A STRUCTURE-CONDUCT-PERFORMANCE ASSESSMENT OF ALTERNATIVE CANADA-UNITED STATES AIR SERVICES AGREEMENTS

by

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ABSTRACT

Canada and the United States have the largest, bilateral trade relationship of any two nations. Fittingly, they also exchange the largest volume of international air travellers of any pair of countries. The terms under which Canada-United States air transportation are provided are set forth in the Canada-United States Bilateral Air Services Agreement. The current Agreement was founded upon the consumer demands and industry operating practices that prevailed in 1966. Although the Agreement was substantially modified in 1974, the essence of the regime has been rendered obsolete by the developments of transborder airline market characteristics. Canada and the United States have recognised that a new bilateral air services agreement is a necessity.

Three general strategies have been proposed as the bases for a new regime: the specified rights option, the open border option, and the cabotage rights option. Specified rights is the genre of the current regime: all routes having entry strictly controlled. The open border option would entail complete freedom for either country's carriers to contest all transborder routes. Cabotage rights allow carriers to contest any market within or between the two countries.

A new agreement has yet to be achieved. The delay in finding an acceptable scheme has been the difficulty in meeting both major
objectives for the new policy: efficiency and equity.

This report examines the alternative schemes for a new Canada-United States air services regime. The structure-conduct-performance paradigm of industrial analysis is utilised to evaluate the nature of the distribution of benefits that would arise following the adoption of the various alternatives.

The report concludes that the adoption of a phased-in, open border regime would best meet the twin objectives of efficiency enhancement and equity of opportunity.
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This thesis is dedicated to "Chummy"
CHAPTER ONE.

INTRODUCTION

1. The Purpose of Analysing Alternative Proposals for a New Canada-United States Air Transport Regime

1.1 Statement of Objectives

The purpose of this report is to evaluate the alternative approaches that have been proposed for a new Canada-United States air transportation agreement. The current agreement, which provides the regulatory structure for transborder airline services, dates back to 1974. Although there have been several amendments to this agreement, it has remained substantially the same for close to twenty years. Over this period, many facets of the air transportation industry have changed. These changes have brought about the need for a new air transport services agreement between Canada and the United States.

This study intends to evaluate the proposed alternative schema for a new Canada-United States air services agreement, and to determine what the most desirable such alternative is. There are two criteria for rating these alternatives: it should improve the efficiency with which
transborder airline services are provided; it should ensure that opportunities for gainful enterprise and employment are retained for interested parties of both Canadian and U.S. nationality. In particular, we will devote a significant proportion of our analyses to the consideration of Canada-United States carrier alliances. Much attention will be given to how these relationships have influenced, and can be expected to influence, the structure, conduct, and performance of Canada-United States airline markets.

1.2 Important Changes in Industry Operating Practices

Necessitating Policy Reform

Since 1974, the air transportation industries of Canada and the United States have undergone substantial transformations. Economic deregulation has occurred in both countries, allowing market forces to govern the pattern of, and prices paid for, airline services. Air carriers, spurred-on by greater freedom to enter and exit from routes, have developed hub-and-spoke route networks. These operations promoted the development of a new generation of airliners: medium-sized, twin-engined types, such as the Boeing 767. Also during this period, innovations in information systems technologies led to the evolution of yield management techniques. Inter-airline alliances have also emerged as important aspects of industrial structure/conduct. In
effect, the way airlines do business has changed dramatically, whereas the regulatory structure in which they operate has not kept pace with these changes. Unfortunately, the achievement of a new agreement has been delayed due to concerns over a number of key issues.

1.3 Equity and Efficiency: Two Important Considerations

1.3.1 Equity Objectives

While Canada and the United States have recognised the necessity of achieving a new air transportation agreement, contentious issues have prevented the realisation of this aim. Equity considerations have been inimical to the conclusion of a new agreement. Equity objectives are routinely pursued in bilateral air transport agreements; in this case, equity refers to equality of opportunity for interests in both Canada and the United States to benefit from engaging in transborder operations.

In the Canada-United States setting, particular equity concerns stem from the difference in the magnitudes of the respective countries’ airlines. For example, it would be a relatively simple matter for a U.S. carrier, having 300 or more aircraft, to allocate a portion of its fleet to new transborder services. In contrast, the Canadian carriers,
with barely 100 aircraft, would find it more difficult to dedicate capacity to any new services permitted by a new agreement.

There are also operational and geographical characteristics of the U.S. industry that give U.S. carriers decided advantages over their Canadian counterparts. In particular, the well-developed hub-and-spoke networks of U.S. carriers allow them to realise superior productive efficiencies relative to Canadian carriers. Also, the bulk of Canada's airline traffic travels east-west between points within 200 miles of the Canada-United States boundary. This geographic reality presents the possibility for U.S. airlines to provide de facto domestic services to Canadian consumers. The Canadian carriers are not in a position to offer reciprocal services to U.S. consumers. A new Canada-United States air transportation agreement must provide an equity of opportunity for Canadian and U.S. interests alike. The determination of an agreement that would allow Canadian carriers to compete on an equal footing with U.S. firms has eluded negotiators thus far.

1.3.2 Efficiency Objectives

The motivation for concluding a new air services bilateral agreement has come from two main sources. First, the domestic deregulations of air transportation in both Canada and the United States has yielded
improved efficiencies in the provision of airline services.\textsuperscript{6,7} Second, the liberalisation of bilateral agreements between other countries has improved the value consumers receive for air transport expenditures.\textsuperscript{8} Such advantages should be available to North American air travellers.

A new bilateral air services agreement should provide a setting in which the same types of efficiency gains that have been achieved in domestic markets may be realised in the transborder sector. These gains would be in the form of productive efficiencies or allocative efficiencies: productive efficiency referring to the minimisation of the cost of providing a given level of output; allocative efficiency referring to the extent to which the allocation of resources achieves the optimum distribution of benefits between different economic agents.\textsuperscript{9}

Various authors have studied the expected efficiency effects to be associated with alternative schemes of bilateral air services liberalisation.\textsuperscript{10} Their conclusions invariably point to the advantages, in terms of economic efficiency, that can be expected to accompany the adoption of liberalised bilateral regimes. Moreover, there is extensive evidence, from the experiences of both Canada and the United States, following those countries' moves to domestic deregulation, that allowing the market to dictate the allocation of airline resources leads to more efficient service provision.\textsuperscript{11} Similar
performance improvements can be anticipated for transborder airline services under liberalisation.

The challenge for analysts and negotiators is to determine the most desirable scheme, given the prospects for efficiency gains, and the constraints of equity considerations.

1.4 Outline of Alternative Strategies

Several schemes have been proposed for a new Canada-United States air transport regime. There have been three general strategies suggested: specified service rights, an "open border," and varying degrees of "cabotage rights." The existing agreement allows services to be conducted on the basis of route specific rights, allocated to either or both country. In turn, the respective regulatory authorities allocate the routes to a particular carrier. An extension of this scheme, wherein additional routes would be specified, has been suggested as the basis for a new agreement.

The "open border" concept would permit any Canadian or United States airline to serve any cross-border city-pair. This proposal has been advocated as a means of introducing new services to currently unserved or poorly served markets. It should increase the competitiveness of
transborder airline markets. The drawback to this scheme is that it should be anticipated that, in the absence of any restrictions, it would allow U.S. carriers to further dominate the transborder sector.

The "cabotage" option would provide the opportunity for carriers to serve the domestic markets of the other country. For example, American Airlines might be permitted to fly Calgary-Toronto. This proposal is also intended to foster additional competition in airline markets. There is concern that, unfettered, this format would also prove an anathema to the viability of the Canadian air carriers.

2. The Structure-Conduct-Performance Paradigm

2.1 Foundations of the Model

To analyse the different proposals under consideration, this study employs the structure-conduct-performance paradigm. The structure-conduct-performance model was pioneered, during the 1930s, by Edward S. Mason of Harvard University. The premise of the model is that the structure of an industry dictates the conduct of the participating firms, which in turn determines the performance of the industry. Dimensions of performance are the technical and allocative efficiencies of the industry, and the distributive equity associated therewith.
While the original formulation of the model supposed a unidirectional flow of causality, from structure, to conduct, to performance, the contemporary view is that causality may flow in both directions. Thus, structure determines conduct, conduct determines performance, performance determines both structure and conduct, and so forth.

2.2 Suitability of the Structure-Conduct-Performance Model for Application to Air Transportation

The structure-conduct-performance model was chosen as the means for evaluation of policy alternatives for several reasons. It is less complicated than game theoretic approaches. It is not susceptible to survey difficulties, and generalisation problems, as is the case study approach.

Second, the basis of the paradigm in neoclassical economic theory has led to the wide-spread acceptance of structure-conduct-performance within the field of industrial economics. In turn, its popularity has led to considerable advancement of the methods associated with the model.

