Code Sharing in International Aviation: a Discussion Paper

Working Paper

This Paper has been produced to inform debate on an issue of growing significance in the aviation industry. The increasing incidence of code sharing between airlines has met with a mixed reception within the industry and government circles. It has been criticised as a form of consumer deception; it has been seen as a force both for and against competitive markets and improved service quality; and it has been pursued by airlines as a service and profit maximising strategy.

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CODE SHARING IN INTERNATIONAL AVIATION: A DISCUSSION PAPER

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FOREWORD

This discussion paper has been produced to inform debate on an issue of growing significance in the aviation industry. The increasing incidence of code sharing between airlines has met with a mixed reception within the industry and government circles. It has been criticised as a form of consumer deception; it has been seen as a force both for and against competitive markets and improved service quality; and it has been pursued by airlines as a service and profit maximising strategy.

Given that the House of Representatives Standing Committee on Transport and Infrastructure has recently examined the issue of domestic code sharing, this paper focuses on international services. It describes the overseas experience with code sharing, and examines some of the diverse economic impacts of the practice. Several case studies will be examined in greater depth in a forthcoming BTCE paper.

This discussion paper does not consider policy options and is intended only to lay the groundwork to support the policy debate. The Department of Transport would welcome comments from interested parties on the development of Government policy on international code sharing. Comments can be directed to either John Kerr, Assistant Secretary of the International Relations Branch, Aviation Policy Division, in the Department of Transport, or to Sue Elderton, Research Manager of the Air and Sea Transport Branch in the BTCE.

Working Paper 21 was researched and written by Kym Starr of the Bureau's Air and Sea Branch.

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Director

Bureau of Transport and Communications Economics
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February 1996

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CHAPTER 1 INTRODUCTION

On a global basis, the airline industry is characterised by both competition and co-operation. Following the deregulation of the domestic airline industry in the US from 1978, many OECD countries have introduced competition in the provision of domestic airline services. Similarly, there have been moves to open up international airline services to greater competition.

As a result of the Chicago Convention, the international air transport industry developed on the basis of bilateral agreements between countries, with national carriers offering point-to-point services (Pena 1995, i). Where a carrier could not serve a particular market directly, international connections were traditionally provided through interline arrangements with another airline. There was significant co-operation between carriers in areas such as co-ordination of schedules, transfer of connecting passengers and baggage, ground handling and ticketing.

In common with many other industries, the airline industry developed a more global outlook during the 1980s and this trend has continued during the 1990s. International integration in the airline industry has been achieved through a wide range of strategies such as mergers and takeovers, acquisition of minority holdings in other airlines (sometimes involving cross-shareholdings) and alliances without equity participation. There has been increased co-operation between partner airlines in areas such as co-ordination of schedules, sharing of airport facilities and linking of frequent flyer programs.

Alliances enable the participating airlines to strengthen their competitive positions and to improve their access to existing and emerging markets. Through these arrangements, carriers are able to partly avoid the high costs of serving many foreign cities with their own aircraft and to overcome some of the restrictions under bilateral agreements which often limit the number of cities that a carrier can serve with its own aircraft. More recently, opportunities for international integration have been increased by the liberalisation of some air services agreements (for example, Canada-US, Netherlands-US) as governments move to further promote competition and maximise national benefits.

Many of the airline alliances include code sharing under which an airline uses its designator code on a flight operated by another airline. For example, where American Airlines code shares on a flight operated by Qantas, the service will be listed as a Qantas (QF) flight and as an American Airlines (AA) flight. An airline's designator code is used in a range of areas including flight schedules, computer reservation systems (CRSs) and ticketing.

An airline that sells seats on a flight operated by another carrier under a code share arrangement provides certain services such as ticketing and in many cases check-in and baggage handling. The operating carrier provides the transport service including, in most cases, on-board service.

Chapters 2 to 4 of this paper provide an overview of code sharing, based on the available literature. They cover the nature and scope of code sharing, the effects of these arrangements, the available empirical studies, and the approaches adopted by regulatory agencies. Chapter 5 contains a summary of the main points in the paper.

Most of the literature on code sharing covers overseas markets, particularly US domestic services and US-Europe services, but some information on arrangements involving Australian routes and airlines is also presented in this paper. Caution should be exercised in applying the results of overseas research to Australia. In particular, code sharing arrangements between major carriers on dense routes (eg transatlantic services) may have characteristics and effects which differ significantly from those on Australian routes where traffic levels are often lower and more volatile and the major international carriers have limited operations. These distinct characteristics will affect the pattern and effects of code sharing on Australian routes and will potentially make code sharing a more attractive option than on the denser US and European routes.

CHAPTER 2 NATURE AND SCOPE OF CODE SHARING

The first instance of code sharing identified in the literature involved the US domestic airline industry. During the 1960s, Allegheny Airlines (now USAir) was attempting to withdraw from unprofitable, short-haul routes. However, at that time, market entry and exit were tightly controlled by the Civil Aeronautics Board. Therefore, in late 1967 Allegheny introduced contracts with commuter airlines to operate services on its behalf from major centres to small towns (Levine 1987, 438). The services were operated by aircraft painted in a version of Allegheny's colours, were listed in Allegheny's timetables, and carried Allegheny flight numbers. The commuter airlines were better equipped than Allegheny to provide services on these thin routes and Allegheny achieved benefits in areas such as lower operating costs and improved marketing.

Other major airlines in the US introduced code sharing on domestic routes from the early 1980s. A major incentive for code sharing on US domestic services was provided from the mid-1980s when regulations to deal with display bias on CRSs resulted in online services (including connecting flights under code share arrangements) being listed before interline flights (Civil Aviation Authority 1994, 54-55).[1] As most bookings in the US were made from the flights at the top of the display, this encouraged airlines to enter into code sharing for domestic flights. Most of the commuter airlines in the US now participate in code share arrangements as a result of several factors including marketing benefits and access to facilities operated by major carriers.

Code sharing first appeared in international markets in 1985 (Gellman Research Associates 1994, 29). This development reflected the broader marketing and operational benefits of code sharing rather than CRS display advantages, since the European CRS code of conduct prevented display preference being given to online services and the major US CRSs closely followed these rules for listing of services outside North America.

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1. An online service broadly involves carriage of a passenger exclusively on one airline's services. An interline service involves the transfer of a passenger from one airline's service to another airline's service at an intermediate point between the origin and destination points, with a change in airline designator codes.

CURRENT SCOPE OF CODE SHARING

A survey of the world's largest airlines in 1995 identified over 320 different alliances formed by 153 carriers (Gallacher 1995, 27-53). Areas covered by the alliances included joint sales and marketing, joint passenger and cargo flights, joint frequent flyer programs, code sharing, management contracts, catering, ground handling and maintenance joint ventures. Around 130 of the alliances incorporated code sharing on one or more routes.

The arrangements vary in response to the requirements of each airline and the characteristics of specific routes. Code sharing is particularly evident in alliances between US and European airlines where it is used to obtain traffic feed and distribution outside of an airline's home market. Similarly, various airlines code share in order to increase the frequency of services under their own codes - for example, the Northwest/KLM alliance provides for code sharing of services operated by both airlines between Europe and the US. Other circumstances in which code sharing may be used include thin routes where traffic is insufficient to support the operation of more than one aircraft. Code sharing is also becoming an increasingly important component of Asian airline operations.

