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THE AUSTRALIAN DOMESTIC
AIR FREIGHT MARKET:
CONSEQUENCES OF PARTIAL DEREGULATION

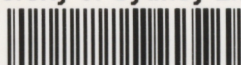
M. Gawan-Taylor

Discussion Paper No. 87

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It should be noted, however, that the views expressed in the paper are those of the author and should not be regarded as representing in any way the views of the Department of Aviation or any other organization.

Abstract

This paper discusses regulation and the economics of the air freight industry before turning to an examination of the consequences of the Commonwealth in 1981 largely removing its economic controls on the industry.

Regulation provides the framework in which the air freight industry operates. The various governmental regulatory systems are outlined and a historical perspective is provided of the growth and structure of the industry since 1946.

The discussion of the economics of the industry seeks to highlight its unique characteristics and draw together the demand and supply relationships.

The events and reasons that led up to the Commonwealth largely withdrawing from economic regulation are considered as well as public and industry views of air freight regulation.

The Commonwealth began to relax economic controls of the industry in 1977 when it allowed two specialist freight operators to import aircraft and operate air freight services between the mainland and Tasmania.

The removal of air freight tariffs from the Airline Agreement in 1981, together with further relaxation of entry, coincided with a period of declining and even negative growth rates in Australia. As a result the few new entrants, as well as several smaller existing companies, were severely affected to the extent that some companies ceased operations. Despite the adverse economic conditions, however, there is evidence both of faster growth of the volume of air freight and of lower prices as a result of deregulation. Increasing price and service competition with the road sector is very noticeable.

Both statistical considerations and industry experience strongly support the view that the growth in the air freight sector was suppressed because of being regulated through the two airline agreement.

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1. INTRODUCTION

Transport in Australia, for many historical and social reasons, is a very regulated industry. Recently, however, moves have been made by a number of Governments to reduce some of the economic controls. As deregulation developments take time to come to fruition, few studies have been made so far as to the outcome.

In the Commonwealth sphere, however, one area that provides scope for analysis is the partial deregulation of the domestic air freight industry in 1981.

The aim of this paper is to examine the economic consequences of the Commonwealth withdrawing from the economic regulation of air freight rates and relaxing its entry and route requirements. The approach taken in the paper is to outline the Commonwealth and State regulatory environment and consider the air freight market in which it operates.

The economics of the industry are examined. The events leading up to a partial deregulation are then discussed before turning to a comparison of the industry before and after partial deregulation.

An associated paper (Discussion Paper No. 88) draws on the consequences of the partial deregulation to consider the prospects for the industry for the period 1983-90.

For the purposes of brevity, the term "deregulated" is used in the text to refer to the present less regulated economic environment. Whilst the easing of economic regulation on interstate air freight in 1981 has been substantial it is not a completely deregulated industry, with respect to entry, as there is a requirement for prospective entrants to establish that there is a demand for their proposed services. In addition, States with intra-State licensing requirements have not followed the Commonwealth's lead in relaxing economic controls.

2. REGULATORY ENVIRONMENT

The Commonwealth and State regulatory systems relating to the carriage of air freight have played a major role in determining the structure and growth of the air freight sector.

2.1 Commonwealth

The economic regulatory powers of the Commonwealth relating to entry, route structure and air fare and freight control are limited constitutionally to the regulation of services within a territory or between a territory and a state. A number of High Court challenges over the years, concerning the interpretation of Section 92 of the Constitution which deals with the right to trade freely between the States, has made it clear that the Commonwealth has not the constitutional power to exercise economic regulation over interstate services. The Commonwealth can only licence intra-State services with respect to safety, regularity and efficiency of air navigation.

As a result of these Constitutional limitations the Commonwealth up to 1981 maintained economic regulation over freight by means of legal Agreements between it and the two major airlines (Ansett and TAA). The Agreements which were ratified by Parliament were the Airlines Agreement Act 1952 and the Airlines Equipment Act 1958.

Under these Acts, the two airlines had the only rights - subject to certain provisions - to carry freight and mail on the major trunk routes. Since the Commonwealth lacks constitutional powers to maintain its Two Airline Policy, it achieves its aim of preventing the entry of other carriers on these routes by using the Customs (Prohibited Imports) Regulations which provides that the import of aircraft is prohibited without Commonwealth authority. The power is limited, however, as once an operator has imported an aircraft, the Commonwealth is unable to refuse an

interstate operating licence except on the grounds of non-compliance or inability to comply with the Australian Navigational Regulations (ANR) relating to the safety of operations.

In respect of freight rates (as well as air fares) the airlines agreed under Section 6 of the Airlines Agreement Act to comply with the Minister's decisions.

Aside from these constitutional limitations, there are some grey areas which are the subject of dispute. Amongst the more important current issues is the East-West's (now part of Sky-West) constitutional challenge of the legality of the Independent Air Fare Committee and Western Australia's refusal to accept that part of the Independent Air Fares Committee Act which gives the Committee powers to set intra-State air fares.

Aside from these issues, however, the constitutional position seems to be reasonably clear-cut in relation to the compatibility between Commonwealth and State powers and the Commonwealth's powers to restrict entry of aircraft.

As regards entry, the Commonwealth exercised its customs powers in 1964 to prevent IPEC importing heavy aircraft for air freight purposes. The power was tested when IPEC took the Commonwealth to the High Court which ruled against the right of IPEC to obtain a permit to import aircraft but in favour of IPEC's rights to operate freight aircraft subject to meeting essentially the Commonwealth's safety requirements. Subsequently, however, in 1977 the Commonwealth granted IPEC and Air Express import permits. This decision was also contested in the High Court by Ansett but was held to be both valid and not in breach of the Commonwealth obligations under the agreements set out in the Airlines Agreement Act.

Following an extensive Domestic Air Transport Policy Review (DATPR) undertaken in 1977 and 1978 (see Section 5), the Commonwealth in 1981 largely withdrew from air freight regulation and was prepared to approve entry to operators who were able to establish that there was a demand for their services and who undertook not to use their aircraft for passenger operators.

Since that date, operators able to meet these and operational requirements have been able to acquire freight aircraft, as required, and provide freight services on interstate routes in unrestricted competition.

2.2 States

The aviation economic regulatory powers of the States, where these are exercised, relate generally to issues of public transport needs and the suitability and fitness of the operator. With the exception of South Australia and Victoria, all states and the Northern Territory require operators of intrastate services to hold state licences. In those States with licencing provisions, it is necessary for the operator to have both a Commonwealth and State licence, except in special circumstances, such as with some TAA services.

As none of the licensing States or the Northern Territory have followed the Commonwealth lead in reducing air freight economic regulation, it is only in Victoria and South Australia that intra-state services have in effect been deregulated. As a result air freight operations can only operate intra-state services within most States if they can obtain a licence and are prepared to meet the conditions of the licence.

The legislation over requirements for entry and continuation of services within each State is different and the conditions can be quite onerous. In most States the licence is only of one year duration, though usually it is customary for the licence to be extended. In general, the licensing Act requires the regulator to consider certain "public interest" criteria relating to protecting consumers as well as existing aviation operators. The conditions can, however, extend to seeking to protect other forms of transport. For example, in NSW, the likely effects of the proposed service on other alternative forms of transport are required to be examined and, in the case of Tasmania, the need to avoid wasteful competition with other forms of transport is also referred to in the Act.

From interviews with officials in States with aviation regulatory powers, the question of entry for a new freight operator would often hinge on the results of the examination showing what effect it would have on other operators providing both passenger and freight services. Since air freight often contributes towards the viability of air passenger services, an air freight license may well be refused because of the effects on the viability of other operators providing both passenger and freight services.

Aside from providing a hindrance to the development of air freight networks, both inter and intra-State, it highlights a general problem in transport where distortions occur because the regulatory powers of the Commonwealth and States are not uniform or compatible. Accordingly, it needs to be noted that there are still restrictions to competition in the air freight market. This is often not appreciated since the Commonwealth reduced its economic controls.

There is no evidence at this stage to suggest that other States intend to follow the Commonwealth's lead. To determine how significant this is in restricting the level of competition would

require an examination of applications for State licenses. The evidence points to few applications up to present. However, the position could change as the air freight business pulls out of the recession.

3. AIR FREIGHT MARKET

3.1 Industry Growth (1946-1981)

Although the first regular airline services in Australia were based on air mail services, passenger services shortly followed. The subsequent expansion of air freight is closely linked with the development of passenger air services. But it was not until the development of larger and more efficient passenger aircraft after World War II that airline services began to grow rapidly.

Figure 1 shows the growth trend in the air freight market for the scheduled airlines since 1946. Several distinct phases can be identified and these are shown in the table below.