Finally, numerous studies of air transportation have been done using
the structure-conduct-performance methodology. Brander and Zhang (1990, 1993), Borenstein (1989), Gillen, Oum, and Tretheway (1985), Morrison and Winston (1986), and Oum, Stanbury, and Tretheway (1991) are examples of analyses which employed the structure-conduct-performance paradigm. Our study will make use of the methodology and conclusions of these foregoing reports to determining the desirable format for a new Canada-United States bilateral air services agreement.

3. Organisation of the Study

3.1 General Methodology

This study examines the alternatives for a new Canada-United States air services bilateral agreement. In order evaluate these alternatives, we will utilise the structure-conduct-performance paradigm. This model provides a framework for analysis of the economics of air transportation. We utilise existing evaluations of the performance of pre- and post-deregulation air transport markets in the United States and Canada in order to gain insight as to what the liberalisation of transborder markets would result in. The basis for this approach is that the fundamental principles governing the conduct and performance of airline markets should not differ with changes in location, but rather should vary primarily with respect to the
structure of the market. The performance of these markets will be the basis on which comparisons between alternative Canada-United States regimes will be based.

Of particular interest will be the factors that have caused the performance of deregulated airline markets to deviate from competitive expectations. Specifically, situations in which the structure of a market or markets has afforded a firm or group of firms the ability to exercise market dominance and/or capture supra-normal returns will be examined. Where this has occurred, we will also examine the nature of the conduct that has arisen to determine whether interventionist policy could be expected to achieve more desirable performance or not.

After developing a solid repertoire of structure-conduct-performance indications from analogous air transport markets, the methodology will be applied to the three alternative forms for a new Canada-United States air transport regime under consideration. These alternatives will be assessed, and a recommendation made as to what the most advantageous policy would be. The basis for recommendation will be that the policy should maximise industrial efficiency, whilst achieving the bilateral equity aims that can be expected to remain a tenet of international air transport relations.
3.2 Chapter by Chapter Layout of the Study

Chapter II begins by examining the general context in which North American air carriers operate. This includes an examination of the historical background of international air transport agreements, and particularly Canada-United States agreements. We examine the alliances between Canadian and U.S. air carriers. We are interested in analysing these relationships in order to both understand the carriers’ responses to existing policy, and to anticipate what forms of conduct may arise from the bilateral policies under contemplation.

Associated with the issue of airline alliances is the question of foreign ownership of airlines. We therefore explore the regulations surrounding foreign investment in airline firms. We consider whether these long-standing regulations are desirable given today’s international economic relations.

Further, in keeping with the emerging nature of international economics, we consider the implications that trading blocks may have on the face of international aviation. Therefore, Chapter II also surveys the air transportation policy of the European Community in order to gain insight into what the trend in international air transport relations may be.
Chapter III is the section of this study that develops the structure-conduct-performance paradigm. It is then given application to the airline industries of Canada and the United States in Chapter IV. Of particular interest is the relationship between regulatory structure and industrial performance, and between market concentration and industrial performance.

Chapter IV contains an extensive survey of the literature regarding structure-conduct-performance as applied to North American airline markets.

Having developed the structure-conduct-performance model, we then turn to an analysis of the alternative policies for a new Canada-United States bilateral air services agreement, in Chapter V. We will analyse the expected welfare effects of the adoption of the alternative strategies.

A summary and our conclusions are presented in Chapter VI.
Footnotes to Chapter One

1. Chesen, p.7
2. Transport [1991c], pp.3,4
3. Transport [1991c], p.8
4. Morrison and Winston [1986], pp.5-8
5. Chesen, p.41
6. Morrison and Winston [1986], p.72
7. Oum et.al. [1991], pp.15-18
8. Tretheway and Windle, p.18
9. Brander, p.16
12. Reid, p.11
13. Scherer, p.400
14. Reid, pp.14,26,27
15. Reid, pp.37,38,45,46
CHAPTER TWO.

CHARACTERISTICS OF INTERNATIONAL AIR TRANSPORT

1. Background

1.1 The Foundations of Bilateralism

There are many forms of law that apply to air transport activities. Bilateral agreements are one form of regulation in aviation. They are important because countries have found it difficult (if not impossible) to conclude multilateral agreements on air transportation. However, there are some multilateral conventions that exist in air law that influence the form that bilateral agreements take.

"The Treaty of Paris" in 1919 gave the first legal recognition to the rights of sovereignty of countries over that airspace overlying their territories. This sovereignty extends to all activities conducted in a country's airspace.

In 1944, the "Chicago Convention" was concluded which established the regime of economic and legal interrelations with respect to international airline transportation. The Chicago Convention was originally signed by 50 countries. It has since been adopted by over
150 states.

One of the important principles of the Convention is that all countries should be able to participate in the pursuit of air transportation on an equitable basis. The notion of an equitable basis refers to the distribution of economic benefits that should accrue to the interests of the parties involved in an air transport relationship.¹

There tends to be somewhat of a conflict between this principle and Article 1 of the Convention, which restates the principle of national sovereignty as originally described in the Treaty of Paris. The conflict stems from the desire of countries to promote their own carriers' economic fortunes, versus the principle of equity that underlies the entirety of the Convention. As discussed later in this chapter, this has given rise to the tendency toward bilateralism in air transport agreements.

The Convention established a list of "freedoms" pertaining to air transportation. Some of these freedoms will be referred to later in the text, and should be defined.
1.2 Definitions of Terminology

First Freedom: the right of an airline to overfly
a foreign country for commercial purposes.

Second Freedom: the right of an airline to make stops
of a technical nature in a foreign country while enroute to
another foreign country. (Technical stops are those made for
the purposes of maintenance, particularly for re-fuelling.)

Third Freedom: the right of an airline to carry
passengers from its home country to another country.

Fourth Freedom: the right of an airline to carry
passengers from another country to its home country.

Fifth Freedom: the right of an airline to carry
passengers from a point not within its home country to a point
within another country that is also not its home country.

Eighth Freedom: the right of an airline to carry
passengers between two points in a country that is
not its home country. Eighth freedom rights are more commonly
referred to as "cabotage."
Consecutive Cabotage: the operation of a flight between two points in a foreign country where that segment is the continuation of a flight that originated in another country, and onto which the carrier has the right to board passengers.

Stand Alone Cabotage: the operation of a flight between two points in a foreign country, that is not the continuation of a service originating in another country.

1.3 The Bermuda Agreements and Canada-United States Bilateral Agreements

1.3.1 The Bermuda Agreements

In 1946, the United States and the United Kingdom concluded the Bermuda I Agreement. Bermuda I established the general format for bilateral air transport agreements to come. The focus of Bermuda I was on routes and capacity. Article 4 of the Agreement gives recognition of the principles of fairness and equality of opportunity that both parties should enjoy in the provision of air transport services between the two states' territories. 

Bermuda I featured covenants regarding Third, Fourth, and Fifth Freedom services. An agreement was reached on
the pricing of services: prices were to be set by negotiation, with the
ability of either country to veto fares that it considered
unacceptable.

The later Bermuda II Agreement (1977) introduced significant changes
from Bermuda I. Bermuda II featured less flexibility in allowing air
routes, virtually abolished Fifth Freedom services, and introduced
capacity controls. These moves were initiated by the United Kingdom in
response to the competitive threat posed by the growing number of
American air carriers. The British were concerned that the liberal
nature of Bermuda I would prove an anathema to their airline industry
in the face of increasing US competition.3

1.3.2 Canada-United States Bilateral Agreements

The first Canada-United States air services bilateral agreement was
signed in 1929. It allowed any Canadian or U.S. carrier to fly
transborder routes. The second Canada-United States agreement was
signed in 1939. In contrast to the earlier bilateral, the 1939
agreement severely restricted access to transborder routes, with four
city-pairs being granted to each country. In 1945, the two countries
signed yet another bilateral. This time, there was an asymmetric award
of route rights: Canada received but 7 of 20 routes specified in the
The first "modern" bilateral between Canada and the United States was concluded in 1949. It substantially conformed to the Bermuda I format, with pricing and capacity provisions contained within the agreement. It also included Fifth Freedom rights for Canadian carriers, for flights from Canada, through the United States to the south Pacific and the Caribbean.

In 1966, the basic Canada-United States bilateral that prevails to this day was negotiated. Capacity restrictions were absent from the agreement; these had never been a contentious issue between Canada and the United States. Market entry was based on "designation": each government selected which airline (or airlines) under its jurisdiction could serve a particular market. The determination of prices was by "double approval." Double approval means that an airline may establish a price on a route which will prevail as long as it is accepted by both governments. The 1966 agreement gave United States air carriers the rights to serve 27 city pairs. Canadian carriers were granted rights to serve 16 city pairs. One Fifth Freedom right was granted to each country.

1974 saw the agreement revised to its present form. The 1974 version of the Canada-US bilateral specifies that US carriers are permitted to
serve 92 routes; Canadian carriers are allowed to serve 71 routes. A total of 129 transborder routes can potentially be served; 87 of these routes were being operated as of November 15, 1990. Significant revisions to the Canada-US bilateral were made in 1974. The amendments and additions included the following:

- an increase in the number of designated routes;
- an agreement covering the conduct of non-scheduled, or charter, services;
- the Pre-clearance Agreement.