An airline's choice of code share partner on a route with multiple carriers will reflect the benefits which potential partners can provide to the airline. The compatibility of management and operating strategies (for example, quality of on-board service) will be an important consideration in many cases. In view of the dynamic nature of international aviation and the changing requirements of individual airlines, many code share partnerships may be only short-term arrangements as airlines develop or adopt alternative strategies that offer greater benefits. These alternative strategies potentially include mergers and different forms of alliances.

Code share arrangements may be classified in various ways. One distinction is between 'naked' code sharing, where it is practised on an incidental and opportunistic basis on a small number of routes, and 'common product' code sharing where it forms part of a broader alliance between the participating airlines (de Groot 1994, 64). Alternatively, the US General Accounting Office (1995, 21) has identified three types of code share alliances between US and foreign carriers:

- three strategic alliances which involve code sharing on a vast number of routes so as to strategically link both airlines' flight networks (Northwest/KLM, British Airways/USAir, United Airlines/Lufthansa);
- eight regional alliances which involve code sharing on several routes to and from a specific region (for example, United Airlines' code sharing on Ansett flights within Australia); and
- 50 point-specific alliances which involve code sharing on flights between a small number of cities, often with one airline purchasing blocks of seats on another airline's flights and then reselling them (blocked-space agreement).

As noted earlier, code sharing is frequently associated with additional co-operation between the airlines in areas such as schedule co-ordination, joint operations or equity investments. Under the most extensive arrangements, Northwest and KLM jointly develop fares for routes served by the alliance, operate under the same service mark, have common incentives for their sales forces, create common marketing products such as World Business Class, have the same branding in many areas (for example, aircraft interiors and exteriors, uniforms, vehicles and stationery), and actively market their integration (General Accounting Office 1995, 29-30).

CODE SHARING ON AUSTRALIAN ROUTES

The focus of this Paper is code share arrangements covering international services and connecting domestic services in other countries. The arrangements involving Australian carriers and/or services into and out of Australia include:

- Qantas with Air New Zealand, Air Pacific, American Airlines, USAir, Canadian Airlines International, Air Niugini, Air Zimbabwe, Air Vanuatu, Air Caledonie and Solomon Airlines;
- Ansett with Malaysia Airlines (MAS) and EVA Air;
- United Airlines with Ansett;
- Virgin Atlantic with MAS; and
- Air New Zealand with Korean Airlines.

Several forms of code sharing are used on Australian services involving international carriers. They include:

- *Purchase of capacity by an airline on a thin route where traffic is only sufficient to support up to several flights a week by a single operator.* For example, Qantas code shares on the Australia-Solomon Islands route under a capacity purchase/sale agreement which entitles it to 50 per cent of the available seats on Solomon Airlines' thrice-weekly B737 service. Similarly, Air Zimbabwe code shares on the Australia-Zimbabwe service operated by Qantas.
- *Code sharing to provide connections with networks of overseas carriers that do not operate aircraft to Australia.* For example, American Airlines provides Australia-US services using a code share arrangement with Qantas.
- *Code sharing to provide services beyond the points where an Australian airline's own aircraft terminate.* For example, Qantas provides services from Australia to various cities in the US (such as New York) by operating its own aircraft to Los Angeles and then having code share arrangements with American Airlines between Los Angeles and the other US cities.
- *Code sharing to obtain improved traffic access and distribution in Australia.* For example, United Airlines code shares on various Ansett domestic flights from the international gateways at Sydney and Melbourne.

- *Code sharing to improve carriers' frequency on certain international routes.* For example, code sharing between Ansett and MAS on the Australia-Kuala Lumpur route enables both carriers to provide more frequent services than if each carrier only sold seats on services operated by its own aircraft.
- *Reciprocal code sharing by two carriers which each operate part of a particular service with their own aircraft.* For example, since 1991 direct services between Australia and Canada have been provided by Qantas (which is the operating carrier Australia-Honolulu) and Canadian Airlines International (which operates connecting services Honolulu-Canada). Each airline sells tickets for both sectors (ie Australia-Canada) under its own name and code.

ANALOGIES IN OTHER INDUSTRIES

In searching for a theoretical framework to analyse code sharing, it may be useful to pursue issues raised by analogies in other industries. In particular, the broader literature on practices such as product branding or possibly franchising may provide theoretical insights for the analysis of code sharing.

An important element of code sharing is the sale of a supplier's product by another company which then attaches its own brand. This is not unique to the airline industry. There are examples of such branding in a range of industries:

- International telecommunications services (for example, telephone calls) are sold by a carrier or service provider in the originating country. The carrier or service provider supplies network access and carries the call part of the way but an overseas company carries the call the rest of the way and provides the final connection.
- In the maritime industry, a shipper may engage a particular shipping line to transport its cargo to an overseas destination but that line may use another company's ships to carry the cargo. For example, one shipping line offering services to shippers in Australia does not operate ships in the Australian trade and uses slot charters with other lines to carry cargo to and from Australia.
- Re-badging is common in the motor vehicle industry where companies source cars from overseas affiliates or competitors. For example, Ford has sourced the Laser from Mazda and Toyota's Lexcen is manufactured by General Motors-Holden's.
- Many companies in the manufacturing sector import products manufactured overseas and attach their own brand.

The similarities with international aviation may also extend to international alliances in some cases. Such alliances are common between companies in a range of industries including telecommunications and shipping.

Although these examples indicate that the sale of a supplier's product under the brand of another company occurs in a range of industries, it might be argued that the airline industry has some unique characteristics which limit

the comparability of code sharing and the arrangements in other industries. In particular, the main activity of airlines is the carriage of passengers whose requirements differ considerably from those of shippers of freight or buyers of manufactured products. The marketing and sale of airline services focus on variations in service characteristics, and intending travellers often use the identity of the airline to assess the quality of service that will be provided on a particular flight since a pre-flight inspection of a particular service is not possible. In contrast, an intending buyer can inspect cars or other manufactured goods prior to purchase.

CHAPTER 3 EFFECTS OF CODE SHARING

A search of the economics literature using several data bases indicates that there are few theoretical studies which specifically focus on code sharing, the only readily identifiable work being an article by Oum, Park & Zhang (1995). Similarly, the study team which undertook a major US study of code sharing in 1994 was unable to identify any broad-based studies of code sharing and found only a few studies which examined the effects of specific airline alliances (Gellman Research Associates 1994, 3). The limited amount of theoretical literature is not surprising given the recent development of code sharing, the lack of major anti-trust or other court cases, and the specialised nature of these arrangements.

For the purposes of this paper, code sharing is examined within the context of a competitive market. A key issue is the impact of code sharing, as a commercial strategy, on competition and consumer welfare. The assessment of the effects involves three basic steps:

- identification of the appropriate perspective (that is, from the viewpoint of airlines' interests, consumers' interests, competition policy or the maximisation of net national benefits);
- specification of the base case (that is, what would have happened in the absence of code sharing); and
- comparison of the expected situation under code sharing with the base case.

Specification of the base case is particularly important if incorrect conclusions are to be avoided. For example, if one of the two operators on a certain route withdrew its aircraft and entered into a code share arrangement with the remaining operator, it might be concluded that there was a negative effect on competition. However, if the first airline would have withdrawn completely from the route in the absence of code sharing, a correct analysis might indicate that code sharing would promote competition.