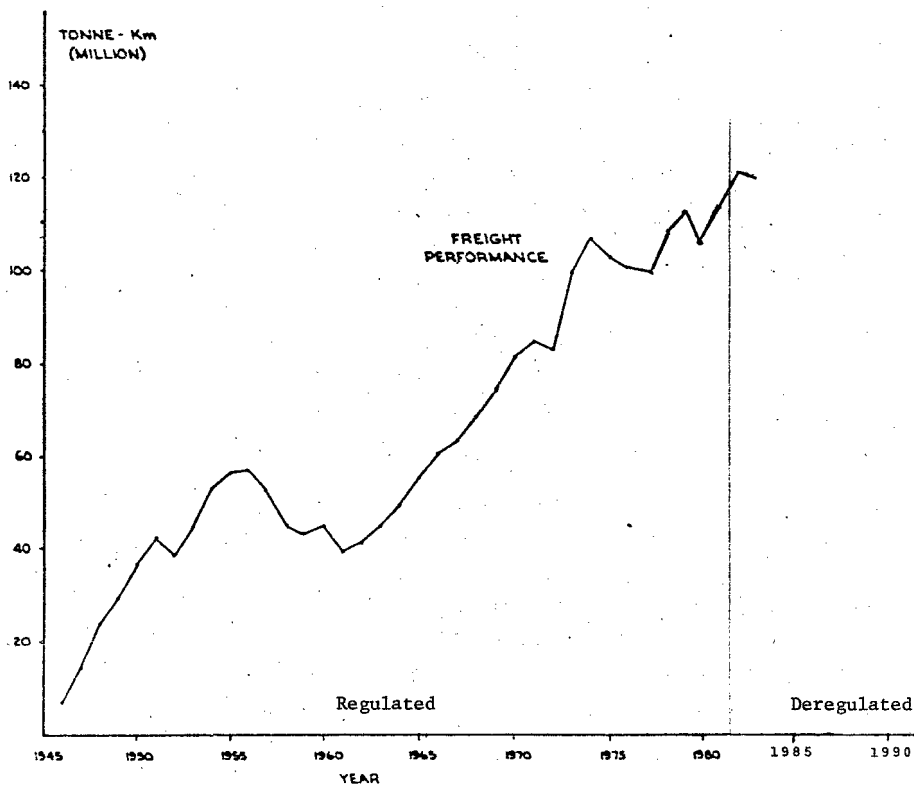
In the period 1946-1956, the growth of air freight expanded at an average compound growth rate of 23.9% in tonne kilometres. However, the subsequent period 1956-1961, despite continued passenger growth, saw a significant decline of 7.5% bringing air freight traffic down to levels equivalent to those carried in 1952. Factors behind this decline included the rapid development and competition from the interstate truck industry following the Hughes and Vale case in 1954 removing the railway protection tax on interstate trucks; the growth of freight forwarders taking advantage of competition and lower road freight rates; and the general improvement of rail and shipping services.

In the period 1961-1977, air freight resumed its growth though at a slower compound average rate of 6.2%. In the 1977-81 period the compound growth fell to only 3%.

Figure 1

Domestic Air Freight Performance 1946-1983

(Scheduled Airlines)



Whilst the growth of air freight has depended on the availability and frequency of air passenger services, the growth rates of passenger traffic and freight have been very different:

Years	Air Freight	Passenger Traffic Growth
1946-56	23.9%	12.1%
1956-61	-7.5%	5.2%
1961-77	6.2%	9.4%
1977-81	3.0%	6.0%

The poor growth of air freight since 1956 can be partly explained by the form of the regulatory environment together with the low priority the airlines gave to freight.

3.2 Outline of Structure of Industry

The regulatory system, in particular the Two Airline Policy, led to around 80% of domestic air freight being carried by Ansett and TAA. With the exception of routes across the Bass Strait, they were the only freight carriers on trunk routes.

Specialised small charter operators carried around 10% of traffic across the Bass Strait. On other routes regional airlines and commuters carried 8.6% and 1.6% respectively. Specialised charter carriers during the mid-1970's included Brain and Brown, Air Express, Forrest Air, Fleet Air, and IPEC which had just commenced operations.

Table 1

Australian Air Freight Industry: Tonnes Embarked

Sector	<u>Year ending June 1976</u>		<u>Year ending June 1982</u>	
	'000 tonnes	%	'000 tonnes	%
Trunk Airlines	96.5	79.4	122.5	75.4
IPEC	(a)	(a)	17.8	10.9
Regional Airlines	10.5	8.6	8.7	5.3
Commuters	2.0	1.6	3.6 (b)	2.2
Charters	12.5	10.3	10.1 (c)	6.2 (c)
	121.5	100.0	162.7	100.0

Notes:

- (a) Included in charters sector in June 1976.
- (b) Total tonnage carried by the 59 commuters operating during the year.
- (c) Excludes IPEC tonnage. As a charter company IPEC carried 12,700 tonnes in 1981-1982 before acquiring an airline licence in 17.3.82. The bulk of the freight was carried by Ansett, Wards and Setair who carried 4489, 2247 and 1897 tonnes respectively.

Source: Department of Aviation Statistics.

The total air transport freight task in the year ending 1976, was only around 120,000 tonnes which was less than .1% of the total freight task in Australia at that time. Table 1 shows the break-up of that time which was fairly typical of the position during the 1971-81 period before deregulation.

Whilst this tonnage is negligible, it provided a fairly significant contribution to airline revenue bringing in around \$53 million in 1977.

Whilst the bulk of air freight was carried in the belly lockers of passenger aircraft (Ansett 62% and TAA 88%), the two airlines had very different operating philosophies. TAA had no specialised all freighter aircraft but carried around 12% of the freight using quick change Fokker F27's and passenger DC9 aircraft with freight loaded on the passenger seats. In contrast, Ansett carried about 38% of its freight using 4 Lockheed Electras converted to specialist freight carriers as well as quick change F27's.

4. ECONOMICS OF AIR FREIGHT INDUSTRY

4.1 Nature of the Air Freight Market

The air freight market has a number of unique characteristics and is generally still regarded as providing a superior quality service meriting higher charges to those provided by other modes of freight. The increasing sophistication of road services, combined with improvements in roads, is resulting in the quality distinction between air and road services narrowing considerably. It is now almost negligible in areas where both are able to provide a reliable overnight service. Whilst in the USA, it was noted that freight forwarder rates set on time critical criteria no longer differentiate on whether the line haul of goods is undertaken by road or by air.

Table 2

THE AIR FREIGHT MARKET

	Emergency Shipments	Perishable Type Shipments	Regular Shipments
Price Sensitivity	Low to Very Low	Moderate to Low	High to Moderate
Time Sensitivity	High	Moderate	Low
Cross Price Elasticity (i)	(a) Moderate (b) Low	Moderate Low	High High to Moderate
General Economic Activity Impact	Moderate	Moderate	High to Moderate
Types of Goods	Urgent small goods, packages.	Company bags, cinema films, newspapers and periodicals.	Records
	Scientific and medical equipment, blood, vital replacement parts.	Cut flowers Livestock, perishable goods, including foodstuffs, personal effects, some types of pharmaceutical goods, regular mail	White goods, automotive parts. Clothing
Factors Involved in Selection of Air Freight	Fastest delivery (speed critical). High quality of service.	Greater reliability; speed of delivery. High quality of service.	Reduced packaging costs; more flexibility in planning and distribution; reduced stock levels and opportunity cost of capital tied up during transport; lower damage and pilferage rates.

Sources: BTE and Industry.

- (i) Relates to those categories of goods on routes where air freight competes with road transport or shipping across Bass Strait. Columns (a) and (b) show the effects on air freight from relative changes between modal freight rates for distances up to 800 and over 800 kms. respectively.

The economic characteristics that determine the demand for domestic air freight are numerous and include population densities; activity levels in industry and in the construction industry (particularly non-urban or remote investment projects); overseas trade; overtime worked; and the price elasticity of air freight together with its cross-price elasticity with respect to those of competing modes (particularly road express and coastal shipping across the Bass Strait).

There has been very little empirical work done in Australia on the air freight market. No econometric model has attempted to derive relationships between air freight demand and the numerous variables indicated. Aside from major statistical deficiencies, the complexity of the task is increased because the air freight market and the setting of its rates is influenced by:

- (a) the nature of freight market segments;
- (b) route freight factors (particularly where there are marked imbalances in freight flows).

As a result, the aggregate results discussed in this paper, although useful in an overall planning sense, require disaggregation for market planning purposes as they represent the summation of a range of markets with widely differing growth rates.

In terms of the range of economic variables, research has focussed on GNP as providing a reasonable indicator for air freight economic activity. The International Civil Aviation Organization (ICAO) uses this indicator for its area forecasts. Studies by Sletmo on the U.S.A. have shown that there is a strong correlation between air freight and GNP rather than industrial production.¹

1. G.K. Sletmo, The Logistics and Transportation Review, Vol. II, No. 1, 1975.

Bearing in mind the importance of bulk commodities in the Australian market which are not air freighted and noting that GNP also reflects growth in processed products and retailing as well as increases in purchasing power, this index has proved to be a reasonable indicator for considering air freight growth. BTE research and unpublished preliminary studies undertaken, as part of this study, at the ANU Centre for Economic Policy Research have suggested that in Australia also there is a strong correlation between air freight activity and GNP.²

Before turning to a discussion of the demand and supply factors, the freight market segments and route factors are discussed.