Pre-clearance refers to the practice of establishing customs facilities at the point of departure. The Pre-clearance Agreement allowed Canadian carriers to establish 13 pre-clearance facilities in the United States, while US carriers were given the rights to create 11 such facilities in Canada. In actual practice, only US carriers have instituted pre-clearance operations. They exist at six Canadian airports: Vancouver, Calgary, Edmonton, Winnipeg, Toronto, and Montreal.

While attempts have been made to negotiate a substantially improved Canada-US bilateral, there has been only limited progress.

The deregulation of air transportation in both the United States and
Canada led to the growth of regional or commuter airlines. These carriers use relatively small, turboprop aircraft on stage-lengths of generally under 600 miles. They are usually affiliated with a large air carrier, acting as a feeder service for traffic destined to, or outbound from, smaller centers that cannot justify economical jet services. Their emergence promoted the need to modify the Canada-US Bilateral.

In 1984, the two countries negotiated a liberalised agreement covering the realm of transborder services conducted by regional air carriers: the Regional, Local, and Commuter Services Agreement. This agreement permitted the growth of short-haul, transborder services by regional carriers. The authority to operate short-haul, transborder services under this Agreement is automatically granted, provided that the following conditions are met:

1. The aircraft operated have a maximum passenger capacity of 60 or less, and a payload capacity of no more than 18,000 pounds;

2. The city pairs have not been designated in the 1966 Agreement;
3. One of the cities must have a population of less than 500,000 if in Canada, or 1,000,000 if in the United States;

4. The stage lengths must not exceed 400 miles if on routes in that area bounded by Thunder Bay and Quebec City, otherwise they must not exceed 600 miles. Routes between Alaska and points in Canada are not restricted with respect to stage lengths.9

Also in 1984, the two countries reached the Experimental Transborder Air Services Agreement. This agreement was aimed at promoting the growth of transborder services through the use of under-utilised airports. The airports designated for concentration under this scheme were Montreal-Mirabel in Canada, and San Jose, in the United States. Features of this plan were limitless carrier participation, in terms of the number of carriers and the amount of capacity they could offer, and liberal pricing provisions.10 Being experimental in nature, the ETAS agreement had a fixed term, and expired without being renewed. Services to Mirabel were instituted, but discontinued. Services to San Jose were initiated, and have outlived the ETAS program: Vancouver-San Jose rights were grandfathered into the Canada-United States bilateral at the conclusion of ETAS.
1.4 Working Toward a New Transborder Regulatory Regime: Considerations, Complications, and Influences

1.4.1 Structural Factors

Recent rounds of bilateral negotiation have been fruitless due to the inability of the two sides to reach a compromise on the issue how to achieve an equitable balance of opportunities for airlines of both countries in the provision of transborder services. A key issue of contention was that of cabotage—or "Eighth Freedom" rights as defined in the Chicago Convention. Canadian negotiators advocated a cabotage rights regime for North America. The United States took the position that it did not wish to grant cabotage rights to Canadian carriers. This was due to their fear that it would establish a precedent that could ultimately jeopardise the viability of American carriers. Ironically, the American concern had little to do with Canadian prospects for seizing control of the US market, but rather that, under the terms of the Chicago Convention, the US would be legally bound to confer the same rights to non-Canadian, foreign carriers.

The United States preferred the concept of an "open border" regime. This would allow airlines of either country to offer direct services between any city in Canada and any city in the United States. The Canadian side felt that this was unacceptable since it would give the
larger, more efficient American carriers the ability to not only capture more of the transborder traffic (in which US airlines already enjoyed a substantial advantage in terms of market share), but also that the Americans would establish "mirror image" routes to the detriment of Canadian carriers.

"Mirror image" routes are services that parallel the Canadian transcontinental routes. Under this scheme, Canadian domestic traffic is carried from a Canadian city, to a US hub, then back into Canada. The Canadian concern was founded on the premise that this practice would give the Americans de facto cabotage in the most lucrative of Canadian markets: the east-west mainlines.

In considering the relative positions of the two nations in negotiating toward a new agreement, two facts should be kept in mind:

1. Air Canada and Canadian Airlines International combined are not as big as US Air (the fifth-largest carrier in the United States);

2. Transborder travel accounts for close to 20 per cent of all air traffic in Canada, whereas it accounts for only about 2 per cent of the traffic in the United States.\(^{11}\)
It is worth noting the difference in perception that is evident in both countries regarding the status of the other in terms of market presence or market influence. When American politicians discuss the activities of foreign air carriers operating into and out of the United States, the companies that are invariably mentioned are British Airways, KLM, Lufthansa, and JAL.\textsuperscript{12} In actual fact, the foreign carrier conducting the most aircraft movements into and out of the United States is Air Canada; Canadian Airlines International ranks third on the list, being slightly behind British Airways.

In terms of actual passengers travelling between the United States and foreign countries, routes linking the United States and Canada account for the second largest quantum: 14.9 per cent of total international passenger movements. Only Germany, with 17.7 per cent of total international passenger movements, was a more significant origin/destination than Canada (these figures were for 1987).\textsuperscript{13}

In 1989, US carriers captured 62 per cent of transborder travellers utilising scheduled airline services. 82 per cent of transborder travellers made their journeys using scheduled services. Canadian carriers capitalised on the charter market, enjoying a 96 per cent share of the non-scheduled market.\textsuperscript{14} In general, it is Canadians who do the majority of transborder travelling. In 1988, Canadian travellers accounted for close to 60 per cent of total transborder
It has been widely recognised that there are fundamental realities of demographics and geography that will determine the feasible solutions to the problem. The Canadian market is located within a relatively narrow, 150-mile-wide strip along the Canada-US boundary. Canada has three urban centres having metropolitan populations of over 1 million; the United States has 39 such centers. The climatic regime of Canada is such that Canadians wish to travel to US destinations, particularly in the winter months, to enjoy their holiday times. In contrast, the attractiveness of Canada as a holiday destination for Americans has been relatively poor, especially in comparison to Europe. The United States is the more powerful of the two economies, and should continue to be so ad infinitum. It therefore has business centres that attract travellers from Canadian business interests.

The essential reason for the success of US carriers in the scheduled services market is in their provision of beyond-the-gateway services: US air carriers are able to offer Canadian travellers services to more points in the United States by virtue of the intra-United States networks they have established. A Canadian passenger seeking transport to, for example, Tucson is confronted with the choice of travelling on a Canadian carrier to, say, Las Vegas, and then having to transfer onto a regional carrier to get from Las Vegas to Tucson.
Alternatively, he can fly on a U.S. airline all the way from Canada to Tucson, enjoying the advantages of single-line service.

1.4.2 Efficiency Consequences of Liberalisation

Much research has been done in recent years to investigate what the outcome would be of opening the Canada-US market to transborder competition. These inquiries have suggested that there would be efficiency gains from a more liberal regime. The extent of the efficiency gains varies according to the type of agreement instituted.

The range of alternative models for a new bilateral goes from a new set of route allocations—essentially following the status quo, to a completely open skies policy—full cabotage rights for carriers of both countries. The outcomes of these alternative approaches have been analysed by Chessen and Associates (1989), Gillen, Hansen, and Ramos (1990), Korenic (1990), Oum (1990), and The Ministerial Task Force on International Air Policy (1990). Without exception, these studies have concluded that there should be improvements in efficiency associated with the liberalisation of airline services in North America.

In general, the beneficiaries of liberalisation will be consumers. Some airlines may benefit from liberalisation schemes by being able to
increase their traffic densities due to improving the structure of their route networks. Airlines enjoying economic rents under the current regime should see these rents disappear (or at least be greatly reduced) under the contemplated changes.

Unfortunately for Canadian carriers, in addition to the advantages of geography and demographics noted above, their U.S. counterparts enjoy superior factor productivity, and unit cost advantages. Therefore, those in the Canadian airline industry have urged the Canadian Government to consider their well-being in crafting a new bilateral agreement. Pursuant to this, it has been suggested that there should be a phased approach to implementation of the opening of North American airline competition. The phased approach is aimed at "leveling the playing field" so that Canadian carriers can compete on a equal basis with U.S. carriers.

There are questions that arise with regard to this notion of equitable opportunity for Canadian companies:

1. How to determine what scheme would afford Canadian companies the measure of protection that would allow them to get onto an even footing with American competitors;
2. What time frame should be provided for this objective to be realised;

3. Will this approach be meaningful in the long term.

In order to frame an advantageous new agreement, consideration must be made of several factors influencing the air transport industries of Canada and the United States. These considerations include: an understanding of the ramifications that domestic deregulation has had on the nature of airline operations in both countries; the trend toward global airline networks through inter-airline alliances; the associated issue of foreign ownership (which may inhibit the achievement of an ideal alliance strategy); the direction that other countries are taking with respect to bilateralism and multilateralism.