The analysis should clearly distinguish between the effects that are attributable to code sharing and effects that are attributable to other aspects of airline alliances. One view is that code sharing is not needed to achieve outcomes such as schedule co-ordination, reliable and rapid baggage transfer, cross-membership of frequent flyer programs and conveniently located gates

for connecting flights since all of these initiatives have been taken (separately or together) in the absence of code sharing (Civil Aviation Authority 1994, 57). In these circumstances, the benefits attributable to code sharing might be limited. An alternative view put by many airlines is that they would not undertake these other forms of co-ordination without a code share agreement (Gellman Research Associates 1994, ES-4). In addition, the benefits from these other forms of co-ordination may be enhanced when they are combined with code sharing.

The impact of factors other than code sharing would ideally be taken into account by accurately specifying the base case. However, in practice the difficulties associated with such specification mean that it may be necessary to rely on a more general view about the effects that are attributable to code sharing.

The remaining sections of this chapter consider the potential effects of code sharing on airlines, competition, consumers and net national benefits since all of these perspectives are of interest to policy makers. It is important to note that extensive use of code sharing by international airlines is a relatively recent development and that further evolution of code sharing may therefore lead to different effects. Some quantitative estimates of the effects of code sharing are presented in chapter 4.

AIRLINES

The recent growth of code sharing indicates that many airlines consider that these arrangements provide them with significant benefits. However, this view has not been universal. American Airlines has argued strongly against code sharing on broader bilateral grounds, although more recently it has entered into some code share arrangements. Trade union leaders in the US have criticised code sharing on the grounds that it may lead to reductions in the number of airline employees.

The discussion in this section focuses on code sharing involving international airlines. It is also important to note that purely domestic code sharing, as occurs between major carriers and commuter airlines in the US, provides benefits to participating carriers. The benefits to small airlines include access to a major airline's reservations system, participation in its frequent flyer program, and joint nationwide advertising and marketing (Nuutinen 1995a, 16).

The benefits of code sharing to airlines providing international services can be broadly considered in terms of increases in traffic and revenue, which particularly reflect marketing effects, and cost reductions. In addition, partner airlines may attempt to use code sharing to limit competition.

Traffic and revenue

Code sharing potentially enables the partner airlines to increase their traffic and revenue (and thereby profits). This will often be at the expense of competing airlines. However, some of the airlines' gains may come from new traffic stimulated by increased competition among alliances and between alliances and other airlines (General Accounting Office 1995, 4). The extent of the gains to the alliance partners will be affected by factors such as the scope of the code sharing network and the degree of integration between the carriers.

Airlines involved in code sharing may currently be achieving first mover advantages. Code sharing mainly affects the relative attractiveness of individual airlines and it might be argued that, in the longer term when all airlines are able to enter into such arrangements on a large number of routes, the benefits will be limited to traffic generation as there will no longer be traffic diversion benefits to individual airlines.

The potential sources of traffic and revenue diversion attributable to code sharing are larger networks, better co-ordination of operations, improved service frequency, more attractive frequent flyer schemes and CRS display advantages.

Network size

In an environment of globalisation and carrier alliances, the ability of an airline to offer services to a wide range of destinations is an important marketing mechanism. Code sharing enables an airline to expand the number of destinations that it advertises in its promotional material and flight schedules. Network expansion through other strategies, such as mergers or acquisition of other carriers, is often constrained by foreign ownership laws and nationality clauses in bilateral air service agreements. Code sharing may provide a mechanism to deal with some of these restrictions, particularly where a foreign airline is prevented from operating past a small number of international gateways in a large market such as the US.

There may also be marketing benefits to an airline if a code share arrangement provides access to an attractive airport that it would otherwise be unable to access. For example, a code share arrangement with Virgin Atlantic enables Delta to advertise non-stop flights to Heathrow, an airport that it is unable to serve with its own aircraft (Nuutinen 1995b, 8). Alternatively, code sharing may provide an airline with increased access (through a partner airline's operations) to landing slots, gates and/or terminal space at an airport that it already serves.

A code share agreement may enable a carrier to enter, or retain a presence in, thin markets that it cannot serve profitably on its own. For example, Qantas code shares with Air Vanuatu on the Australia-Vanuatu route as load factors

would not be viable if it introduced its own aircraft on to the route. Code sharing may also be used by a carrier which wants to access new markets without incurring the sunk costs associated with launching additional services using its own aircraft.

Co-ordination of operations

Improved co-ordination of services associated with code sharing may strenghten the competitive position of participating airlines. This factor will be particularly important in cases where it provides improved access to domestic feed (and distribution) for international airlines which have limited access to behind-gateway traffic as a result of restricted cabotage rights, nationality clauses in bilateral agreements or constraints on foreign ownership. For example, an arrangement with USAir provides British Airways with code share access to 52 cities in the US in place of its previous interline arrangements with several US carriers.

As noted earlier, in assessing the impact of code sharing it is important to distinguish any benefits that could be achieved from other aspects of an alliance. However, the role (and effect) of code sharing may be very difficult to isolate. For example, it has been argued that a common flight code acts as a signal to passengers that two airlines are co-operating in the provision of a connecting service and that many desirable product characteristics (for example, co-ordinated schedules, single check-in and shared frequent flyer programs) are being provided (Civil Aviation Authority 1994, 57). In this situation, code sharing would provide a marketing benefit to the airlines (and a benefit to consumers in terms of information about service quality) even if it was not a necessary input into achieving improved co-ordination.

Service frequency

Code sharing may enable a carrier to market more frequent services on particular routes. For example, as noted earlier, the arrangement between Ansett and MAS on the Australia-Kuala Lumpur route enables both carriers to offer more frequent services than if each carrier only sold seats on services operated by its own aircraft.

Frequent flyer schemes

A code share arrangement may increase the number of routes or services on which a traveller is able to obtain frequent flyer points with a particular airline. This will make the airline more attractive to some travellers and potentially divert traffic from competing airlines. However, these benefits will not always be attributable to code sharing since reciprocal benefits under frequent flyer schemes can be provided without code sharing arrangements. For example, members of Ansett's frequent flyer program can earn points on

flights with Cathay Pacific but there are no code share arrangements between the two airlines.

CRS display

An airline will achieve a competitive advantage if its flights for a particular origin-destination pair are at the top of the CRS display list, since overseas data indicate that around 80 per cent of all bookings are made from the first screen of information (Humphreys 1994, 4, 11-12). As noted earlier, this factor provides an incentive for code share arrangements on US domestic services. There is not a similar incentive for international services since the European CRSs and the major US CRSs do not give preference to online services (including code share services) for international flights. However, partner airlines will benefit if they are code sharing on the most direct service available between two points as such a service will be placed at the top of the CRS display list.

Code sharing will result in a particular flight being listed at least twice in the CRS — once under the code of each of the partner airlines. In the US, a code share involving a double connection (from behind a US gateway to behind a foreign gateway) can be shown up to eight times (Gellman Research Associates 1994, 59). These multiple listings will give the partner airlines a competitive advantage if they push other airlines' services further down the screen or onto the next screen (General Accounting Office 1995, 3). This is called screen padding or clutter. For example, in the US the General Accounting Office (1995, 6) noted that multiple listings consumed much of the first display screen in nearly 20 per cent of the cases it reviewed. In Europe a particular flight can not be listed more than twice in the CRS but in the US there are no controls over the number of times that a code share flight can appear.