4.1.1 Market Segments

Air freight can be broadly characterised into two main market components. A demand for the urgent delivery of emergency and perishable cargoes-quicker than can be provided with other transport services-and the demand for shipments as part of the normal distribution process. The former tends to be more unpredictable as it often arises from machinery breakdowns or unforeseen stock pile shortages. Nevertheless, the bulk of air freight falls into this category and it provides the greatest opportunities for profitability as higher air freight rates can be charged.

Table 2 sets out the main characteristics of the market together with its demand characteristics which are discussed later.

Whilst there are few statistics on what goods are carried by air freight they tend to include items such as urgent small goods and a range of other items including white goods, clothing, automotive parts and newspapers.

2. A.B. Smith, The Outlook for Domestic Freight, BTE Domestic Freight Workshop, Canberra, 1977.

Table 3

Domestic Air Freight Tonnes Consigned:

Capital City Airports

1981-82

(tonnes)

	Inbound	Outbound
Adelaide	9,645	7,622
Brisbane	17,128	12,705
Canberra	2,021	1,002
Hobart	7,663	4,768
Melbourne	30,942	43,809
Perth	6,389	6,931
Sydney	24,439	34,335
Darwin	1,746	1,066

Source: Commonwealth Department of Aviation, Central Statistical Section.

In general terms, items can be categorised into items of:

- high value, low volume, high density
- perishable or urgent
- livestock.

Whilst it has been traditional to discuss the advantages of air freight in terms of speedier delivery, greater reliability, lower pilferage costs, in recent years the increased growth and sophistication of interstate road services using containers have whittled down many of the claimed advantages of air transport.

The main air transport advantages are particularly on those routes where rapid delivery is required over distances of 800 kilometres upwards and between non-adjacent cities.

The main disadvantages of air freight are its higher cost, the problems of traffic imbalances (as with other modes) and the fact that some goods, because of their size or bulk are not suitable for air freighting, for example, steel and coal.

The main competition for air freight is from road transport in mainland Australia and from sea transport across the Bass Strait to Tasmania. Rail and other coastal services tend not to be competitive both because of the relatively slow service provided and the tendency to concentrate on non-air freight type cargoes having low value or of a bulk nature.

Whilst the tonnage is negligible in relative terms, its economic importance (aside from supplementing airline passenger revenue) has lain in the relatively high values of goods transported and the wide range of commodities freighted.

Although there are no studies on this aspect in Australia, a USA study by Ilan concluded that air traffic through the port authority of New York and New Jersey accounted for 25% of total shipping value though representing only around 1% of total tonnage.³

4.1.2 Route Factors

The general freight flow imbalance is a particular problem affecting air freight - particularly with respect to the use of all freighter aircraft. In general, there is a net imbalance in the East-West freight flows with the eastern seaboard a net "exporter of freight". Table 3 shows the position for the capital city airports in 1981-82.

4.2 Demand for Air Freight

As already noted various characteristics influence the demand for air freight. Amongst the more important are the general level of economic activity, the cross price elasticity of transport substitutes and the real freight rate. With the first two variables the relationship is direct while with the third it is an inverse one.

4.2.1 GDP Relationship

A BTE study for the 1968-76 period in Australia showed that for each 1% GDP increase in the 1968-76 period in Australia, the volume of air freight used rose by 0.9% on a tonne-km basis.⁴ GDP relationships taken over different periods may, however, show different results as they are dependent on a number of factors, including the nature and extent of competition in the industry.

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3. A. Ilan, Future Development in International Air Cargo Transports, paper presented to Transport Research Forum, 1976.
 4. Bureau of Transport Economics, Future of Air Freight in Australia, Canberra, 1981.

Whilst no econometric work has been undertaken on other periods, possibly because of inadequate data, there have been dramatic changes in the growth rate of air freight in the various periods between 1946-1981 (see Section 3.1). For example, the periods between 1946-56 and 1961-77 the growth rate greatly exceeded changes in GDP. In the new more competitive environment the elasticity is likely to be very different to that of the 1968-76 period.

A major issue, of course, that concerns the future of the industry is whether these elasticities are likely to be smaller or larger in the future. It is suggested in Discussion Paper 88 dealing with the growth prospects of the industry that the elasticities relating to change in economic activity are likely to be moderately higher, possibly around 1.25, which would be more in line with countries whose air freight markets are still developing.

This is because of the more competitive situation with deregulation and having regard to the fact that around 62% of freight tonnage is carried on passenger aircraft. The relationship between economic activity and passenger movements appears to be considerably higher and has been estimated in the airline industry as being in the vicinity of 1.75.

4.2.2 Price Elasticities

As the cost of carrying goods is usually small in relation to the final selling price of the goods - 5% to 10% is often used as a yardstick - quite large changes in transport costs do not normally markedly affect the final selling price. Consequently the demand for air freight cargo is usually regarded as being price inelastic.

Various U.S. econometric studies have supported the view that air freight is mainly service responsive and not price responsive. For example, Sletmo using a number of econometric modelling techniques concluded that it was price inelastic - less than one - but highlighted the significant cross price elasticity between air and road transport. Market research by the U.S. Company Flying Tigers, the largest air cargo organisation in the world, have also supported the view that it is service responsive rather than a price sensitive business.

Naturally, however, the average price elasticity will include a range of different elasticities for the various markets and products. Freight of an emergency or urgent nature could be expected to have very low elasticities in contrast to that for routine use. Although very little work appears to have been undertaken on the different markets the Sletmo study noted that the demand for air express in the USA appeared to be virtually price inelastic.⁵ Table 2 characterises the likely range of elasticities for the different market segments.

The main Australian work on air freight price elasticities has been done by the BTE. The DATP review, drawing on BTE work, concluded that the price elasticity of demand for air freight services in Australia was of the order of .6% on a tonne-km basis.⁶

Knowledge of the broad magnitudes of price elasticity is obviously useful in setting freight rates where the market is not competitive. It does not need to be precise to be useful. Clearly information and market knowledge difficulties will usually preclude obtaining precise magnitudes. Even the

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5. G.K. Sletmo, The Logistics and Transportation Review, Vol. II, No. 1, 1975.
 6. Bureau of Transport Economics, Future of Air Freight in Australia, Canberra, 1981.

knowledge, that the price elasticity is less than one rather than over one provides a guide - when matched with the firm's cost data - as to whether the general pricing strategy in the less competitive markets should be based on lowering or raising rates.

In spite of the importance of this area of research to both freight companies and those seeking to understand the air freight market, very little work has been done in Australia to provide meaningful estimates of price elasticity that could be employed in making policy or corporate strategy decisions. One reason for this is the lack of information on the types, quantities and values of goods moved in Australia, as well as the actual freight rates charged.

Without having information on actual freight rate charged over time the deriving of estimates of price elasticities from published rates is likely to be inaccurate. Because of wide-spread and heavy discounting of rates, the use of published rates, particularly in the recently deregulated air freight industry is very misleading as an indicator of the current rates for freight. Air freight industry sources suggest that only around 10% of the cargo is carried at published rates. A rough rule of thumb used in the road freight industry is that only around 20% of traffic carried by road is at the scheduled rates.

In areas where competition is significant, price elasticities may be of little importance compared with the cross-elasticity of competing modes. (The cross elasticity is the relative change in quantity carried by mode A resulting from a change in the freight rate of mode B.) In the case of air freight, the range of information required to establish these elasticities is the relative prices of air to road or sea transport for the type of goods.

Again largely because of substantial information deficiencies, there has been even less research work in this area than on price elasticities. There seems to be no generally accepted cross elasticities for transport in Australia. Rimmer in "Freight Forwarding in Australia" pointed to the many difficulties of having meaningful comparisons between the various transport charges.⁷ This is particularly evident having regard to the problems referred to of widely differing published and discount rates for the same freight. The work by Sletmo showing that air cargo was price inelastic also concluded there was a positive and significant cross price elasticity between air and road transport in the USA.⁸

4.2.3 Concluding Comments

The unique characteristics of the air freight market have been discussed in this section. Analysis of the market present some difficulties both because of the variety of market segments and the limited knowledge on some of the fundamental relationships.

Table 2 draws together the main threads of this section with a view to showing the relationships schematically. In this respect, it shows a cross-walk of the market segments and the various factors influencing the air freight market together with their relative importance.

4.3 Supply Characteristics

The form of aircraft capacity used to meet demand is either by way of a freight-carrying passenger aircraft or an all freighter aircraft. These two supply components have very different cost structures.

7. P.J. Rimmer, Freight Forwarding in Australia, Canberra, 1970.

8. G.K. Sletmo, The Logistics and Transportation Review, Vol. II, No. 1, 1975.

As already noted, most of the air cargo is carried in scheduled passenger aircraft. As a result, in the new more deregulated environment when spare capacity exists the air freight space can be sold profitably from prices slightly above marginal costs to what the market will bear.

Where there is insufficient passenger aircraft capacity or unsatisfactory passenger services (in terms of passenger geared timetables or equipment, which does not meet freight service requirements) the all-freighter aircraft plays a significant role. However the costs of such an aircraft need to be met entirely from cargo sales as cargo is no longer a by-product. It is therefore no longer possible in the longer term to carry freight at prices as low as marginal costs. The new minimum freight rates will need to be considerably higher depending on the total fixed and variable costs of operating the aircraft and having regard to the likelihood of obtaining acceptable freight load factors on each leg of the trip.