We now turn our attention to a consideration of the relationships that exist between Canadian and U.S. air carriers with respect to marketing and operational alliances. Their current manifestations are evidence of the strategic conduct of the carriers. Understanding their foundations should therefore be instructive as to showing how the air carriers would react under alternative formulations of a new bilateral agreement.
2. Foreign Ownership of Airlines

2.1 General History of Controls on the Foreign Ownership of Airlines

2.1.1 General Basis for Ownership Controls

As noted in the preceding discussion of the bases of international air transport relations, airlines have historically had a distinct nationality. Such international operation rights as may be exercised by an airline are conferred on the basis of the carrier's nationality. Nationality generally has been determined on the basis of the citizenship of those who substantially own and effectively control the airline.¹⁷

In general, countries have not permitted foreign nationals to own any more than minimal holdings in national air carriers. This practice arose out of concerns from both military and economic perspectives. Nations have viewed air transport as a strategic industry.

In recent years the policy has endured because of the importance that air transportation has assumed in national economies in terms of communication, tourism, and as a realm of high technology employment. Moreover, operating a national airline is a source of pride for most
countries. It is for these reasons that so many of the world's air carriers are owned either partially or entirely by national governments.

Canada and the United States are unusual in this regard. The U.S. airline industry has, since its inception, been operated by private capital. Canada has had strictly privately-owned airlines since 1989--when Air Canada was fully privatised.

2.1.2 The Genesis of Foreign Ownership Controls

The sovereignty of countries over their airspace, and over the operation of aircraft therein, was defined by the Treaty of Paris. This led to national identities being formed with regard to air transport operations. Since a nation had the authority to dictate what operations would be permitted in its airspace, governments sought to ensure that their own nationals would, as much as they were able (which varied greatly from country to country), to reap the rewards of their aviation enterprises. Moreover, state aircraft were employed to promote government policy and to ensure security.

With the end of World War II approaching, the allied powers, and neutral and non-aligned nations met at the 1944 Chicago Convention to
determine a legal regime that would facilitate the pursuit of commercial aviation in the post-war era. Some discussion of provisions concerning ownership and control of airlines occurred at Chicago. The United States advocated that such restrictions be placed on internationally operating airlines. Opposition, largely from Latin American countries, led to no formal agreement being reached as to a standard for these matters at Chicago.

The 1947 Bermuda Agreement between the United Kingdom and the United States established the first formal conditions regarding nationality of ownership with respect to air carriers. The purpose of the requirements for national ownership and control over air carriers was to prevent enemy nations and nationals from being able to overfly and enter the territories of the signatories. This was the beginning of the Cold War era, and the specter of espionage was looming over the minds of British and American negotiators. The potential for surveillance, reconnaissance, and infiltration posed by commercial aviation operations was intended to be minimised by the introduction of the foreign ownership restrictions included in Article 6 of the Bermuda Agreement.18
The substance of Article 6 is as follows:

Each Contracting Party reserves the right to withhold or revoke the exercise of the rights specified in...this Agreement by a carrier designated by the other Contracting Party in the event that it is not satisfied that substantial ownership and effective control of such carriers are vested in nationals of either Contracting Party...

There is no explicit indication that this article was intended to pertain to economic considerations. It has been widely interpreted, however, as so-doing. This interpretation formed a precedent for later bilaterals.

As the Bermuda Agreement has served as the model upon which most bilateral agreements have been based, countries have embraced the interpretation of the Article as a form of economic protection in air transport relations. The result has been the continuing limitation on foreign ownership of airlines. Carriers have had to rely on domestic sources of capital to establish and expand their businesses. This practice is in marked contrast to the internationalisation that has been a feature of corporate endeavour in other industries.
2.2 Foreign Ownership Controls in Canada and the United States

2.2.1 Canadian Foreign Ownership Controls

As mentioned previously, Canada and the United States permit an airline to have no more than 25 percent of total voting equity to be held by non-citizens. The reasons for this limit are slightly different in both countries.

The motivation for the equity limit in Canada is one that has been pervasive in Canadian economic thinking since Confederation: Canada seeks to protect its economic sovereignty through legislation. The development of air transportation legislation in Canada began with the passage of the Trans-Canada Airlines Act of 1937. This Act created the mandate for the growth of a national air carrier. Thus, Trans-Canada Airlines (TCA) was formed.

The purpose of TCA was to provide a Canadian trans-continental airline service. Ottawa was concerned that if it did not act toward this end, that pressure to permit United States carriers to provide such services would prove to be indefatigable. Again, the aim was to ensure Canadian control over transportation services in the country.
2.2.2 Foreign Ownership Controls in the United States

The US experience with the genesis of air transportation was in marked contrast to that of Canada. From the outset, US firms established airline services on a private basis. US firms were not only able to establish viable service within the United States, but some US carriers were first to introduce air transportation within foreign countries---Pan American Airlines being the best example of this.

Though the United States Government has never owned airlines, it did participate in fostering the growth of the air transportation industry by giving mail contracts to early air carriers. In later years, recognising the strategic importance of aviation, Washington took steps to ensure that the US industry could provide the US military with aircraft which could be called into national service to transport men and materiel in times of conflict. The current manifestation of this scheme is the Civil Reserve Air Fleet (CRAF).
Table 1.

FOREIGN AIRLINE OWNERSHIP OF US AIRLINES

<table>
<thead>
<tr>
<th>Foreign airline</th>
<th>% ownership</th>
<th>US carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Canada</td>
<td>24.0</td>
<td>Continental</td>
</tr>
<tr>
<td>Swissair</td>
<td>5.0</td>
<td>Delta</td>
</tr>
<tr>
<td>Singapore</td>
<td>5.0</td>
<td>Delta</td>
</tr>
<tr>
<td>Ansett</td>
<td>20.0</td>
<td>America West</td>
</tr>
<tr>
<td>JAL</td>
<td>20.0</td>
<td>Hawaiian</td>
</tr>
<tr>
<td>KLM</td>
<td>49.0</td>
<td>Northwest</td>
</tr>
</tbody>
</table>

SOURCES: Dempsey, p.294; Erickson, p.35.

The case of the relationship between Northwest Airlines and KLM is particularly noteworthy. KLM has a 49 per cent holding in Northwest Airlines. However, this 49 per cent of equity is not all voting equity; it is voting equity that is restricted to 25 per cent of the total. The issue here centres on relaxation of this restriction because if substantial airline alliances are to be formed, the parties desire that they be given some measure of control over each other's operations. This control is yielded by having a position that allows for their wishes to be directly conveyed to management; this is what voting shares facilitate. It is unlikely that, in most cases, airlines would wish to invest in companies where their desires could not be directly expressed to management.

Given a highly regulated airline industry, and the presence of the threat (whether perceived or actual) posed by the Communist Bloc, the
restrictions on foreign ownership made some sense. Prior to deregulation, the airlines were granted route authority, and applied to the applicable regulatory agency in order to enter new markets and to establish prices in markets being served. The determination of appropriate prices was the responsibility of the regulatory agency—the Civil Aeronautics Board in the United States; the Canadian Transport Commission in Canada. Because these agencies approved fares on a cost-plus basis, any cost increases on the part of the carriers were ultimately incident on the air traveller. This practice was one of the biggest reasons why advocates of deregulation eventually were successful. It was deemed in the best interests of consumers that pricing in air transportation be left to the forces of the marketplace.

Under the regulated price regime, airline profits also tended to be higher than they have been under deregulation. This was the result of monopoly rents stemming from entry restriction. Coupled with the opportunity for strategic allocation of fixed costs to suit the best interests of the company, the ownership of airlines by non-citizens would have been politically unworkable.
2.3 Foreign Ownership Limitations Reconsidered

2.3.1 The Case For Reducing and/or Removing Foreign Ownership Limitations

In this era of deregulation and global airline alliances, the restrictions on foreign ownership of airlines should be re-assessed. Gone are the route awards and concomitant price regulation. Also, the existence of a relatively clearly defined enemy to free enterprise capitalism has disappeared as of 1991. If deregulation has been successful in providing better services to consumers, capital should be given the same sort of freedom to move within the airline industry.

There are two primary reasons why airlines would like to see the restrictions on foreign capital eliminated. The first is that there would be a greater pool of capital on which the air carriers could draw. If domestic investors interested in airline equity have been exhausted, then foreigners wishing to acquire airline holdings would increase the supply of available funds. This would have several advantageous effects on airline finances.

A larger pool of funds would reduce the amount of airline finance that would have to come through debt rather than equity. Currently, many major carriers in the US and both major airlines in Canada have
high debt-to-equity ratios. This exposes the carriers to the whims of interest rate changes to a frightening extent. A debt-financed carrier has less latitude regarding its disposition of cash than does an equity-financed company.

Second, and most importantly, the relaxation of foreign ownership limitations would permit airlines to enter into more "strong alliance" relationships. The current scheme only allows carriers to engage in "weak alliances": they may exchange equity, but only to an extent that does not effectively merge the companies into a single entity. The current regulations prevent non-citizens of either country from having a controlling interest in an airline, regardless of the proportion of equity that is held. There tends to be a direct relationship between the "strength" of the inter-airline relationship and its effectiveness.\textsuperscript{20} The most effective alliances are those where there is substantial equity exchange between the carriers. Foreign ownership restrictions limit the extent to which equity may be exchanged, and therefore preclude the optimal coordination of operations between carriers.