Cost factors

Expansion of a carrier's network through code sharing potentially provides the airline with economies of scope and density. Economies of scope will be achieved if code sharing enables the partners to serve new markets without having to expand other parts of their operation to accommodate the new markets. There may also be economies of scope in terminal operations. A code share arrangement which increases the traffic of the partner airlines on existing routes and services will result in economies of density since there will be more intensive use of fixed facilities and aircraft (Gellman Research Associates 1994, 24-25).

Code sharing may enable an airline to gain or maintain a presence on a route without having to operate equipment on that route. This will provide cost savings on thin routes through lower operating costs or higher load factors. It

may also enable an airline to provide services using another carrier which has lower costs as a result of factors such as more suitable aircraft. For example, an airline which operates larger aircraft such as the B747 on transcontinental routes may find that on short, low density routes it is more economical to code share with another carrier which operates smaller aircraft such as the B737. In addition, code sharing may enable an airline to deploy its own aircraft and resources to more profitable routes.

In some cases, code sharing facilitates an airline's entry into new markets by reducing the costs involved, particularly costs that would be irretrievable (that is, sunk costs). For example, the arrangement between Virgin Atlantic and MAS enables the new entrant (Virgin) to gauge the demand for its Europe-Australia services without incurring the costs of operating its own aircraft on all sectors of the route.

Summary - airlines

Code sharing potentially provides benefits to the partner airlines as a result of increases in traffic and revenue, which particularly reflect marketing effects, and a reduction in costs. In addition, all carriers on a route may benefit from any additional traffic that is generated. Code sharing may also be used for anti-competitive purposes by the partner airlines in some circumstances.

COMPETITION

The increases in airline traffic and revenue and the reductions in costs may be pro-competitive. However, code sharing is often accompanied by other co-operative arrangements which may facilitate anti-competitive practices. The arrangements are most likely to have a negative impact on competition when they include practices such as joint pricing and sale of capacity and the partner airlines have substantial market shares.

It is also important to recall that the assessment of code sharing involves comparison with the situation in the absence of code sharing (the base case). Even though a code share arrangement may not enhance competition in some situations, the alternative to such an arrangement may be less competitive. Similarly, it has been argued that code sharing is rarely the core of an airline alliance, and that the competition implications of code sharing are less important than the implications of the co-operative agreements of which code sharing is only a part (Civil Aviation Authority 1994, 57).

The impact of code sharing on competition can be considered in terms of the promotion of global alliances, and specific impacts.

Promotion of alliances

There is a range of views on the potential long-term impact of airline alliances and large groupings of carriers.

Code sharing may be considered to be broadly anti-competitive if it is viewed as a method by which airlines are able to form large groupings that in turn are likely to dominate the international airline industry. With this view, such carriers and groupings may eventually reach an accommodation in order to reduce competition and may be able to drive out non-aligned carriers.

Alternatively, code sharing may be assessed as broadly pro-competitive where global alliances are considered to be a key component of airline competition and code sharing is an essential part of such alliances. These alliances enable carriers to work more effectively with rights available under bilateral agreements and may therefore be a means for strengthening competition in international aviation.

Specific impacts

The preceding discussion of the impact on airlines identified several aspects of code sharing that may affect the level of competition in particular circumstances. Expansion of a smaller carrier's network and domestic feed/distribution will often improve its competitive position relative to larger carriers, but such an expansion by larger carriers may either promote or reduce competition. Similarly, the use of code share arrangements may enable airlines to develop more sophisticated methods for working with rights available under bilateral agreements and therefore either compete more effectively or drive out smaller rivals. Larger carriers benefit from code sharing with smaller carriers where the arrangements provide increased traffic feed into major hubs.

Code sharing may have a positive impact on competition on thin routes where there is only sufficient traffic to support several flights a week by a single operator (for example, Australia-Solomon Islands). In this case, the sale of capacity by a second airline may provide some competition where the carrier markets its own capacity independently.

Code sharing may also facilitate new entry by reducing the costs (and risks) incurred by a new entrant. The impact on competition may be even greater if the code share entrant subsequently introduces its own aircraft onto the route.

Code sharing with a larger airline may improve the position of a smaller airline relative to other large carriers and hence promote competition. For example, a code share arrangement with Delta has reportedly strengthened Virgin Atlantic's competitive position against British Airways through factors such as access to a wider range of destinations in the US and extra revenue

(Nuutinen 1995b, 8). However, code sharing may be anti-competitive if large carriers use these arrangements to eliminate smaller rivals.

As code sharing involves co-operation between carriers, there is the potential for collusion between code share partners. Carriers which decide to code share may attempt to co-ordinate the marketing and sale of seats, with adverse effects on competition if the partners have a large market share and indirect routes do not provide an attractive alternative for travellers. Code sharing will also have anti-competitive effects if it is used to drive rival carriers out of the market or to deter entry by an airline operating without code share arrangements.

As noted earlier, the CRS display advantages for code share services may also have significant anti-competitive effects.

Summary - competition

These factors suggest that code sharing cannot be presumed to be pro-competitive or anti-competitive in all situations. The effect on competition needs to be assessed in terms of the market circumstances in each case.

CONSUMERS

If competition is effective, code sharing benefits to the airlines will be passed on to consumers. Consumers may also receive other benefits such as access to larger networks, better co-ordination of flights, more frequent services, lower fares, wider choice of carriers and better access to frequent flyer rewards. However, there are potentially costs, particularly in terms of consumer deception.

Network size

It was noted earlier that code sharing enables an airline to expand the number of destinations that it advertises in its promotional material and flight schedules. Development of a larger network will provide benefits to consumers. If the arrangements simply involve the addition of the airline's code to existing interline services without any improved co-ordination of services between the partners, it could be argued that the benefits to consumers would be minimal or non-existent.

A code share arrangement may also provide consumers with improved arrangements for baggage handling, access to lounge facilities or check-in facilities. This could occur where an airline achieves access to better facilities operated by its partner at an overseas airport or where the two airlines are able to combine and upgrade their facilities at an airport.

Co-ordination of operations

The replacement of interline arrangements by code share services may provide significant benefits to consumers through better co-ordination of schedules and transfers. It seems likely that, where code sharing is part of a broader alliance between two carriers, there will also be improvements in areas such as faster transfer times, easier connections for passengers, through-fares and baggage check-in through to the final destination. However, as noted earlier, in assessing the impact of code sharing it is important to consider whether the improved co-ordination would have been possible in the absence of code sharing.

Service frequency

Where code sharing enables a carrier to market more frequent services on a particular route, there may be benefits to consumers. For example, a passenger who travels outbound on a particular airline's aircraft will have a greater range of options for the return flight if the airline code shares with another carrier which offers flights at different times on the same route.

In addition, a return air fare with one airline would generally be cheaper than separate fares for inbound and outbound flights with two different airlines (for given quality of service). Code sharing will therefore potentially enable a consumer to access more convenient flights, or alternatively to travel on specified flights at a lower total fare, in some circumstances.

Fares

It was noted earlier that code sharing potentially provides significant benefits to airlines in terms of lower operating costs. These may benefit consumers if the cost savings are passed on to them in the form of lower fares (compared to the base case). However, where code sharing is accompanied by other co-operative arrangements between airlines with significant market shares, there may be some reduction in competition with the result that the cost savings will not flow on to consumers.