It is these types of consideration which explain the relatively slow growth of specialised all cargo aircraft. Whilst they face certain difficulties, it should be noted that without such aircraft or the temporary use of passenger aircraft for freight alone, the size and scope of the market would be almost entirely restricted to the capacity and route structure provided by the level of passenger services at any one time.

4.3.1 Industry Cost Structure

Whilst the cost structure for the industry depends on whether consideration is being given to passenger aircraft carrying freight as a by-product or on all freight aircraft, the profitability of both sectors of the industry is heavily influenced by changes in the cost factors. These include labour, energy, capital investment (including infrastructure), taxes and subsidies, technology and regulation.

In this respect, it needs to be noted that air freight in Australia is relatively labour-intensive because of freight handling and distribution and is therefore strongly affected by changes in wage levels or conditions.

Fuel costs have risen nearly 300% since 1975. Depending on type of aircraft, fuel now represents between 16% and 35% of direct operating costs, depending on type of aircraft, and has become the largest single component in operating costs. In 1978-79 TAA concluded it represented 34.3% of its operating costs. Fortunately since 1981, prices have declined slightly in real terms.

The industry has benefitted markedly, however, from the development of the air freight forwarder. By consolidating cargoes and providing shippers with door-to-door services, better services and cost savings to air freighters have been provided. In addition, the introduction of computer technology since 1973 has both improved services and led to some cost reductions.

Although the scheduled passenger carriers have benefitted from modern and larger aircraft with greater freight capability, the specialist air carriers have not. Moreover, partly as a result of the earlier regulatory regime, the cargo fleet is only partially modernised. With the result that it contains a mixture of modern Learjets and DC9's as well as aircraft of the 1950's, such as the Argosy Series 200. The main problem with older aircraft is their fuel inefficient engines which lead to very high operating costs.

Moreover, in contrast to passenger aircraft, aircraft technology has not assisted the all-freight operator. Despite industry interest in having a commercially viable medium capacity (around 30 tonnes payload) specialised air freighter, so far no manufacturer has been prepared to develop one because of doubts of making sufficient sales to justify the high development costs.

The trend towards containerization has, however, provided cost savings through reducing handling, processing time, documentation and the damage to goods. As well as improving services, these benefits considerably outweigh the costs of container maintenance, storage and the additional tare weight of the containers.

5. EVENTS LEADING UP TO PARTIAL DEREGULATION

In the mid-1970's there was increasing public dissatisfaction with the two Airline Policy - largely because it was felt that the level of competition between the airlines was adversely affecting the quality of air services and fare levels. In response the then Minister for Transport, Mr Nixon, agreed to his department reviewing domestic air transport.

Whilst the main issues were concerned with passenger transport, the regulation of air freight with respect to capacity, entry, and routes was also of concern to some sectors of industry.

Up to 1981, the Two Airline Agreement together with associated legislation provided the controls on air freight capacity, entry and rates on all trunk routes.

In respect of air freight capacity, six monthly determinations on the two airlines set the capacity levels. As there were few specialist air freight aircraft, freight capacity was essentially determined by the availability of space on the capacity controlled scheduled passenger services.

Up until 1977 all requests for entry were refused although the agreement provided authority for the Minister to approve specialist air freight services not provided by the two airlines. In 1977, the freight operators, IPEC and Air Express, were given approval to import aircraft to commence services across the Bass Strait.

Overall freight rates were fixed by the Minister and usually increased *pari passu* with air fare increases. Discounting of freight rates seems to have been fairly prevalent in the industry, so essentially what the Minister was setting were the maximum freight rates.

5.1 Domestic Air Transport Policy Review

The then Department of Transport review of domestic air transport commenced in 1977. Submissions were invited from State Governments and the private sector as well as major users of air transport and the public. In all sixty submissions covering mainly passenger services were received.

Although the topic of air freight was the subject of some conflicting submissions, the main arguments could be condensed into those for and those against more competition. The main areas covered in the submissions were as follows.

5.1.1 Industry and Public Views

(i) The Airline Agreement

There were contrasting views on whether the agreement should be continued. Opinions ranged from those who believed it had worked well to those who believed air freight services were inadequate as the airlines were primarily concerned with passengers and not freight. Several submissions suggested that air freight be excluded from the two airlines policy.

A number of submissions contended that, where a need existed, specialist freight operators should be permitted. There was some disagreement, however, over whether the Minister had the powers under the agreement to authorise additional freight operators offering specialist services on trunk routes.

(ii) Extent of Competition

More Competition

Those submissions criticizing the two airline system stated that true competition did not exist since there was little to distinguish between the two airlines. The effects of tight regulation resulted in a situation similar to monopoly but with two parallel operations.

As the airlines were protected by Government policy, the submissions contended that their high cost structures and inefficiencies could easily be passed on to the consumers. Change and innovation were also inhibited. The view was taken that with a more competitive industry the consumer could exercise his power of choice and influence the price and type of services provided.

It was suggested that industry concessions should be granted to other operators where demand was not being met because of passenger-gearred timetables and equipment.

Less Competition

Several submissions also argued the case for less competition contending that a monopoly was the best solution for trunk operations because of the small size of the Australian market.

Some submissions argued that specialist air freight operators were not in the long term public interest and therefore should have their licences terminated as there was already adequate cargo capacity. It was also argued that new operators would lead to market fragmentation and rate wars jeopardizing the long term viability and stability of the industry.

Other submissions claimed that as these operators were unnecessary, their initial lower rates would shortly be superseded by increased rates and curtailment of services on the minor routes due to lack of demand.

In respect of airlines, some submissions criticised the unpublished discounts of rates as discriminatory, whilst others defended it on the grounds of inducing greater use of capacity.

(iii) Curfews

The general view was taken that the relaxation of curfew hours would allow higher aircraft utilisation and lower fleet operating costs. At present only certified non-jet aircraft are allowed to fly during curfew time.

(iv) Special Needs

Tasmania

Several submissions pointed out the particular dependence of that State to air freight services. It was claimed that, apart from some specialist air freight operators, the majority of air freight capacity to Tasmania is limited by passenger considerations.

The question of providing tax rebates to companies moving Tasmanian freight and extending the freight subsidies scheme to aviation was also canvassed.

Northern Territory

It was suggested that intra-Northern Territory air freight needs could be best served by third level operators.

Queensland

It was considered that large air freight aircraft, not owned by the domestic operators, should be allowed into northern Queensland.

5.1.2 Review Conclusions and Recommendations for Air Freight

The Committee recommended that the legislative controls on air freight capacity and entry should be removed. It concluded, however, that the Government should continue to approve air freight rates though it suggested that these be allowed to be varied within certain limits.

In coming to its recommendations major points made by the Committee included:

(i) Overall Air Freight Market

There were indications that domestic air freight development was lower than expected. In addition the development of a complete air freight service had been restricted by the Two Airline Agreement.

(ii) Specialist Freight Operators

The Committee considered that fast and frequent services were available to users wishing to send urgent goods, but that the development of specialised types of air freight service had been restricted and this had led to a slower growth of the total air freight market.

It concluded that the possible benefits of specialised freight operators supplying a different but complementary service to that already existing far outweighed the smaller risk of over capacity and instability in the airline industry. It thought the greater choice of service could increase total demand for air freight and stimulate the aviation industry as a whole. With the information available to it, the Committee was not able to determine the likely viability of specialised freight operations.

(iii) Air Freight Rates

In view of the small amount of information available on the costs of carrying air freight the Committee felt unable to establish whether air freight rates are high or not. It felt, however, that competition from other modes restricted the level of rates that could be set.

(iv) Capacity

The Committee considered it did not have definite evidence to determine whether the market would expand if more capacity and lower rates became available. Based on BTE elasticity estimates, it thought that if air freight rates were cut by say 5% demand would increase by 2.9%.

(v) International Carriers

The Committee concluded that for the time being no change should be made to policy in respect of domestic air freight forwarders wishing to utilize spare capacity on international carriers. The policy is to allow access to Qantas capacity but only through the domestic airlines which sub-contract capacity over the routes for which they are licensed.

(vi) Curfews

In view of important social considerations, the Committee concluded the existing curfew policies should not be changed unless particular circumstances warranted special consideration.

(vii) Special Needs

The Committee noted the conclusions of the Committee of Inquiry in 1976 into Tasmania Transport Needs that air freight users to Tasmania pay charges no higher than on the mainland and that there was scope for growth in air freight.

The Committee considered the capacity available was more than adequate in view of the developments in specialised freight operations (ie IPEC services to Tasmania) which had the effect of increasing air freight services to Tasmania. Questions of air freight subsidies and tax rebates were considered to be beyond the Committee's terms of reference.

5.1.3 Review Conclusions and Recommendations on Air Mail

Airmail has always been regarded as a separate and high priority category of air freight. It makes up about 10% of all domestic air freight.