Another reason that foreign ownership restrictions should be changed is that they are being somewhat circumvented through the use of debt issues. While foreign concerns are prevented from owning more than 25 per cent of voting stock in Canadian or American air carriers, there
are no limitations on the amount of debt holdings that a foreign party may have in an airline in either country. By acquiring creditor status, a foreign interest may be able to exercise some measure of control over the decisions of the airline. Since this practice is contrary to the intent of the law regarding foreign control over domestic carriers, some action should be taken to ameliorate this situation.

Two courses of action appear obvious to rectify the problem of the influence of foreign creditors. The first would be to create regulations to deal with the amount of foreign debt that can be assumed by the carriers. This solution, however, would really not serve the interests of the carriers as it would mean that their pool of capital would be that much smaller, hence the interest rates that they should expect to pay for loans would be that much higher.

The second remedy would be to increase the amount of equity holdings that foreign interests are permitted to hold in the airlines.

The point may be raised that liberalising foreign ownership regulation may only serve to put the Canadian industry into foreign hands, while not otherwise being beneficial to Canadians. However, given the current financial status of Canada's two major airlines, it is likely that inaction will leave Canada with an effective air
transport monopoly. This situation will clearly not be advantageous for Canadian consumers--unless one takes the position that it is preferable to endure monopoly for the sake of maintaining Canadian economic sovereignty. It should be stressed that the aim of liberalisation is not to give carte blanche to foreign investment, but rather to allow for a greater percentage of foreign capital to participate in the Canadian industry.

Air Canada and Canadian Airlines International have apparently engaged in destructive competition. A superior cash position has afforded Air Canada the opportunity to attempt to drive Canadian out of business. If Canadian had been earlier allowed to conclude its equity deal with AMR Corporation, in which the latter proposed purchased a 49 per cent share in the company, Air Canada would not have been able to use this strategy successfully due to the substantial financial resources of the American company. This would have obviated the need for the two Canadian carriers to resume "normal competition." While in the short term this would lead to higher prices for Canadian travellers, in the long run prices would be kept lower since competition would be maintained thereby.

Another area of concern is that the increase in foreign influence might lead to a decrease in employment within the airline industry in Canada. Again, the liberalisation being contemplated here is not to
the extent that foreign parties would be given majority control. Furthermore, Canadian employment and immigration law would remain in force, thus limiting the access of foreign labour to airline employments in Canada.

2.3.2 Arguments Against Increased Foreign Ownership

No course of public policy is without its drawbacks. With regard to the increasing of the proportion of equity that foreign investors can hold in domestic airlines, there are issues that arise against pursuing this policy.

There will be at least a perceived loss of control over the nation's air transportation system with an increase in foreign ownership. The fear that arises is that courses of action may be taken by non-national investors that will be beneficial to the investors and/or the corporation which will be adverse to the country. These adversities are usually manifested in the following forms:

1. Restrictions on trade imposed by the parent country.
   The regulations of the investors' home government may prevent the subsidiary from capitalising on certain opportunities considered not in the best interests of the home country. An
example of this might be that the prohibition on United States airlines from serving Cuba would be applied to a Canadian carrier that was majority owned by a US firm;

2. A purely domestic focus. The subsidiary will not compete against the parent company in international markets. The problem with this is that the opportunities for the firm to export its services will be curtailed, thereby eliminating a source of export earnings that would have helped the country's balance of payments position. In the airline industry, this would mean that the foreign-controlled subsidiary would only carry domestic traffic, serving international travellers to the parent company for flights to points abroad.

3. Lack of research and development. This is a concern more related to manufacturing industries. The problem that might surface in the airline industry would likely be in the area of computer reservations systems. However, given the stranglehold that the largest airlines have on this technology, this should be of little concern.

4. Utilisation of foreign management. Foreign-controlled firms tend to populate the top management positions of the subsidiary with nationals of the parent country. This
denies domestic citizens the opportunity to advance to the upper echelons of the organisation. While this is likely to be an eventuality in the airline business, it should be noted that there is already an exchange of top executives between the United States and Canada: Hollis Harris, a US citizen, is the president and CEO of Air Canada, for example.

As with any public policy, there will be costs that accompany benefits. Given the above described drawbacks that can be expected to arise from the liberalisation of foreign investment in air carriers, what must be determined is the net benefits to be obtained from such a liberalisation.

2.3.3 Foreign Investment Liberalisation and Bilateral Air Services Agreements

There is another realm of potential difficulty associated with the easing of foreign equity restrictions on air carriers. This is in the area of the bilateral agreements between countries for airline services. Bilateral air services agreements can be expected to continue to be the framework upon which international air transportation is conducted. Changing the regulations on foreign ownership may compromise the workability of these agreements.
The basis of the bilateral air services agreements is that the signatories' air carriers will be domestically owned and controlled. The agreements stipulate the conditions of services that will be made available, and, in general, which firms may offer these services. They are premised upon the legal notion of equity: the benefits accruing to each party should be comparable. Historically, since the airlines of each nation have been domestically owned and controlled, the benefits arising out of the agreement could be clearly visible between the parties. With the relaxation of ownership restrictions, the allocation of benefits becomes much more difficult to discern.

Critics of liberalising airline ownership regulation are concerned that such relaxation would necessitate a change in the whole way that air transportation agreements are achieved. Professor Paul Dempsey, an air transportation law expert, comments that

"...foreign ownership jeopardizes the integrity of bilateral air transport negotiations between the United States and foreign governments. International routes are traded by nations on a bilateral basis, usually with candid input from their carriers. Multiple allegiances may well jeopardize the integrity of that process."

The adoption of more liberal foreign ownership policies may result in turmoil in international air services relations, as the bilateralism that has prevailed since World War II cannot be sustained if one of its
fundamental premises would be violated. In this case, the premise is that airlines have national identities. With free investment in air carriers, the national identities of these firms may become obscured, and the regime of air transport agreements will have to be reformed to reflect the resultant absence of carrier nationalities. It may be difficult to reconcile the wishes of multinational airline enterprises with those of the government-owned airlines that persist as being the common form of carrier; it may be difficult for countries that wish to pursue liberal ownership regimes and those that desire to maintain national control over their carriers to reach agreement over the protocol that will prevail in international aviation.

2.4 Recent Developments Toward a More Liberal Foreign Ownership Regime

2.4.1 The Scandinavian Air Services Case

Airlines have been owned and controlled on a multinational basis for some years. Scandinavian Airlines System (SAS) has been a successful example of multinational airline enterprise. Incorporated in 1947, SAS has conducted international airline services on behalf of Sweden, Norway and Denmark. SAS has had to contend with on-going squabbles related to contentions of favouritism related to company appointments.
and the distribution of facilities and contracts among the nationals and interests of the three countries respectively. Being administered by the three governments, SAS has had to allocate such benefits between Danes, Norwegians, and Swedes on political bases rather than on strictly economic terms. This has resulted in a certain degree of inefficiency for the airline. Nonetheless, SAS has survived, with credit to its longevity being given to the commonality of culture between the three constituent nations allowing them to overcome problems that have arisen. 22

2.4.2 The "Clinger Bill"

In February of 1993, Congressman William F. Clinger Jr. of Pennsylvania introduced a Bill into The House of Representatives of the Congress of the United States that intends to increase the proportion of voting equity in United States air carriers that can be owned by other than US citizens. This Bill is officially known as H.R. 926 but is commonly referred to as the "Clinger Bill." As of the time of this writing, the Bill has not been enacted into law.

The Clinger Bill, if adopted, would allow for foreign interests to hold up to 49 per cent of the voting equity in an airline company. The requirement that the president, chairman of the board of directors, the
chief operating officer, and two thirds or more of the board of directors be United States citizens that exists under current US law would remain in effect. An escape clause is contained within the Bill in that the acquisition of such equity must be considered to be in the public interest.

There are specified considerations regarding the determination of the public interest. These considerations include the financial condition of the carrier in question, and the effect of the purchase on service, competition, and on employment. The most important considerations are whether the purchaser's home country would permit United States citizens to acquire similar holdings in airlines of its register, and whether a purchasing airline was owned, controlled, or subsidised by a foreign government. The Bill provides that the Secretary of Transportation can disallow a purchase if he believes that these criteria are not met by the interested purchaser. Furthermore, the President can disapprove a purchase if he finds that it is not in the interests of the United States on the basis of national defense considerations.

The motivation for the "Clinger Bill" was provided by United States airlines, who have sought a relaxation of foreign ownership guidelines so as to access a larger pool of investment capital. This has been of particular interest to smaller American carriers, who believe that such
reforms would afford them the needed capital with which to expand their operations. It is also seen as a vehicle through which US carriers can better integrate their operations with partners in other countries.