Frequent flyer schemes

Consumers who are members of frequent flyer schemes receive greater benefits if they maximise their travel with the airlines operating the schemes to which they belong. As passengers flying on code share flights will often be eligible for frequent flyer points for these flights, code sharing may provide additional points (and therefore increased benefits if reward thresholds are passed) to consumers. However, as noted earlier, these frequent flyer benefits will not always be attributable to code sharing since they can be provided without code share arrangements.

Additional benefits attributable to code sharing are most likely to arise in situations where alternative carriers on the route do not have a frequent flyer scheme or the passenger only has membership of a scheme operated by one of Australia's domestic carriers. For example, code sharing by Qantas on services operated by Solomon Airlines and Air Vanuatu provides an opportunity for members of the Qantas scheme to earn frequent flyer points that would otherwise be unavailable on these routes.

Consumer deception

A consumer may feel misled if an airline or travel agent does not indicate at the time of booking that a different airline will be operating all or part of a service under the booking airline's code and number.

The decision to book a seat on a particular flight will often be affected by the consumer's perceptions of non-price factors such as safety, on-board service, reliability or aircraft type. Since it is difficult for a consumer to obtain detailed information on these non-price factors for multiple airlines, the identities of the airlines operating flights will often be used as an indicator of these factors. Thus, if the consumer is unaware that another airline with potentially different characteristics will operate the flight, he or she will select the flight using inadequate information and potentially make a sub-optimal choice. While the consumer may be able to rely on the airline issuing the ticket to choose code share partners with similar service quality in some cases, there will also be situations where the partner has significantly different characteristics.

The potential lack of consumer transparency with code share arrangements becomes particularly significant when airlines base their marketing on characteristics such as a high level of safety, superior on-board service or a specific aircraft. When these undertakings are not adequately discharged by a partner airline which has lower standards than the airline which issued the ticket, consumers will feel deceived if they were unaware at the time of booking of the carrier operating the service. While such inconvenience may also occur with an interline service, potential problems may be less apparent to the intending passenger at the time of booking a seat on a code share service.

Similarly, a code share service may give the impression that a particular flight is non-stop or involves only refuelling stops. However, if one airline operates part of the service and another airline operates a connecting service to the destination, the consumer may suffer unforeseen inconvenience from the need to transfer to another aircraft. A change of aircraft involves both physical inconvenience for the passenger and an increased possibility of lost luggage.

Qantas has indicated that steps are taken to ensure that consumers are not misled by its joint service arrangements. For example, it reportedly advises

passengers at the time of booking that, for Australia-Vancouver services, sectors beyond Honolulu are operated by Canadian Airlines International and that a change of aeroplane takes place in Honolulu (IASC 1995a, 4). Similarly, Qantas has advised the International Air Services Commission (IASC) that systems are in place to ensure that passengers are informed that Air Vanuatu is the operating carrier on Australia-Vanuatu services (IASC 1995b, 6).

Computer reservation systems

The impact of code share arrangements on CRS displays may also involve elements of consumer deception which adversely affect consumers. In particular, if similar or more convenient flights are crowded out from the first screen as a result of multiple listing of code share flights, consumers may not be made aware of attractive travel alternatives.

Passenger liability

Code sharing may also raise some issues in relation to passenger liability (OECD 1995, 13). This is most likely to occur where the countries in which the airlines are registered are not signatories to the Guadalajara Convention. For these airlines, code share flights are regarded as successive carriage flights under the Warsaw Convention and passenger liability therefore rests with the airline operating the flight. Problems may occur where the operating carrier's contractual terms on liability differ from those of the code share partner (for example, limits on compensation).

This issue is unlikely to arise where the code share partners are signatories to the Guadalajara Convention. Most countries, including Australia, are signatories to this convention and airlines code sharing on Australian services are likely to be covered by it.

Summary - consumers

Code sharing potentially involves costs to consumers in the area of consumer deception. It may provide benefits to consumers through access to larger networks, more convenient schedules and transfers, more frequent services, and improved access to frequent flyer rewards.

NET NATIONAL BENEFITS

The effects of code sharing on airlines and consumers are key elements in the assessment of the net national impact of code share arrangements. In Australia's case, the impact on the tourism industry is also a relevant component of the assessment of these arrangements. The impact on competition will affect the extent to which benefits to the airlines are passed

on to consumers in several areas (for example, lower costs flowing through to fares).

It is important to consider the distribution of benefits and costs between Australia and other countries since the net benefit to Australia is the relevant criterion for policy-makers in Australia. A code share arrangement which provides significant benefits to foreign airlines and foreign consumers but few benefits to Australians could be unattractive compared to the base case (in isolation from other aspects of bilateral negotiations).

In view of the potential for unequal sharing between countries of the benefits from code sharing, the impact of these arrangements may be an important consideration in bilateral negotiations. For example, a third country code share arrangement (code sharing between two non-Australian carriers on flights on an international route from Australia) may provide fewer benefits than code share arrangements involving an Australian carrier since there will be no benefits to an Australian airline under a third country code share.

In the US, there has been concern about the distribution of code sharing benefits between countries (Gellman Research Associates 1994, 58-59). For example, American Airlines officials have argued that there can never be an effective reciprocity of rights for the US with international code sharing. They consider that, when the US gives a carrier code sharing rights, it gives access to half of the world's aviation market. In contrast, when a European country gives such rights it simply gives access to a small market, with the result that US airlines then have to seek additional authority for either direct or code sharing access beyond the European country. American Airlines officials assert that this fundamental asymmetry affects all code share agreements involving US airlines and that new code sharing proposals should therefore be accompanied by concessions from the foreign country.

A detailed discussion of the net national benefits of code sharing is beyond the scope of this paper. It is a complex issue that needs to be assessed on a case-by-case basis. The available empirical studies are described in the next chapter.

CHAPTER 4 CURRENT VIEWS ON CODE SHARING

The views of government agencies and the findings of several recent studies provide further information for the assessment of code sharing. This material can be considered in terms of Australia and overseas countries.

AUSTRALIA

Code sharing is potentially an issue under Australia's bilateral air services agreements. The Department of Transport is responsible for conducting bilateral negotiations and is therefore interested in the impact of code sharing. The International Air Services Commission (IASC) and the Australian Competition and Consumer Commission (ACCC) also have an interest in code sharing.

Bilateral negotiations

The majority of Australia's bilateral aviation relationships now provide for some form of code sharing.

The principle applied by Australia in negotiating provisions for code share arrangements is that code share capacity is part of the overall capacity entitlement available to designated carriers under an air services agreement. Within the parameters of this principle, Australia has had an open attitude to code sharing.

International Air Services Commission

The IASC has noted that, although there is some evidence that code share services can deliver benefits (particularly on thin routes), there is a great variety of such arrangements (IASC 1995a, 8). Each arrangement must therefore be assessed according to its terms.

In the Commission's view, the net benefits of a joint service agreement (which may include code sharing) are likely to vary according to market conditions (IASC 1995b, 6). It considers that these conditions include, but are not limited to, the following factors:

- market size;

- number of operators;
- availability of indirect services;
- shelf capacity available to other operators; and
- the relative market power of the parties involved in the joint service arrangements.

The Commission considers that, where a service proposal involves joint services, it needs to be careful to ensure (through the imposition of conditions) that the public benefits derived from utilisation of capacity are not neutralised by inappropriate commercial arrangements. The Commission would be unlikely to approve a code share agreement under which the parties pooled revenue or failed to price and sell their capacity independently, because of concerns that such arrangements would inhibit competition.