The Two Airline Agreement ensured that the two airlines each obtained a 50% share at a rate negotiated between TAA and Australia Post (Ansett receiving the same rate) over the competitive routes. This represented about 80% of the total volume of mail. The carriage of the remaining 20% was negotiated between Australia Post and the carriers concerned which included the trunk and regional airlines, commuter and charter operators.

There has been a steady decline in the relative importance of airmail revenue to the airlines. It currently accounts for less than 1% of their total revenue.

The Committee concluded that the present system worked reasonably well despite some shortcomings. It was not in favour of deregulating mail but instead recommended modifications aimed at improving the overall system.

Changes recommended were aimed at providing more incentive to the airlines to improve their services by allowing a variation in the 50/50 sharing arrangements with variations in the rates through negotiation or by competitive tendering.

It also recommended that the Government's policy be relaxed so as to enable Australia Post to award contracts for the carriage of such mail to other Australian airlines and operators including Qantas on those routes where the major airlines could not offer sufficient capacity.

5.2 Government Air Freight and Air Mail Policy Decisions

The Government accepted the recommendations of the report with respect to removing legislative controls on air freight entry included in the airline legislation. The necessary amendments to the legislation were made in 1981 by deleting all references to air freight.

Nevertheless the Government decided to retain administrative control by requiring prospective operators to establish that there was a demand for their proposed services. (Entry was also conditional on an operator giving an undertaking that the aircraft would not be used for passenger operations).

With respect to air freight rates, however, the Government went further than the Review recommended and removed all air freight rate controls.

The Government also decided to completely deregulate airmail carriage with the result that references to airmail were deleted from the Two Airlines Agreement.

However, the Government was not prepared to permit Qantas to carry freight on domestic routes. In terms of the new agreement, Qantas operations are restricted to international air services (Clause 15) and no carriage of freight or mail on domestic routes is allowed.

6. ECONOMIC CONSEQUENCES OF PARTIAL DEREGULATION

It is too early to provide definitive conclusions on the consequences of the partial deregulation bearing in mind that the new airline agreement was only implemented in June 1981 and that during that time there has been a serious recession.

The preliminary conclusions, however, that can be drawn from the evidence - both of a statistical and industry source nature - are that relaxing economic regulatory control has led to a much more vigorous and innovative industry with the ability to compete effectively. This suggests that the industry will also be able to benefit significantly as the economy improves.

6.1 Transitional Phase

There are no theoretical guidelines as to what is the period required for the effects of deregulation to work its way through the system. In my discussions in the U.S.A. most airline executives and academics interviewed regarded five years as representing a reasonable transitional period for the main

consequences of deregulation to flow through the air freight industry. This is considerably lower than for passenger deregulation in the U.S.A. in view of the much greater complexity of passenger operations.

Probably what is required is for the industry to experience a full cycle of recession and steady growth to allow a sufficient period of adjustment to a range of economic conditions. Since the Australian air freight industry has faced a recession in its first two years, it would seem reasonable to suggest that the main effects would work their way through the system possibly by the end of 1985.

The consequences of the partial deregulation of air freight to date are considered by:

- (i) comparing Australian freight performance with that of overseas prior to the relaxation of economic control
- (ii) examining the market structure before and after the partial deregulation
- (iii) considering the effects of the partial deregulation on:
 - (a) capacity
 - (b) entry
 - (c) activity trends
 - (d) freight rates

6.2 International Comparisons

International comparisons since deregulation are not yet possible because of the unavailability of statistics, but it is possible to compare how Australia fared in respect of the regulated period between 1961 to 1976. The statistical comparisons are made with the domestic airlines which provide around 80% of the total freight capacity.

Table 4

International Comparisons of Domestic Air Freight

Activity between 1961 and 1976

(in tonnes-km)

(a) Cumulative Growth Rates

	<u>1961-1971</u>	<u>1971-1976</u>
Australia	7.9%	3.5%
Canada	18.6%	8.4%
Germany (FR)	25.2%	8.4%
U.S.A.	15.4%	5.7%
World	13.7%	6.7%

Sources: ICAO Digest of Statistics

Domestic Air Transport Policy Review (Appendix A14.1).

In the period 1946-1977 there were three distinct phases of development; very strong after World War II between 1946-56 (24% per annum); a decline between 1956-1961 (minus 7.5%) and a modest increase of 6.2% between 1961 to 1977. (Section 3.1).

When Australia's rate of air freight growth between 1961-1971 and 1971-1976 (7.9% and 3.5% respectively) is compared with overseas countries, our growth rate is shown to be poor - both in comparison with the other countries considered as well as with the World average growth rate. The cumulative growth rate for the two periods are shown in Table 4.

Of the countries compared in Table 4, Canada, USA, and Germany all had air cargo growth rates nearly or more than double that of Australia in the periods 1961-1971 and 1971-1976. The average world growth was also very nearly double in the same periods. (Since 1976, North America and World average freight growth rate have declined).

The comparison with Canada seems to provide a reasonable yardstick, as aside from broadly comparable GDP per capita, our population densities were also very similar. For example in 1975 Australia had a population density of 2 per kilometre squared and a GDP per capita of US\$6364 compared to that of Canada with also a population density of 2 per kilometre squared and a GDP per capita of US\$6995. Moreover, in terms of the actual tonne kilometres carried on scheduled flights, the Canadian air freight activity in the base year 1961 was also broadly similar to that of Australia (32.4 million tonne kilometres compared to 39.8 million tonne kilometres). By the year 1976, however, the Canadian air freight activity had risen to 257.7 million tonne kilometres compared with 100.7 million tonne kilometres for that of Australia.

In comparing Germany, however, it needs to be noted that the very dramatic rates of growth experienced between 1961 and 1971 occurred from a low base of 1.6 million tonne kilometres in 1961.

One other international comparison is to note the changes in average air freight rates during the period. Between 1963 and 1972, the world international air freight rate fell from 20.6 to 19.7 cents per tonne kilogram - a decrease of 4.4%. In a slightly shorter period 1964 to 1972, the average freight rate (based on TAA figures) in Australia rose from 30.1 to 37.8 cents per tonne kilometre - an increase of 25.6%. This also suggests greater evidence of competitive pressures facing the overseas airlines.

6.2.1 Conclusions

All these international comparisons suggest that the Australian air freight market compared very poorly with those of other countries. To draw firm conclusions, however, the analysis would need to extend to comparing economic conditions, the relationships between transport modes and supporting infrastructure, as well as taking account of geographical and population differences.

Nevertheless, the circumstantial evidence is very strong that Australia's air freight performance would have been improved if it had not been so tightly regulated, particularly when allowance is made for other factors which should have favoured the development of the air freight market. These include our relatively well developed air transport system, the size of the country and the remoteness of many of our mining towns developed during that period.

It therefore seems reasonable to conclude that the international comparisons suggest that the two airlines system, accompanied by a tight regulatory framework, adversely affected the growth of the air cargo market. The two airlines - as well as the two airline policy - were geared primarily to the passenger market and there seemed to be little incentive to develop an air freight market. This combined with the complete entry restrictions up to 1977 resulted in little aviation competition as well as a general suppression of the potential growth of the air freight market.

6.3 Market Comparisons Before and After Partial Deregulation

6.3.1 Market Structural Changes

Prior to Partial Deregulation (1971-81)

Table 1 shows the breakup as at June 1976 which was fairly typical of the position during the 1971-1981 period before deregulation.

The total average growth rate in the 1971-81 decade on a tonne-km basis was 3.1%. Despite the fact that the majority of cargo was carried by regular scheduled passenger aircraft, growth between 1971 to 1980 was only 30% compared with 92% for passengers in the same period. Several reasons were advanced to explain the poor growth rate experienced in this period. These included the airlines only being concerned with passengers, equipment was not suitable for air cargo, strong competition from an unregulated road sector and regulation had led to low air cargo rates providing no incentive to carry freight.

Up to 1977, although many requests were received for route operating licences, no other operators were allowed to provide trunk route services. As a result, with the exception of commuters, there was little structural change in the industry. Commuters only provided around 2% of the freight.

In the period between 1977 and 1981 when the Commonwealth relaxed its economic control, there was a flux of structural changes in the industry particularly near the time when policy changes appeared imminent.

In 1977, the Government agreed to allow the specialist freight operators, IPEC and Air Express, to import aircraft and to operate air freight services between the mainland and Tasmania. IPEC set up a separate aviation division and commenced operations in 1978. Between 1978 and June 1981, Wards acquired Learjets and set up a separate aviation division, and Ansett reorganized its air freight operations by transferring responsibility for them to its TNT partners which had developed extensive road transport operations. Just before the introduction of deregulation, Cargomasters, a new company, was established with financial backing from the U.S.A. Company Air Alaska and obtained a charter licence.

Following the Partial Deregulation (1981-1983)

By the time the legislation removing air freight from the Airline Agreement had been enacted, much of the major structural reorganisation had already taken place in the industry.

With the introduction of the Airbus, TAA reorganized its freight operations setting up a completely separate subsidiary freight operation with its own profit centre.

With relaxation of entry requirements, IPEC expanded from a single route operator to an all freighter airline providing services to five cities. By 1982, it had become Australia's largest all freighter airline with regular scheduled flights between the major centres of commerce and industry. Wards also expanded its range of operations.