2.5 Attitudes Toward Foreign Ownership Held by Selected Interested Parties

Various interested groups made submissions to the Ministerial Task Force on International Air Policy. These submissions often included opinions regarding the desirability of increasing the proportion of foreign ownership permitted for Canadian air carriers. Air Canada, Canadian Airlines International, Canadian charter carriers, Canadian tour operators, and several public organisations (including Canadian provincial governments) supported the relaxation of foreign investment limitations. It should be noted that the text of the Task Force Report does not clarify whether these groups support greater foreign ownership in terms of voting equity per se.23 There is, however, clear indication in the Report that most groups wished to see control over Canadian carriers retained by Canadians.

The position of commuter and smaller scheduled carriers in Canada with regard to foreign ownership liberalisation was less clear in terms of their submissions to the Task Force. These groups indicated that
they wished to continue the practice of code sharing. This would allow them to continue to provide connecting services to the major airlines. The most secure and profitable feeder-major relationships on a domestic basis have involved equity exchanges between the carriers concerned. By implication, commuter and other smaller carriers should be expected to support the liberalisation of foreign ownership regulations so as to enter into more secure relationships with major airlines.

Other groups that approached the Task Force expressed opposition to the relaxation of foreign ownership restrictions. U.S. airlines were seen to have been divided on the issue of foreign ownership. Some U.S. firms expressed concerns that national security and labour considerations might be compromised by the allowance of greater foreign ownership. Labour unions indicated that they wished to see the retention of existing ownership and control guidelines. They were anxious that any form of international liberalisation should not compromise the viability of the Canadian airline industry.

As the presumption of nationality of air carriers is a feature of the bilateralism paradigm, any alteration of the norms with respect to nationality of carriers will affect the nature of international air transport relations. The adoption of less restrictive ownership regulations would impact international aviation agreements. The
practice of international airline alliances may be effected by changes to ownership restrictions and nationality requirements. A relaxation of ownership requirements may encourage the development of more extensive international airline alliances—both qualitatively and quantitatively.
3. Alliances Between Canadian and United States Air Carriers

3.1 Airline Alliances in General

In the 1980s, the expansion of air travel led companies in various countries to opt for forming alliances with foreign carriers in order to provide their customers with greater geographic coverage. Airline alliances can take four general forms: marketing and service agreements, pooling arrangements and joint ventures, equity exchanges, and outright mergers. These arrangements are emerging as important means for airlines to secure their futures. They have been important as a means of getting carriers into markets that they had little or no presence in without having to establish ground and flight operations in the particular markets. Alliances allow airlines to offer customers a more comprehensive network of services.

Marketing and service agreements are the simplest form of alliance. The common manifestation of these agreements are the use of code-sharing. Code-sharing involves the use of multiple flight designators for the same flight. For example, Air New Zealand operates a service from Honolulu to New Zealand, the flight designator code of which is NZ 53. Canadian Airlines International also provides service on this route; its flight designation is CP 1037. In fact, the only aircraft actually flying the route is an Air New Zealand DC-10 or B747. Both
Canadian and Air New Zealand offer customers seats on this aircraft, but under different flight numbers.

The purpose of code-sharing is to keep customer loyalty through offering what is apparently on-line service. This provides the traveller with the convenience of single-airline service; there is no need for the passenger to collect his baggage in Honolulu from Canadian, and check it in with Air New Zealand. It diminishes the chance that the customer will miss his connecting flight as the Air New Zealand flight will be held pending the arrival of the Canadian Airlines flight. This makes for better service between Canada and New Zealand. Hence the airline that does not fly its own services to a particular destination is nonetheless be able to bring that traveller to a partner's gate and vice-versa. This increases the attractiveness of the allied carriers to the consumer, who incurs lower information costs in securing passage, and who receives a higher quality of service during the journey. Code-sharing also has the advantage that it allows the partner carriers to dodge the penalty of computer reservations system (CRS) bias: code-shared flights are listed on CRSs as though they were single-line services. 28

A more sophisticated form of airline cooperation is the pooling arrangement. The scheme sees two or more airlines coordinate their flight operations, and share revenues therefrom according to some fixed
formula. If the airlines also share costs, the arrangement is termed a joint venture.29

Pooling arrangements and joint ventures are superior to marketing and service agreements in that the relationship between the carriers is more firmly defined through extensive contractual obligations. The coordination of the participating airlines’ schedules on a system-wide basis distinguishes the pooling arrangement or joint venture from simpler marketing arrangements. While under more rudimentary agreements there would be some consideration given (as indicated above) to making sure that connecting passengers make their flights, pooling arrangements and joint ventures involve planning services on a network-wide basis so as to maximise service quality and revenues, whilst minimising service costs.

Canadian airline firms are currently involved in pooling arrangements with foreign air carriers. Canadian and United States carriers have not entered into pooling arrangements for North American services.30

A still stronger form of alliance is the equity exchange.31 This form involves the acquisition of voting shares by an airline in another airline. Frequently, there is a two-way exchange of shares. The holding of such securities makes for a semi-permanent relationship between the carriers. It also reduces the risk associated with
exposing details of the firms' financial, operational, and technical data to each other as the possibility of defection is lower. The exchange of equity increases the stakes that the partners hold in each other's fortunes. In turn, this promotes the depth of cooperation between the carriers with respect to honoring their contractual obligations for the delivery of services to the consumer.

Finally, mergers are the strongest form of airline alliances. The merger is simply the complete combination of two or more companies into one entity. The advantage of the merger is that it brings all of the assets of the merging companies under the control of one management group. Thereby, the merged entity is able to coordinate flight schedules, fare structures, discount and seat-management strategies, and take advantage of the general benefits of larger corporate size as it affects capital acquisition, and the breadth of market-presence.

While the merger is the strongest form of corporate alliance in general, in international air transport a problem arises in that countries reserve the rights to operate domestic, and Third and Fourth Freedom airline services to companies that are native to the country. The definition of a national carrier may vary from country to country, but largely ownership of the enterprise determines nationality. If the merger was contrived by the purchase of a national carrier by a foreign carrier, the ultimate nationality of the resulting entity would be that
of the purchasing carrier. This would preclude the resulting company from operating the aforementioned services with respect to the acquired company's country without some change to the air law of that country.

3.2 Barriers to Airline Alliances

Currently, there are limited alliances between Canadian and US air carriers. These are confined to marketing and service agreements, and, to a lesser but growing extent, some degree of equity exchanges. The restrictions on foreign ownership of airlines in both countries have prevented substantial equity arrangements from being contrived between carriers from opposite sides of the border.

3.2.1 Regulatory Barriers

In Canada, the legal regime pertaining to all transportation modes is the National Transportation Act (1987). Under the terms of the Act (NTA), a Canadian transportation enterprise must be owned by a Canadian citizen to be eligible to receive an Operating Certificate in Canada. The Operating Certificate grants the holder the legal right to conduct a transportation business in Canada.
A stipulation of the National Transportation Act requires that an airline be owned not more than 25 percent by foreign nationals. The requirement has precluded the entrance by Canadian carriers into substantial equity exchanges with foreign companies.

United States law is similar in substance to that in Canada. Under Section 101 of the U.S. Federal Aviation Act, a United States airline may not be more than 25 percent owned by non-US citizens; this is part of the definition of "fitness" in the "fit, willing, and able criteria" used to determine whether an applicant for a licence will have one granted. Again, this restriction applies to the voting stock of the airline. Foreigners may hold more than 25 percent of total equity, but the effective control of the airline must remain in the hands of American citizens. This includes the provision that the president of the company, and more than half of the board of directors must be United States citizens.

3.2.2 Corporate Charters as Alliance Barriers

Beyond the restrictions imposed by federal legislations, there may be other legal requirements that would prevent an increase in foreign participation in domestic airlines. For example, Canadian Airlines International has a charter condition that limits any one shareholder
to holding not more than 10 percent of the voting stock in the airline's parent company, PWA Corporation.34

3.2.3 Competition Legislation

Beyond those regulations that are concerned directly with the conduct of air carriers, the firms are subject to the guidelines of general competition legislation. In both Canada and the United States, competition legislation exists to protect consumers from the effects of inter-firm conduct that is intended to enhance the profitability or market power of companies that are arrived at by means considered outside the realm of fair business practices. In the United States, this body of regulation is known as Anti-Trust Legislation; in Canada, it is termed Competition Legislation.

Competition legislation is particularly concerned with business activities that are considered to reduce competition. Forms of anti-competitive conduct that are applicable to the air transportation setting include predatory pricing, refusals to deal, price fixing, and mergers between firms that are intended to lessen competition. With respect to airline alliances, the questions of price fixing and mergers are likely to arise.
Where two firms dominate a market, they can be tempted to collude with respect to pricing, setting fares at above competitive levels in order to either eliminate smaller competitors from the market, or for the purpose of rent extraction, or for both reasons. Where these firms are alliance partners, they will be able to execute such collusion more readily; where they are strongly allied through equity exchanges they can do so with little or no possibility of defection.