The IASC has also stated that it is necessary and appropriate that consumers are advised, at the time of ticket reservation, that they will travel part of the journey on an aircraft of another airline.

Australian Competition and Consumer Commission

In its determination for the Qantas/British Airways application, the ACCC'c predecessor (the Trade Practices Commission) stated that it had concerns regarding the effects of code sharing (TPC 1995, 77-78). The ACCC's concerns centre on several issues:

- possible consumer deception arising from a lack of detailed information being available to consumers;
- the increased possibilities of price fixing of fares and collusion on areas of non-price competition;
- the enhancement of market power and possible misuse of this market power; and
- the possibility that in particular markets the implementation of code sharing might have the effect of substantially lessening competition.

The ACCC considers that, given the differing markets and variety of arrangements, code share agreements must be considered individually to assess competitive impact.

OVERSEAS

Code sharing has recently been examined by several agencies in the US and Europe, by the OECD, and in the article by Oum, Park and Zhang.

United States

Studies on code sharing have recently been undertaken by Gellman Research Associates and the General Accounting Office (GAO). Both studies identified benefits to airlines and consumers, although the work was constrained by data limitations. The Department of Transportation and the Secretary of Transportation have also released papers on code sharing.

Department of Transportation

From 1987, the Department of Transportation required code share arrangements between US and foreign airlines to be filed for approval (General Accounting Office 1995, 14). The Department also required reapproval of the arrangements after a specified period of time, usually annually. In November 1994, it issued an international aviation policy statement which generally supported code sharing.

By the end of 1994, 61 alliances involving nearly 150 different code share arrangements had been approved by the Department of Transportation, with only one application for approval being turned down (General Accounting Office 1995, 47). The rejection involved United Airlines and British Airways. The two airlines were required to end their point-specific arrangement between Seattle and London as a condition of the agreement with the UK allowing United Airlines to replace Pan Am as one of two US carriers serving Heathrow Airport. The Department of Transportation considered that the code share arrangement between these points could potentially reduce competition as United Airlines and British Airways would be the only airlines operating on the Seattle-London route.

The US anti-trust laws, which prohibit collusion and anti-competitive behaviour such as price fixing, limit the level of integration that competing airlines can achieve (General Accounting Office 1995, 21, 24). The Secretary of Transportation has the authority to grant anti-trust immunity to agreements in foreign air transport on specified grounds. The integration between Northwest and KLM in areas such as pricing was granted anti-trust immunity by the Department at the request of the carriers, although it did not consider immunity to be necessary in that case.

The potential for consumer deception has also been an area of interest for the Department. In 1985 it adopted a policy statement in the context of domestic code sharing (Gellman Research Associates 1994, 51). The requirements for airlines included:

- the specific identification of code share flights in written or electronic schedule information provided to the public;
- notice of code sharing in any direct oral communication with a consumer; and

- frequent notice in advertising media that conveys to potential customers the existence of a code sharing relationship between carriers.

Subsequent research by the Department involving 200 test calls to 15 airlines and 20 agents found that, despite these rules, inadequate information was provided in 30 per cent of the inquiries (Humphreys 1994, 14-15). In 1994, the Department proposed rules to strengthen the existing requirements. For tickets sold in the US, the proposed rules included written notice at the time of the ticket sale naming the airline that would operate the flight.

Gellman Research Associates

In December 1994, the Department of Transportation released a study of code sharing prepared by Gellman Research Associates (1994). The study included the development of an econometric market share model based on first quarter data for a sample of 91 city-pair markets. The model was estimated by relating the observed market shares of the choices available in each market to a set of explanatory variables (seat shares, average time between departures, fare, average elapsed time of flights, a service quality proxy, and a set of carrier-specific hub dummies).

The model was applied to the British Airways/USAir and KLM/Northwest arrangements in order to assess the impact of code share arrangements. Estimates of the impact on net social surplus were obtained by summing the changes in net producer surplus (change in airline revenue minus airline costs) and consumer surplus.[2] The authors noted various shortcomings of the model, some of which would cause the results to underestimate market size and over-estimate the impact on market share.

The results indicated a British Airways/USAir market share of 2.9 per cent without code sharing and 11.2 per cent with code sharing. The annual net social surplus attributed to code sharing was US$15.6 million. This included net gains of US$27.2 million for British Airways and US$5.6 million for USAir and net losses of US$26.7 million for other US carriers and US$0.8 million for other foreign airlines. Consumer surplus gains were US$4.9 million for US consumers and US$5.4 million for foreign consumers.

For the KLM/Northwest arrangements, the estimated market share was 34.4 per cent without code sharing and 45.0 per cent with code sharing. The annual net social surplus attributed to code sharing was US$29.5 million. This included net gains of US$16.1 million for Northwest and US$10.6 million for

2. Producer surplus is the excess of the total earnings of a supplier of a good/service over the minimum payment required merely to induce the supplier to continue to maintain the current level of supply. Consumer surplus is the excess of the amount that a consumer is prepared to pay for a good/service (rather than go without it) over the amount the consumer actually does pay for it (Bannock, Baxter & Rees 1985, 89, 353).

KLM and net losses of US$15.7 million for other US carriers and US$8.6 million for other foreign airlines. Consumer surplus gains were US$13.0 million for US consumers and US$14.1 million for overseas consumers.

Gellman Research Associates also responded to several concerns about international code sharing that were raised during the study. They considered that there were ample means available to deal with the issue of consumer deception. They stated that US carriers could achieve substantial benefits from code share alliances even with a carrier from a small country and without fully equivalent code sharing opportunities beyond the foreign gateway. In relation to anti-trust concerns, Gellman Research Associates noted that the Department of Transportation and the Department of Justice reviewed code share agreements to ensure that they did not lead to anti-competitive outcomes.

The model and the results were subsequently criticised on several grounds (Shenton 1994a 2-5; Jennings 1995, 65). The areas of criticism included major shortcomings in the traffic data, exclusion of competitive responses from US airlines, the small size of the benefits relative to total market revenue, the high value of time used in the consumer surplus calculation, the assumption of full knowledge of alternative schedules and fares by the passenger, and exclusion of online code sharing (as practised by Delta Airlines) from the study.

Shenton concluded, on the basis of the study, that the benefits of code sharing, although they existed, were negligible. He considered that the potential benefits from code sharing were in the other aspects of airline alliances that are part of nearly every code share arrangement (for example, cost reductions resulting from integration of operations and marketing).

Statement by Secretary of Transportation

A statement of international air transportation policy issued by the US Secretary of Transportation in April 1995 included a discussion of code sharing and other co-operative arrangements (Pena 1995, 4-5). It noted that, although code sharing had become a widely used marketing device and the most prevalent form of commercial arrangement, further evolution of the industry and its regulatory environment could lead to new marketing practices that could supplement or supplant code sharing.

The statement indicated that code sharing and other co-operative marketing arrangements could improve the competitive positions of partner airlines through traffic diversion and generation of new traffic. Code sharing should also increase competition between airlines to carry passengers on the domestic segments of their international journeys. There would also be benefits to consumers through increased international service options and enhancement of competition between carriers, particularly for traffic to or from cities behind major gateways. Stimulation of traffic, increased

competition and increased service options should expand the overall international aviation market, with US airlines being major beneficiaries of this expansion.