A few small companies were set up and obtained charter licences. As a result of the depressed economy and often inadequate financial backing, many of these only operated a short while before either completely or effectively withdrawing from the industry. The largest of the companies was Bloodstock which was set up to provide charter services for the transport of livestock. In view of its inability to get adequate charter services shortly after inception it leased its 727 aircraft to TAA.

Whilst Cargomaster had obtained its charter licence prior to deregulation, its services commenced afterward. Its expectations of obtaining sufficient charter business from the North West Shelf, however, never materialized and the company's flying operations were terminated in mid July with the Hercules aircraft on lease being returned to Air Alaska.

6.3.2 Capacity of Industry

Prior to Partial Deregulation

As around 60% of the freight was carried on scheduled passenger services, the availability of freight capacity was largely dependent on the capacity and frequency of passenger aircraft. Within the routes served by these aircraft, there is little evidence to suggest that there were capacity shortages at the freight rates being charged. Submissions presented to the domestic air policy review did not identify capacity shortages though inadequate cargo equipment and services outside the trunk route networks as well as the general lack of specialist type air services was highlighted. Airline load factors also support the view that generally availability of capacity in terms of the tonnages aircraft could uplift was not a problem.

A further 30% was carried on charter by the trunk airlines, charter companies and a number of commuter operators. Again the main tonnages were carried by TAA and Ansett. In the case of TAA the all cargo aircraft comprised quick change Fokker 27's and passenger DC9s with freight loaded in bags on the seats. Ansett used four Lockheed Electras as well as quick change F27's. Criticisms of these services were directed at lack of choice of carriers, inappropriate equipment, but not at a lack of total capacity available.

Around 10% of the capacity was provided by Regionals also carrying freight on passenger aircraft. There is little information on whether there were any problems of capacity availability, though having regard to the wide range of road and rail freight services and some bolstering of cargo capacity by commuters, it seems unlikely that there were any major capacity problems.

In respect of charter capacity, the entry of IPEC as a charter operator in 1977-78 considerably boosted the charter capacity available. In its first year it added 15% capacity to the system.

To sum up whilst there was a range of criticisms directed at domestic air freight, particularly the lack of specialist operators, in general the level of capacity available was not an issue. Although as passengers determined route coverage and frequency, the carriage of freight was regarded as very much of secondary importance.

Since Partial Deregulation

(a) Existing carriers

As a result of the two airlines' major re-equipment decision a substantial increase in passenger aircraft cargo capacity took place when the new aircraft came on stream in 1982 and 1983. In

contrast with the earlier aircraft (B727-200) that had a total cargo capacity of only 3.5 tonnes the introduction of TAA's Airbus and Ansett's Boeing 767 led to a substantial increase to approximately 9 tonnes with full passenger and fuel load in the case of the Airbus.

The considerable expansion in cargo capacity took place at a time when the economic growth was decreasing. As a result, load factors declined substantially and there was evidence of excess air freight capacity on the heavily trafficked routes. This accentuated air freight competition between the airlines as well as with road transport.

TAA decided on economic grounds related to the carriage of passengers, to phase out its quick change F27's which carried palletized cargo by night. As a result its all air freighter capacity of 12% was removed from the system. To replace this loss in capacity, it signed a contract with IPEC which enabled it to take significant space on IPEC DC9 jet services across the Bass Strait as well as on other IPEC services. Ansett also recently decided to modernize its freighter fleet by converting one of its 727 aircraft to an all freighter carrying pallets. With the introduction of this aircraft Ansett has indicated it will withdraw its operationally costly Electra Turbo-Prop fleet (now 24 years old).

In order to provide Australia wide services, IPEC substantially increased its capacity with a purchase of an all freighter DC9 (with a payload of 16 tonnes) and a third Argosy. All in all it now had an uplift capacity of 200 tonnes a night but in view of the recession the third Argosy is basically held in reserve.

(b) New carriers

With the relaxation of regulation entry was open to all carriers wishing to provide inter-state services and able to satisfy the requirements that there was a demand for the proposed services and meet the operational safety criteria for their aircraft.

The circumstances facing new entrants seeking to find a profitable niche in the market could hardly have been bleaker. The prospects of making a reasonable profit were poor, having regard to a declining GDP, falling total freight tonnages - not to mention evidence of excess capacity both within the aviation and the road transport systems. These features highlighted the difficulties newcomers would face.

As a result of the gloomy economic prognostications, the only new entrants were very small charter and commuter operators entering the industry. In view of the smallness of their operations - usually limited to a single aircraft on lease arrangements with minimum equity - their freight statistics are rarely reported. Nevertheless, the evidence points to the new capacity as being very minimal - in total volume terms - though on some inter-capital city routes their very low freight rates (based on marginal costs) did have the effect of lowering rates as the larger operators matched their rates.

Of the new entrants since 1981, Bloodstock is the largest in terms of freight capacity. It entered operations with a 727-100 aircraft with the expectation of carrying livestock within Australia. Contractual arrangements were made for crewing and maintenance to be provided through TAA. As the market failed to materialize, most of the plane capacity was leased to TAA.

Although no records are available, evidence from industry sources suggest that a number of bankruptcies occurred amongst the smaller charter and commuter operators resulting from

under-capitalization, inadequate credit control and lack of operating experience. Further, setting rates at uneconomic levels at times, the result of predatory pricing by established carriers in the context of a very competitive market, was also a major factor.

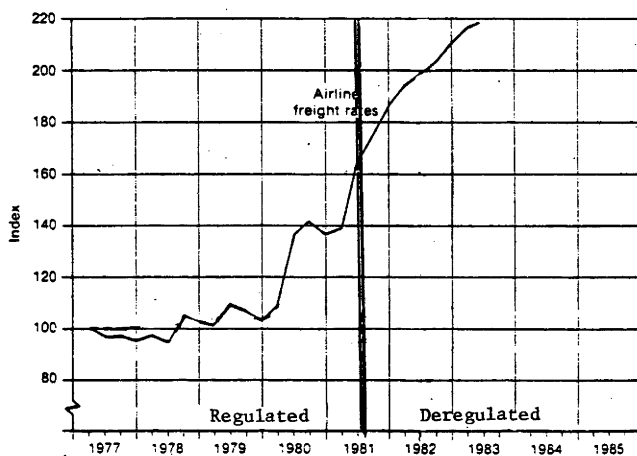
Amongst the most competitive of routes where rate cutting has been strongly in evidence has been that across the Bass Strait to Tasmania. There at least six carriers at one time or another have been in competition with IPEC since 1978 when interstate entry restrictions to Tasmanian routes were relaxed. Before 1981 most of the competition from companies such as Air Express, Forrest Air, Brain and Brown had withdrawn because of financial losses before 1981. With the exit of Set Air in mid-1983, IPEC has now been left with little air freight competition on this route.

The depressed economic conditions and fierce competition also led to a number of companies such as Cargomasters, Set Air, and General Cargo which had commenced operations before deregulation either temporarily (in the case of Cargomasters) or permanently ceasing operations. Anticipating considerable market growth on the North-West Shelf, Cargomasters entered charter operations shortly before deregulation with a Hercules aircraft leased from Air Alaska. Unfortunately with the termination of the resources boom, it was unable to obtain adequate charter services there or elsewhere - particularly having regard to the large size of the aircraft. Following some charter work in Papua/New Guinea, the company wound down operations and the plane was returned to Air Alaska until there is a guarantee of more work.

Set Air, one of the larger companies affected by the recession, carried over 2,000 tonnes in 1982/83. It had commenced passenger and freight operations in 1978. Freight charters included

Figure 2

Airline Scheduled Freight Rates



Sources: ABS, Retail Sales of Goods Cat No 8501.0, Ansett and TAA freight schedules.

Average Annual Air Freight Rates Increase (in real terms)

June 1977 - June 1981	13.9
June 1981 - June 1983	15.4
1977 - 1983	14.4

competing with IPEC across the Bass Strait and providing special courier type services e.g. newspapers service between Essendon/Canberra/Sydney.

The effects of competition on air freight rate levels and on the growth of activity before and after deregulation are contrasted in the subsequent two sections.

6.3.3 Air Freight Rates Comparisons

Air freight rates statistics are not collected by the Commonwealth. As already discussed there are significant problems in obtaining meaningful actual freight rates paid since there is substantial customer and volume discounting of published rates.

Nevertheless, by comparing various series of statistics and indicators and by examining average freight rates paid over the trunk route system, reasonable insight can be obtained into what changes have occurred before and after deregulation.

a) Scheduled freight rates

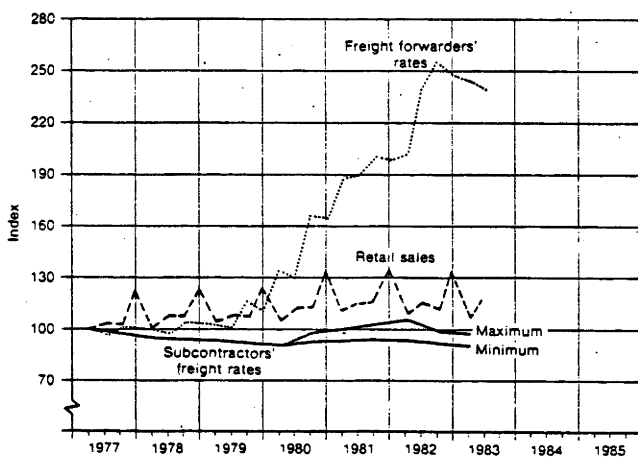
Despite its significant limitations as a meaningful guide to actual freight rates paid, scheduled freight rates are the usual means of comparison because of their ready availability.