3.2.4 Two Cases in Canada-United States Airline Alliances

Recently, these restrictions on foreign ownership have been challenged--on both sides of the border. In Canada, AMR Corporation of Texas, the parent company of American Airlines, sought to acquire a 49 percent interest in Canadian Airlines International. The deal would have given AMR effective control of Canadian. In order to close this deal, the provision of the National Transportation Act with respect to foreign ownership limitations would have to have been waived by Cabinet Order.

One of the conditions of the deal was that Canadian would withdraw from the Gemini reservations system. However, Canadian was under contractual obligation to remain in the Gemini system until 1999. 35 Gemini was 33.3 per cent owned by Air Canada, which was determined not
to allow Canadian to abrogate its obligations to Gemini. Ultimately, Canadian was permitted by the Canadian Competition Tribunal, to exit from the Gemini system.

The aforementioned chain of events brought Canadian to the verge of financial collapse. The solution was to have the Canadian Government bail out the troubled carrier: Canadian Airlines received $50 million in loan guarantees from Ottawa. Further loan guarantees were provided by the provincial governments of Alberta and British Columbia. The federal government justified this action on the premise that, had it not done so, Canadian would have failed and Canadian consumers would have been left with a virtual airline monopoly in the guise of Air Canada.

In December of 1992, Canadian announced that it had reached an agreement with AMR which would see the latter acquire a 33.3 per cent economic interest in the airline. This holding would give AMR a 25 per cent voting share in the company as the result of its investment of $246 million. This arrangement avoided the problem of the foreign ownership limitations of the NTA. However, the problem of the Gemini situation persisted until the spring of 1994 before finally being overcome.

Canadian's rival has also been active in trying to form alliances
with US air carriers. Air Canada purchased a substantial interest in Continental Airlines of Texas in November of 1992. The deal saw Air Canada acquire a 27.5 per cent share of Continental. Because of the restrictions on foreign ownership, Air Canada netted only 24 per cent of voting stock in the arrangement.

With the alliance with Continental, Air Canada achieved two competitive advantages. Continental has a fleet of 330 aircraft--in comparison to Air Canada's livery of 120. The deal therefore gives Air Canada some measure of influence over these aircraft. In addition, Continental has major hub operations at Newark, Cleveland, Houston, Denver, and Honolulu. With coordination of schedules, this alliance gives Air Canada the ability to send the traveller on-line from any Canadian city to virtually any United States destination. Moreover, Air Canada obtained influence over U.S. markets, and in access to U.S. airport assets without the need for dealing with nationality complications and/or securing operating eighth freedom rights.

In both the case of Canadian Airlines and AMR Corporation, and of Air Canada and Continental, there was the desire to have a more substantial equity exchange between the companies. Because of the limitations on foreign ownership in both the United States and Canada, a larger equity position was not attainable for either Air Canada or AMR Corporation.
Airline alliances have been shown to increase both the value and convenience of air travel for consumers. It has been asserted that while economies of scale are absent from airline operations in terms of costs, they are present in terms of these demand-side forces. The freedom to form alliances is therefore important for air carriers in that they enhance the competitiveness of the individual firms through better accommodating consumer demands. With deregulation on each side of the border, mergers have led to an increase in the concentration measures of the industries in both Canada and the United States. However, it has been demonstrated that, although industrial concentration has increased, the performance of the industries has tended toward more competitive outcomes in terms of fare levels and service quality. The practice of alliance formation has therefore been beneficial for the participating airlines, and for the consumers of their services. It is likely that a change in foreign investment policy would extend these benefits, on a continental basis.
Footnotes to Chapter Two

1. Diederiks-Verschoor, p.11
2. Diederiks-Verschoor, pp.40,41
3. Diederiks-Verschoor, p.41
4. Transport [1991c], p.2
5. Transport [1991c], p.3
6. Chesen, p.24
7. Transport [1991c], p.109
8. Transport [1991c], p.27
10. Korenic, p.13
11. Korenic, p.19
12. House of Representatives, p.35
13. Korenic, p.20
14. Transport [1991c], p.37
15. Oum [1990], p.17
16. Windle, p.37
17. Balfour, p.256
18. Dierikx, p.119
19. Dierikx, p.121
20. Patterson and Tretheway, p.5
21. House of Representatives, p.298
22. Gidwitz, p.10
23. Transport [1991a], pp.80-101
24. Transport [1991a], p.86
25. Transport [1991a], p.92
26. Transport [1991a], pp.95,96
27. Hadrovic, p.193
28. Hadrovic, p.209
29. Diederiks-Verschoor, p.17
30. Transport [1991b], p.47
31. Patterson and Tretheway, p.8
32. Feldman [1989], p.30
33. Patterson and Tretheway, p.5
34. Patterson and Tretheway, p.6
35. Wings [#4,1993], p.8
36. Wings [#4,1993], p.10
37. Wings [#4,1993], p.8
CHAPTER THREE.

MODELLING THE INDUSTRY: THE STRUCTURE-CONDUCT-PERFORMANCE PARADIGM

1. Introduction

To systematically analyse an industry, a framework is needed that will allow the interrelationships between causes and effects to be identified and evaluated. A model provides the means by which such analysis can take place.

The structure-conduct-performance paradigm is a model that has been widely used in the economic analysis of industrial structure. The model was pioneered by Edward S. Mason of Harvard University during the 1930s. It has been further refined by the efforts of Joe S. Bain, Richard Caves, F.M. Scherer and others. It has gained widespread acceptance with policy analysts, largely due to its basis on neoclassical microeconomic theory, particularly with regard to its emphasis on Pareto optimality, to rate policy alternatives.¹

The model will be described in this section, and will subsequently be used to analyse the character of the airline industry in general, and the nature of existing and contemplated transborder air services between Canada and the United States in particular.
The basic premise of the structure-conduct-performance paradigm is that industries have a characteristic structure, determined by technical and regulatory realities, that leads participating firms to follow certain modes of conduct, which in turn result in performance characteristics. The model seeks to describe an industry in terms of its structure, conduct, and performance, and considers the linkages between these modules. Its purpose is to both identify and describe the causation of existing phenomena, and to provide a logical means of prediction of what results can be expected from alterations to any of the modula of the industry.

2. The Fundamental Principles of the Structure-Conduct-Performance Paradigm

2.1 Structure

2.1.1 General Elements of Structure

The structure of an industry refers to the productive activities of firms that participate in an industry, and the distribution of output between these firms. There are five major determinants of the structure of an industry: technology, the horizontal and vertical
integration of firms, the concentration of the firms, barriers to entry into the industry, and governmental regulation.\(^2,3\) There are also linkages between these determinants.

Technology refers to the physical characteristics of the processes by which firms offer their goods or services to the consumer. It encompasses both the realms of production and distribution. The nature of the productive and distributive processes determines the firms' cost structures. Cost structure in turn dictates the number of firms that may successfully participate in the industry.\(^4\)

Important concepts related to the issue of technology are economies of scale, economies of scope, and economies of density. Economies of scale arise when per-unit costs decrease as total output increases. Economies of scope exist where a single firm, producing different types of outputs, can do so at lower cost than could several firms, each specialising in a particular type of product.\(^5\) Economies of density are related to network operations. Density economies exist where per-unit costs decrease as more units are moved over a given network.\(^6\)

The extent of inter-firm integration is a significant aspect of industrial structure.\(^7\) There are two types of such integrations: horizontal and vertical. Horizontal integration involves the partial or complete merger of two firms in the same industry. For example, the
merger of two airline companies is a horizontal integration. Vertical integration occurs when a partial or complete merger is concluded between firms that have a supplier-customer relationship. An example of this type of integration would be the purchase by an airline (in this case, the customer) of an airport terminal facility (in this case, the supplier). The usual objectives of integrations are to capture economies of scale, scope, or density, or to create barriers to entry.8,9

Barriers to entry have a large influence on industrial structure.10 Entry barriers may be ex ante: for example, where the production technology favours natural monopoly. Entry barriers may be ex post: where the incumbent firms in the industry engage in conduct aimed at deterring entry.

If entry barriers are significant, the market may be effectively closed to new competition from would-be entrants. This can permit existing firms to continue to earn supra-normal profits, to the detriment of the consumer. Alternatively, entry barriers may also give rise to the inefficient production processes. Firms producing behind entry barriers may be sufficiently protected from market discipline that their production processes incur higher-than-necessary costs. This is termed "X-inefficiency," and represents a loss to society in that these resources would have been more greatly valued in other
Finally, government regulation can have a decided impact on the structure of an industry. Regulation is generally divided into two categories: technical and economic. Technical regulations are primarily aimed at ensuring the physical safety of workers and consumers. This form of regulation is applied to most if not all industries, regardless of market structure. Economic regulation is generally applied to industries in which some form of market failure exists. Industries characterised by monopolies, monopolistic competition, and dominant firm situations are example cases. The objective of economic regulation is to move the industry toward a more socially desirable level of production, output, and distribution. Economic regulation is usually concerned with the specific areas of industrial activity: pricing, entry and exit, mergers and acquisitions, collusion, advertising, and research and development. It is economic regulation that is of relevance to the discussion of the effect of government regulation within the context of the structure-conduct-performance paradigm.