It was recognised that, although the expansion of co-operative arrangements was expected to be largely beneficial, there might be some negative effects. The areas of concern identified in the statement included harmful effects on competition if greater traffic access gave participating carriers considerable competitive muscle, and unavailability of civil aircraft to meet emergency airlift requirements. The statement also noted that global systems and code sharing might put significant competitive pressure on airlines not participating in such arrangements, and that these pressures and carriers' responses would lead to a restructuring of service and airlines. However, there would continue to be a role for regional niche carriers alongside the two types of global networks (sole-carrier and joint-carrier). It was considered that these developments would expand the level and quality of international air service for consumers.

The statement noted that consumers needed access to full information if products such as code sharing were to accurately respond to their preferences and markets were to function efficiently. It concluded that airlines should give consumers clear information about their products and that consumers should be in a position to distinguish between code sharing and other forms of service.

General Accounting Office

In May 1995, the GAO released the results of a study into airline alliances (General Accounting Office 1995). The study included information on 85 per cent of the code share alliances that were approved by the Department of Transportation between 1987 and 1995.

The GAO concluded that alliances between US and foreign airlines had in several cases generated large gains for the participating carriers in terms of passengers and revenues (General Accounting Office 1995, 3). It noted that the benefits to the alliance partners generally became larger as the scope of the arrangement became more global and the degree of integration of schedules and frequent flyer programs increased. Conversely, the loss of traffic and revenue by competing airlines depended on the alliance's geographic scope and integration, other airlines' competitive responses and the extent to which competition between the alliance and other carriers stimulated new traffic. Whether the US airline industry gained as a result of an alliance depended on the specifics of each deal.

The report included information on changes in market shares and revenue attributable to several alliances which included code sharing. For example:

- The GAO estimated that the KLM/Northwest alliance (code sharing and integration) produced added revenues of US$125-175 million for Northwest and US$100 million for KLM in 1994.
- British Airways estimated that in 1994-95 the alliance with USAir produced US$100 million in revenues for British Airways (US$45 million from code share traffic and US$55 million from increased interline traffic, linked frequent flyer programs and cost savings).
- United Airlines estimated that its alliance with Ansett Australia, which included code sharing and integration, was providing it with US$14 million in revenue.

The GAO concluded that code share alliances provided benefits to consumers in areas such as shorter layover times and enhancement of consumers' choices. However, as a result of insufficient data, it was not able to identify the effect of alliances on fares in the short term or to assess whether alliances would reduce or increase competition in the long term and thereby lead to higher or lower fares.

The GAO noted that the Department of Transportation had not required airlines to report sufficient data to enable the Department to fully monitor the effects on competition and the international competitiveness of US airlines. It recommended that the Secretary of Transportation give high priority to requiring US and foreign carriers to regularly report information on code share flights.

The GAO noted that the Department of Transportation had proposed new rules in 1994 to ensure that consumers were informed, before booking, about the airline that would operate a code share flight. However, neither the existing regulations nor the Department's proposed rules limited the number of times the same flight could be listed on CRSs. The GAO stated that multiple listing of a code share flight on CRSs crowded out listings of other carriers' flights and therefore limited competition.

Europe

Code sharing has been considered by the European Union (previously called the European Community) and by individual countries in Europe.

European Union

European carriers are generally free to enter into code share or block space arrangements anywhere in the European Union (McNeill 1993, 14). The European Commission does not examine code share arrangements as such but rather considers their impact on competition. European carriers are allowed to enter into such arrangements unless they result in a monopoly. Airlines can also code share on intercontinental routes to destinations where

they both hold traffic rights, but they cannot use the system to get into markets which were previously closed to them.

In late 1994, the European Commission issued an invitation to tender for a study which focuses on the competition aspects of code sharing (Odell 1995, 8). The Commission will reportedly decide whether to regulate code sharing after the report is completed early in 1996.

The European Union's October 1993 revision of its CRS rules limited to two the number of times that a code share flight could be listed (General Accounting Office 1995, 59). This reportedly reflected concerns about the negative impact of numerous listings on competition, consumers and travel agents.

In Europe, CRSs are obliged to clearly identify the airline actually operating the flight (ECAC & European Union 1994, 3). The European Code of Conduct for CRSs specifies the order in which flights are displayed, with non-stop flights first, followed by other direct flights and then connections (Shenton 1994b, 16).

United Kingdom

A 1994 Civil Aviation Authority (UK) report on airline competition on European long-haul routes included some comments on code sharing (Civil Aviation Authority 1994, 54-57, 78-79). The Authority cautioned that it was unrealistic to attribute all or even most of the benefits of airline alliances to code sharing, although in a few cases significant benefits might result from code sharing in isolation. It viewed code sharing as a relatively cheap way of advertising that some form of airline co-operation exists.

The Authority concluded that the effect of code sharing on competition between airlines would vary from case to case. In some cases, such as the withdrawal of a service by one of the partners as a direct result of code sharing, the burden of proof that the arrangement was not anti-competitive might reasonably fall on the partners. In other cases, code sharing would strengthen one or both of the partners in a way that would enable them to be more effective competitors in the broader market. The Authority considered that most cases would fall between these two extremes and consequently be more difficult to deal with. However, the competition implications of most code share arrangements in isolation were likely to be overshadowed by effects associated with the wider airline partnership of which code sharing would normally be just a part.

In a preliminary survey of code share services undertaken by the Authority, 60 per cent of the airlines contacted had given no indication that another carrier provided part of the service. The Authority stated that this seemed to

be an abuse of consumer rights and that it intended to carry out a more detailed survey.

Germany

A report on code sharing prepared for the Ministry of Transport by the research institute DLR was released in mid-1995 (Odell 1995, 8).

The report opposed the regulation of code sharing in the context of bilateral negotiations. It supported European-wide legislation to ensure full disclosure of code share flights to passengers, with Germany acting unilaterally if the European Commission procrastinated.

The report also concluded that the European CRS code of conduct was being severely damaged by screen padding. It noted that, even though city-pair flights could only be listed twice on screens, the existence of multiple segment code share services meant that a city-pair could appear up to six times. As a result, two code share partners could dominate the first screen.

Other countries

Detailed information on the attitudes of other countries towards code sharing was not obtained during the preparation of this paper. The growth in the number of code share arrangements suggests that many of these countries allow code sharing on international services. European countries in particular would be expected to be supportive of code sharing since their carriers wish to obtain better access to points beyond the international gateways in the US. However, additional information on specific countries, particularly in Europe and Asia, would be useful.

OECD

In a draft paper released in June 1995, the OECD identified various issues in the analysis of code sharing (OECD 1995, 11-15). The issues included cost and marketing benefits for airlines, improved access to behind-gateway traffic, quality of service improvements, continuation of some services, concerns about the impact on the ability of other carriers to compete, passenger liability, and arguments that code sharing may deceive air travellers. The OECD noted that the impact of code sharing and airline alliances was affected by several factors including the changes in operation which accompanied an arrangement, how well the arrangement was structured, the networks being linked, and the initial market power of the carriers involved.

The OECD concluded that it was extremely difficult to generalise about the competitive effects of code sharing. It noted that the increasing number of studies initiated by governments and international bodies reflected concern

about possible anti-competitive aspects, and that further monitoring was required.

Oum, Park & Zhang study

In a paper released in early 1995, Oum, Park and Zhang (1995) reported on the development of an analytical model of code sharing and its application to data on 57 transpacific international air routes for the 1982-1992 period. Derivation of the model was based essentially on a leader-follower model in oligopoly.