Figure 2 shows that the average rate of growth of published air freight rates in the four year period to 1981 prior to deregulation was about 13.9% in real terms. Since deregulation it has risen to 15.4% despite the recession and road competition.

Industry sources also confirm that considerably higher scheduled rates are being charged on small packages for the reasons that they are more costly to handle and that under regulation the

Figure 3

Road Freight Scheduled Rate and Sub-contractor's Freight Rates



Sources: Hay, D. Report of the Independent Inquiry into Representation for Long Distance Owner Drivers, Feb. 1980, ABS, Retail Sale of Goods, Cat. No. 8501.0, Personal Communication with three national freight forwarding companies and the LDRTAA.

Average Annual Road Freight Rates Increase (in real terms)

June 1977 - June 1981	18.8
June 1981 - June 1983	10.5
1977 - 1983	16.0

freight rates on these items were kept unduly depressed. When controls were removed from freight rates the rates for this small group rose to relate more closely to the costs of carriage as well as to what could be charged in a more competitive market.

As can be seen from examining the deregulated interstate road sector - the main competitor for this type of traffic - the equivalent scheduled rates over the June 1977 - 1981 period for road transport (Figure 3) rose faster (by 18.8%) than for air in this period but slower by (10.5%) in the subsequent 1981-1983 period following aviation deregulation.

Over the total period 1977-1983, total air freight scheduled rates rose slightly less (by 14.4%) than for the road sector in which the rates during this period rose 16.0%.

Having regard to the steep decline in road freight scheduled rates since June 1982, the margin between road and air freight indexes is narrowing. Combined with the declining rate of increase in air freight over the last quarter this suggests that air freight rate increases for this group of commodities will probably in the future tend to be closer to what is occurring in the rest of the air freight market.

Prior to deregulation, air freight charges were revised at the same time as passenger fare increases were brought in and usually by a similar percentage.

Air freight rates charged on small parcels on some routes continued to be uneconomic partly because there was a reluctance to attempt to increase the rates significantly as ministerial approval was needed. Thus air freight rates - particularly for small consignments - reflected neither costs nor the market conditions. For large consignments, there was less restraint on freight setting as substantial discounting occurred from the

Table 5

Comparison of Changes in Average Air Freight
Rates Before and After Deregulation
(based on TAA yield per ton/km)

Period	Nominal Annual Change	Real Annual Change ⁽ⁱ⁾
1979 - 1981	17.3%	7.3%
1981 - 1983	2.3%	-8.3%
1979 - 1983	9.6%	-0.8%

(i) Indexed to GDP Implicit Deflator

maximum ministerial approved freight rates. While no statistics are available to indicate the magnitude of the small consignment sector of the market, estimates provided by the industry suggest a maximum of 10% of the total market.

Despite the small size of the market, airlines regard it as profitable and compete strongly for the traffic. This is borne out by the fact that the TAA air freight basic consignment charge of \$16 is below that of \$20 charged by a number of road freight companies. Although the route kilometre charge is higher for air than for road, and despite dramatic increases in route rates for small packages aimed at recouping higher operating costs, it is still cheaper to air freight small packages of a few kilos on most routes than it is to send them by road. Having regard to some inherent advantages of air freight, this highlights how very competitive air freight is currently in respect of some types of traffic.

(b) Average air freight rate comparisons

Comparison of changes in average air freight rates provide a better means of gauging what the effects of deregulation has been in encouraging competition.

As Table 5 shows over the period 1979-81, the average annual increase in air freight rates for one airline was around 17%, which represents a real increase in air freight rates of 7%. Following deregulation, the increase in average air freight rates was only 2% which represents a significant decrease in real terms of 8% over the period.

Comparison of the two time periods shows that with deregulation air freight rates in real terms have declined significantly. Declining rates are to be expected in an unregulated competitive market in a period of recession. The magnitude of the decrease,

however, is probably linked with the efforts to attract new business for the larger passenger aircraft at a time when overall freight tonnage for all modes was declining.

Whilst no comparable road average freight figures are available, the sub-contractors freight rates (Figure 3) provide some indication of the intense competitive pressures which have adversely affected profitability in the road sector in the last two years. During the 1981-83 period, freight rates paid to sub-contractors declined bringing the rates down below what had been paid in mid-1977.

6.3.4 Industry Growth Comparisons

Activity trends before and after deregulation

Table 6 provides a comparison between average annual growth rates over the 1971-1981 decade and that of the two year period following deregulation.

Whilst the comparison provides only preliminary evidence because of the short time period that has elapsed since deregulation, the 1981-83 has a slightly higher growth rate of 3.8% since deregulation compared with 3.1% in the period preceeding it.

The evidence is particularly striking because during the decade before deregulation real GDP growth averaged 3.1%, compared with a fall in GDP of 1% during the later period. As earlier discussed there is normally a positive relationship between GDP and freight activity. Yet during the last two years when it would have been reasonable to have estimated that total air freight volume would have fallen around 3.0% (based on the evidence of the 1971-81 decade), the actual figures have shown a positive growth rate of 3.8%. The more competitive, less

Table 6

Comparison of the Average Annual Growth Rate for the Domestic Air Freight Sector before and after Deregulation

Average Annual Growth Rate (Freight Tonne Kilometres)

	Pre-Deregulation (June 1971-June 1981)			Since Deregulation (June 1981-June 1983)		
	GDP: + 3.1% ⁽ⁱ⁾			GDP: ~ 1.0% ⁽ⁱ⁾		
	Market Share % June 1976 (ii)	Average Annual Growth Rate	% Contribution to total av. annual growth.	Market Share % June 1983 (iii)	Average Annual Growth Rate	% Contribution to total av. annual growth.
TAA/Ansett						
Passenger Aircraft	59.5	3.0	1.8	62.0	4.9	3.1
All Cargo Aircraft	19.9	4.0	.8	15.8	-10.4 ^(iv)	-1.6
IPEC	(v)	5.8 ^(v)	.2 ^(v)	9.8	29.7 ^(vi)	2.9
Regional Airlines	8.6	-0.1	-	5.2	-9.7	-0.5
Commuters	1.6	20.6	.3	1.0	-7.1	-0.1
Charters	10.3	n.a.	n.a.	6.2	n.a.	n.a.
Total Average Annual Growth Rates	100.0		3.1	100.0		3.8 ^(vii)

Sources: Department of Aviation and Domestic Air Transport Policy Review (Volume 1).

Footnotes:

- (i) GDP change in real terms.
- (ii) Market shares for June 1976 are on a tonnage basis and are obtained from the Domestic Air Transport Policy Review, Volume 1.
- (iii) Market shares for June 1983 are on a tonne-kilometre basis with the exception of charters which are based on June 1982 tonnages as statistics for 1983 are not available.

The marked decline in the charter sector between 1976 and 1982 is largely due to IPEC transferring from a charter company to a cargo airline.
- (iv) Nearly all the decline is attributable to recent contractual arrangements whereby TAA freights substantial tonnages through IPEC.
- (v) IPEC commenced operations as a charter company in 1977/78. Average annual growth rate and contribution to total average growth has been estimated and based on IPEC's growth in tonnages carried between 1977/78 and June 1981, and share that IPEC held of the charter market.
- (vi) Average annual growth rate is a summation of IPEC's slow growth as a charter company and rapid growth as a cargo airline since March 1982. Provisional statistics for June 1983 show that the IPEC growth rate in 1982/83 was 53.6%.
- (vii) Industry statistics, without charter freight, show that the growth rate was 6% in 1981/83. The lower growth rate shown of 3.8% takes full account of IPEC's change of operations from a charter company to an airline.

regulated environment in which considerable marketing effort, accompanied by some freight rate discounting - aimed at increasing load factors on the larger aircraft - probably explains the bulk of this growth.

These growth rate comparisons together with those of the international ones already discussed strongly suggest that growth in the air freight industry was being hampered by the two airlines agreement.

Even taking the latest one year statistics September 82 to September 83 - the gloomiest statistics to date - the evidence over the one year period showing a slight fall in air freight of 0.4% support the general conclusions indicated above. Bearing in mind the GDP, in real terms, in this period fell around 2%, the earlier empirical evidence would have suggested a decline in air freight of over 2%.

Road transport comparisons, moreover, back up the point that air freight since deregulation has been achieving significantly better growth rates than either road or coastal shipping - its main competitors. Over the period 1977-1981, road freight activity grew around 6% i.e. 3% above that of air freight. In marked contrast, in the 1981-83 period road freight activity fell by over 7% compared to the 3.8% growth for air freight. Whilst tonnage comparisons across the Bass Strait for the same period are not available, coastal sea bulk and non-bulk freight also fell by 4.7% and 3.3% respectively.