The data covered 30 North America-East Asia routes, 24 East Asia-Oceania routes and 3 North America-Oceania routes. There were 18 origin and destination cities in total. The code sharing cases in the data set were classified in terms of major code sharing (between two international carriers) and feeder code sharing (between a major carrier and its feeder carrier, usually the former's subsidiary).

The empirical results indicated that major code sharing made the market leader behave more competitively and increased the demand for its services. The market leader's equilibrium output rose as a result of the competitive effect and the demand effect, and its equilibrium price declined.

In contrast, the results indicated that feeder code sharing had a statistically insignificant effect on the market leader's demand and made the leader behave more collusively. Its equilibrium price rose and output fell when feeder code sharing occurred on a city-pair route.

CHAPTER 5 SUMMARY

The preceding chapters have provided an overview of code share arrangements in terms of their nature and scope, the potential effects in broad terms, the available studies, and the approaches adopted by regulatory agencies. Empirical estimates of the impact of code sharing on Australian routes and the assessment of its long-term effects are beyond the scope of this paper.

Code sharing is a significant component of alliances between international airlines. At least 17 international airlines are currently involved in code sharing on Australian services. The distinct characteristics of Australian markets, particularly long distances and low traffic densities, will affect the level, pattern and impact of code sharing on Australian routes.

A key issue in the examination of code sharing is its impact, as a commercial strategy, on competition and consumer welfare. Any assessment should clearly distinguish between the effects that are attributable to code sharing and the effects that are attributable to other aspects of airline alliances.

The effects of code sharing vary in response to factors such as the size of the partners, their market shares and the characteristics of the routes involved. As extensive use of code sharing is a recent development, further evolution of these arrangements may lead to changes in their effects. In the longer term, code sharing may become less widespread if airlines are able to obtain similar benefits through alternative strategies such as mergers or different forms of alliances.

Code sharing potentially provides benefits to the partner airlines as a result of increases in traffic and revenue, which particularly reflect marketing effects, and a reduction in costs. It cannot be presumed to be pro-competitive or anti-competitive in all situations, and the effect on competition needs to be assessed in terms of the market circumstances in each case.

From the consumer perspective, there is particular concern about deception arising from code sharing. However, there are potentially benefits to consumers such as access to larger networks, more convenient schedules and transfers, more frequent services, and improved access to frequent flyer

rewards. CRS display is considered to be an issue in the US and Europe, but the extent to which this is a concern in Australia is unclear.

The net national benefits (or costs) from code sharing should be examined on a case-by-case basis. It is important to consider the distribution of benefits and costs between countries since a large proportion of the benefits from a code share arrangement may be captured by foreign airlines and foreign consumers. The limited empirical work on code sharing indicates that there is significant variation in the distribution of benefits between national and foreign airlines/consumers under individual code share arrangements.

The limited number of empirical studies so far been undertaken have provided estimates of some of the benefits and costs of code sharing. However, the scope of the studies has been constrained by data limitations and further work will facilitate a more comprehensive assessment of code sharing. Caution should be exercised in applying the results of these overseas studies to Australia given the distinct characteristics of Australian routes.

Regulatory agencies in the US and Europe have approved a large number of code share arrangements, often as part of quite extensive co-operation between carriers. The growth in the number of code share arrangements suggests that many other countries also allow code sharing on international services.

In bilateral negotiations, Australia has generally adopted an open attitude to code sharing subject to the principle that code share capacity is part of the overall capacity entitlement available to designated carriers under an air services agreement. The IASC has noted that code sharing can deliver benefits (particularly on thin routes) but that it may have adverse effects in other cases. In the context of the Qantas/British Airways proposal, the ACCC has stated that it has some concerns about the effects of code sharing in terms of possible consumer deception, collusion, misuse of market power and substantial lessening of competition. Both the IASC and the ACCC consider the code share arrangements must be considered individually to assess the competitive impact.

REFERENCES

Bannock, G., Baxter, R. E. & Rees, R. 1985, *Dictionary of Economics*, Penguin Books, Harmondsworth.

Civil Aviation Authority 1994, *Airline Competition on European Long Haul Routes*, Civil Aviation Authority, London.

de Groot, J. E. C. 1994, 'Code-Sharing: United States' policies and the lessons for Europe', *Air & Space Law*, vol. XIX, no. 2, 62-74.

ECAC & European Union 1994, *Code Sharing*, Paper for ICAO World-Wide Air Transport Conference on International Air Transport Regulation: Present and Future, Montreal, 23 November - 6 December .

Gallacher, J. 1995, 'Making it work', *Airline Business*, June, 27-53.

Gellman Research Associates 1994, *A Study of International Airline Code Sharing*, Gellman Research Associates Inc, Jenkintown.

General Accounting Office 1995, *International Aviation: Airline Alliances Produce Benefits, but Effect on Competition is Uncertain*, United States General Accounting Office, Washington.

Humphreys, B. K. 1994, *The Implications of International Code Sharing*.

IASC 1995a, *Determination — An Allocation of New Capacity to Canada to Qantas Airways Limited*, Determination Number IASC/DET/9508, International Air Services Commission, Canberra.

--- 1995b, *Determination — An Allocation of Shelf Capacity to Vanuatu to Qantas Airways Limited*, Determination Number IASC/DET/9501, International Air Services Commission, Canberra.

Jennings, M. 1995, 'What's in a code?', *Airline Business*, June, 64-67.

Levine, M. 1987, 'Airline competition in deregulated markets: Theory, firm strategy and public policy', *Yale Journal on Regulation*, vol. 4.

McNeill, L. 1993, 'Maximum advantage from a minimum of investment', *The Avmark Aviation Economist*, April, 14-16.

Nuutinen, H. 1995a, 'Independent regional rebuilds value', *The Avmark Aviation Economist*, June/July, 14-21.

--- 1995b, 'Rationalising to profitability', *The Avmark Aviation Economist*, April, 2-8.

Odell, M. 1995, 'Germans win out on codes', *Airline Business* August, 8.

OECD 1995, *OECD International Futures Programme: Functioning of Competition*, SG/AU/AT(95)3, Organisation for Economic Co-operation and Development, Paris.

Oum, T. H., Park, J.-H. & Zhang, A. 1995, 'The Effects of Airline Codesharing Agreements on International Air Fares', paper presented at 7th World Conference on Transport Research, Sydney, July.

Pena, F. 1995, *US International Air Transportation Policy Statement*, Washington.

Shenton, H. 1994a, 'GRA report sanctifies DoT policy', *Avmark Aviation Economist*, December, 2-5.

--- 1994b, 'Codesharing: Is airlines' gain consumers' loss?' *Avmark Aviation Economist*, October, 13-20.

TPC 1995, *Determination - Application for Authorisation in Respect of an Application for Authorisation Lodged under s.88(1) of the Trade Practices Act by Qantas Airways Limited and British Airways Plc*, Application No. A90565, Trade Practices Commission, Canberra.

ABBREVIATIONS

ACCC	Australian Competition and Consumer Commission
CAA	Civil Aviation Authority (UK)
CRS	Computer Reservation System
ECAC	European Civil Aviation Conference
GAO	General Accounting Office
ICAO	International Civil Aviation Organisation
IASC	International Air Services Commission
MAS	Malaysia Airlines
OECD	Organisation for Economic Co-operation and Development
TPC	Trade Practices Commission
UK	United Kingdom
US	United States