Table 6 also shows the effects on the various segments of the air freight market. However, some caution is needed in making comparisons between the different sectors as there has been a transfer of operations between airlines and other operators. The main transfer involves IPEC's change in status from a freight charterer to a freighter airline. There are also considerable lags in the collection of some company statistics.

The most important point to note is that the all cargo aircraft negative growth rates for TAA/Ansett are considerably lower than would normally be expected because IPEC is carrying, on behalf of TAA, significant tonnages on contract. This largely explains the dramatic growth in IPEC tonnages in the 1981-83 period.

In terms of the actual tonnages carried on the system, Table 1 (page 9) shows the importance of the relative segments of the market and the changes that occurred between June 1976 and June 1982.

In brief, domestic trunk airlines continue to carry the bulk of the cargo, though in percentage terms their share has fallen slightly from 79% to 75%. IPEC's share in 1982 which included large TAA cargo contracts, made it the third largest air carrier. By June 1983, with the exception of TAA and Ansett, IPEC's share of the market of around 24,000 tonnes was greater than the rest of the market combined.

Since 1976, the regional airlines market has fallen both absolutely and as a percentage of the market. Commuters have nearly doubled their tonnage, though the whole 59 companies, only carried around 2% of the market. Of the charter operators, the three largest - Ansett, Wards and Set Air - carried around 8,500 or 85% of the total charter tonnage.

7. CONCLUSIONS

The economic theory relating to the predicted consequences of relaxing economic regulation in a potentially competitive market can be closely aligned to what has actually occurred in the domestic air freight market in Australia.

The statistical and industry experience strongly supports the view that the growth in the air freight sector was suppressed because of being regulated through the two airline agreement.

Evidence pointing to suppressed demand includes various international comparisons, before and after deregulation growth rates, as well as comparisons with road and sea competitors. These comparisons have been discussed above.

The competitive effects resulting from less regulation are also strikingly evident from the major structural and organisational improvements that took place in the industry just prior to and after deregulation. Increasing price and service competition with the road sector is very noticeable.

The air freight sector has been remarkably successful in increasing its growth rate and share of the market in a period of recession. The gains, however, have been uneven - largely going to IPEC-and to a lesser extent to the trunk operators. The other segments of the industry, and particularly the few new entrants, have felt the full brunt of the recession in terms of falling traffic volumes.

Like other industries in a recessionary period, financial pressures have been severe. Financial data is not yet available to determine the overall extent the industry has suffered during the recession.

The more competitive approach has significantly affected profitability and led to bankruptcy for some small operators - both amongst those existing in 1981 as well as new entrants since that time. The latest casualty - O'Connor Air Services - is one of South Australia's biggest regional airlines. The company is expected to go into liquidation following the awarding of a former O'Connor freight charter contract to another airline Wings Australia.

With the exception of the smaller operators, interviews and industry reports suggest that the financial consequences for firms in the road freight industry have been considerably worse than in the air freight sector.

The precise effects on the two airlines are not easy to determine. They depend partly on the accounting methodology adopted in allocating costs between passengers and freight on passenger aircraft. As air freight traffic has grown, the effects of the recession on profitability, if any, may be fairly minimal. In terms of airline passenger operations, however, falling traffic levels have significantly cut back profitability or led to financial losses.

IPEC air freight operations are believed to have been profitable. The total IPEC group, however, had losses in the year to March 1982 because of its road transport operations. Air operations have benefitted from extensive traffic growth, high labour productivity and load factors of nearly 90%. In 1982, the company gained the distinction of being ranked by the International Air Transport Association as the World's seventh largest carrier in terms of total tonne-kilometres per employee.

In respect of new entrants, these carriers have faced considerable competition. Excess capacity on some routes resulted in losses to the operators concerned and some have left the industry.

The new entrant is likely to continue to face difficulties in getting a market established. Their willingness and ability to enter the market, however, play an essential role in maintaining a competitive market.

Although there are conditions to entry, there seemed to be no evidence that genuine and serious prospective operators have been refused entry since 1981. In fact, there seemed to be recognition amongst the regulatory community of the need for air freight competition as well as the value of ensuring "threat of entry" to keep current operators honest.

In view of the importance of seeking to ensure continued effective "potential competition", questions of whether prospective new entrants are deterred by a requirement to establish a demand for a proposed service or whether industry regard it as a barrier to entry (thereby protecting existing operators) are pertinent issues for the regulator. As there is a variety of techniques for determining whether a satisfactory case has been made, views on these issues are likely to be closely related to how the regulation is applied in practice.

Ultimately only market experience would determine whether a prospective entrant had identified a new market or had the necessary skills and ability to obtain a share of a market which may be held currently by road or other aviation operators. If used as a means of controlling capacity, rejection of entry reduces competition as well as benefitting existing operators. Moreover, the decision concerning entry is a more complex one in time of rapidly growing demand as it requires the regulator to assess the nature and extent of the demand.

In the USA since May 1979, new entrants have been subject to the tests of fitness, willingness, and ability to serve. Once the deregulation process gathered momentum, however, the interpretation given to the provisions became such that right of entry became close to being virtually automatic. The current view in the USA is that imposing economic conditions on entry is not consistent with a deregulated market.

Since actual as well as "threat of entry" will continue to be important elements in ensuring a competitive Australian Domestic Air Freight market, entry provisions and practices will need to be regularly reviewed to assess their value as well as their effects, if any, on restraining competition.

BIBLIOGRAPHY

- Aircraft Magazine, various editions, (Melbourne).
- Ansett Transport Industries Ltd., Annual Report, various issues, (Melbourne).
- Ansett, "Ansett News", Staff Newspaper, various issues, (Melbourne).
- Asian Aviation, various editions, (Singapore).
- Australian Transport (July 1979), "New Jet Choice Not as Simple as it Looks", Journal of the Chartered Institute of Transport.
- Bailey, E.E. and Panzar, J.C. Jr. (1981), "The Contestability of Airline Markets During the Transition to Deregulation", Law and Contemporary Problems.
- Bailey, E.E., Graham, D.R. and Kaplan, D.P. (1983), "Deregulating the Airlines: An Economic Analysis", Civil Aeronautics Board, (Washington).
- Bureau of Transport Economics (1980), "Future of Air Freight in Australia", (AGPS, Canberra).
- Bureau of Transport Economics (1980), "Outlook Paper: Freight Transport" in Transport Outlook Conference, 1978, Papers and Proceedings, (AGPS, Canberra).
- Bureau of Transport Economics, Transport Indicators, various issues since 1983, (Canberra).
- Carron, A.S. (1981), "Transition to a Free Market: Deregulation of the Air Cargo Industry", Brookings Institution (Washington DC).
- Carron, A.S. (1980), "Deregulation of the Air Cargo Industry", (PhD thesis, Yale University).
- Crabb, M. (1979), "Domestic Air Freight in Australia" in Domestic Air Transport Policy Review, Volume II, (Appendix A14.1) (AGPS, Canberra).
- Department of Aviation, Annual Report, 1981-82 and 1982-83, (AGPS, Canberra).
- Department of Aviation, Air Transport Statistics, various issues, Central Statistical Section (Canberra).

Department of Transport, Annual Report, various issues,
(AGPS, Canberra).

Department of Transport (1979), "Domestic Air Transport Policy
Review" (Volumes I and II) (AGPS, Canberra).

Department of Transport, Transport Indicators, various issues up
to 1982, (Canberra).

Douglas, G.W. and Miller, J.C. III (1974), "Economic Regulation
of Domestic Air Transport", Brookings Institution,
(Washington).

Goodrich, R.K. (1960), "The Economic Structure of Inter-State Air
Transport in Australia (1921-1958)", (Masters of Commerce
Thesis, Melbourne University).

ICAO (1982), "ICAO Statistical Year Book" (ICAO, Montreal).

IPEC (1982), "The Express" and "Distributor Quarterly", various
issues, (Sydney).

Kirby, M.G. (1981), "Domestic Airline Regulation - The Australian
Debate", (Centre for Independent Studies).

OECD (1976), "Main Economic Indicators", (OECD, Paris).

Olason, M.L. and Reynolds (May 1976), Boeing Commercial Airline
Company, Paper No. 422. Eighth International Forum for Air
Cargo.

Poulton, H.W. (1981), "Law, History and Politics of the
Australian Two Airlines System", (H.W. Poulton, Melbourne).

Rimmer, P.J. (1970), "Freight Forwarding in Australia", (ANU,
Canberra).

Sletmo, G.K. (1975), The Logistics and Transportation Review,
Vol. II, No. 1.

Taplin, J.H.E. (1983), "A Long Term Look at the Development of
Transport with Particular Reference to Road Transport over the
next 10 to 20 Years", World Road Congress Conference, (Sydney,
October 1983).

Taplin, J.H.E., "A Coherent Approach to Estimates of Price
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Economics and policy, 1980.

Trans-Australian Airlines, Annual Report, various issues,
(Melbourne).

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