2.1.2 Five General Types of Market Structures

In a purely competitive market structure, the firm faces a perfectly
elastic demand curve for its output. In short, the firm may sell all that it can produce, at a price that is determined solely by players outside of the firm: consumers and other firms. Purely competitive industries are typically those having low fixed costs both in absolute terms and in terms of their relation to marginal costs. This technology gives rise to ease of entry (due to low absolute fixed costs), and to the absence of economies of scale (due to the relationship between fixed and marginal costs). Firms are able to easily enter the industry to capture what profits are available. Equilibrium is achieved when the firms participating are all earning a normal return on investment. Any further entry would result in all firms earning sub-normal returns.13

A natural monopoly situation arises when it is possible for only one firm to supply the market economically. Natural monopolies are characterised by having a high proportion of fixed costs relative to marginal costs. The minimum efficient scale of production is such that only one firm can reach this scale, given the existing demand for the good or service. Entry by other firms would result in a duplication of fixed costs, and therefore a rise in the per unit cost to a level above that which is socially optimal. Therefore, it is socially beneficial to have only one producer, thus the term natural monopoly.14

There are two general types of intermediate market structures: the
oligopoly and monopolistic competition. Oligopoly arises in industries where there are relatively significant entry barriers, such as high fixed costs. In these industries, average costs are not such that a natural monopoly should prevail, as a small number of firms are able to produce at the minimum efficient scale. Instead, a limited number of suppliers can economically participate, selling substitutable, differentiated products to consumers. Because of the small number of suppliers, the oligopolists are aware that their production quantity and pricing decisions will influence the conduct of rival firms.\textsuperscript{15}

Monopolistic competition is the fourth form of industrial structure. It is somewhat similar to oligopoly, yet differs in that the firms in this structure do not base their quantity and price decisions on the expected reactions of competitors. Instead, they presume that competitors will not alter their behaviour in response to the firm's conduct. Products are considered to be close substitutes for each other. There are usually relatively lower proportions of fixed costs in these industries compared to those in oligopolies, and the number of participating firms is likely to be higher. Firms will face downward-sloping demand curves since other firms' products are easily substituted for their own.\textsuperscript{16}

The final form of industry structure is the contestable market. A contestable market is one in which competitive outcomes are achieved
through the threat of competition rather than the presence of actual competition. While a lone firm may supply the market, it is limited in the extent to which it can extract economic rents because of the threat of entry by other firms. Thus, even in the absence of actual competition, competitive pricing and output are realised in contestable markets.\textsuperscript{17}

Contestability is founded upon the premise that the cost of entry will determine the behaviours of both incumbent firms and potential entrants. Entry barriers are any costs that would affect an entrant but which incumbent firms can avoid. The degree of contestability of a market varies inversely with the extent of entry barriers facing potential competitors. A perfectly contestable market is one in which there are no entry barriers. The perfectly contestable market mimics the market performance of competition, since, even if there is a lone firm supplying the market, the ever-present threat of entry disciplines that firm's conduct.\textsuperscript{18}

2.2 Conduct

2.2.1 Basic Elements

The conduct aspect of the paradigm concerns the behaviour of firms in
their production of goods or services. Conduct refers to the decisions firms make with regard to the scale and methods of production, pricing policy, distribution methods, geographic coverage, advertising and research activities, and other behaviours. It encompasses the strategies that firms pursue with respect to agreements and relationships with other firms, and research and development. Conduct is considered primarily influenced by the structure of the industry. There may also be performance-related influences on conduct.

Industrial structure forms the boundaries within which the firm's decision-makers must operate. For example, if the firm is participating in a purely competitive market structure, the management of the firm may not presume to be able to establish the price of the firm's output(s); the marketplace has absolute control over the price that the firm may receive. The degree of latitude that the individual firm has in self-determination of its conduct tends to vary directly with the extent of concentration of the industry: if sufficiently concentrated, competitors may react directly to changes in the firm's conduct. If the firm anticipates such reaction, its conduct will be thereby influenced.

As basic decisions, firms must decide what type of goods or services they will offer to the marketplace, what geographic areas they will operate in, and what technology to employ in the production process.
In choosing to enter or remain in the business of providing a good or service, a firm must consider the probability of its successful participation in that pursuit. This decision is influenced by the existing firms in the industry, and by the characteristics of the demand for the product being consumed.

Existing or incumbent firms may have certain advantages that pose entry barriers to would-be competitors. In addition to the natural barrier to entry that may be posed by economies of scale, incumbent firms might have other advantages such as patents, name recognition, superior relationships with suppliers (often yielding cost advantages), or "regulatory capture," in which incumbent firms have the ability to influence government regulators to disallow entry.22

There are characteristics of market demand that also influence the structure of an industry. The most important of these characteristics are buyers' price elasticities of demand, the substitutability of other products, and the rate of growth of demand.23

The own-price elasticity of demand for a good or service may be particularly significant in dictating conduct. Own-price elasticity determines the price-cost margin or profit-revenue ratio:24

\[
P - MC = \frac{1}{P e}
\]
As the elasticity of demand \((e)\) increases, the price-cost margin \((P-MC)\) decreases. This limits the extent to which firms may affect prices in the pursuit of profits. In turn, this influences the conduct of firms within an industry.

2.2.2 Objectives of Firms

The objectives of the firm ultimately determine the firm’s conduct. In general, there are three objectives that are considered the driving forces behind the conduct of enterprises: profit maximisation, revenue maximisation, and growth maximisation.\(^{25}\)

Classical economic theory presumes that profit maximisation is the aim of the activities of the firm.\(^{26}\) Under this credo, the management of the firm is primarily concerned with maximising the return to the shareholders’ investment. The firm should be able to enhance the wealth of shareholders to an extent superior to the returns that the investors would be able to earn by choosing alternative investments. Those firms having the best profit performance should attract more investment capital, and thereby be able to sustain their operations and be able to grow in their industry. Rewards accrue to the firms which are able to use their assets most efficiently, as they will earn for
their shareholders the most advantageous rates of return. In turn, this will draw assets into the most efficient companies, giving the most productive uses of society's scarce resources.

The idea of the firm as a profit maximiser has its foundation in classical economics. An essential premise of the classical school of economic thought is that the firm would be participating in a purely competitive market structure. A feature of this structure is that all firms are considered to be price takers, selling undifferentiated products, to consumers whose buying decisions are motivated by their desire to maximise utility through making purchases based on rational evaluations of their choices in a marketplace having perfect information regarding all available alternatives. The emergence of the monopoly and oligopoly forms of market structure necessitated a change in the theory of the firm. In these market structures, the firm has the ability to effect prices, differentiate its products, influence consumer tastes, and possibly bar entry by new firms. Moreover, the emergence of the large corporation, particularly in the realm of the aforementioned market structures, as the common form of enterprise saw the separation of ownership and control of the firm. With the increased dispersion of shareholdings in large corporations, the management of such companies often became somewhat less inclined to pursue the classical goal of profit maximisation, and instead turned to the objectives of revenue (or sales) maximisation, and growth
maximisation.27,28

The objectives of revenue maximisation and growth maximisation lead to conduct that is notably different from that which results from pure profit maximising strategies. Firms pursuing revenue or growth maximising goals will tend to sacrifice short-term returns for shareholders in anticipation of longer-term rewards for the firm, or, according to more cynical analysts, for the short-term rewards of the firm's executives, whose remuneration and/or non-monetary utility is often directly related to total revenue or the rate of growth.29,30

The less cynical explanation for revenue or growth maximisation is that oligopolists recognise that there is often a direct relationship between market share and long-term viability. The pursuit of revenue and growth maximisation strategies is usually associated with firms operating in oligopolistic market structures.

It has been demonstrated that a revenue maximiser will produce a higher level of output than will a profit maximiser.31 The purpose of this higher level of production is to yield greater revenues that can be used to expand capacity, which in turn is expected to lead to greater returns in the long run. The fundamental goal is to maximise the net present value of the firm's profits in the long term. Therefore, evidence that an oligopoly is pursuing objectives other than profit maximisation is that the industry is characterised by having
current sub-normal returns and higher-than-expected output. Thus, conduct is shaped by the objectives of the firm.

In order to achieve their objectives, firms have a variety of actions that they may take. In general, these actions can be categorised as pricing behaviors and non-pricing behaviours. Pricing behaviour refers to the setting of prices for the firm’s outputs; it is generally meaningful in the context of market structures in which the firm is a price setter. Non-pricing behaviour refers to actions taken by the firm in other aspects of marketing such as product differentiation, selection of geographic areas in which to compete, and advertising. It also encompasses the realm of inter-firm agreements related to the foregoing marketing activities.

2.2.3 Pricing

Pricing behaviour is particularly important in the analysis of industrial conduct since it affects the quantity demanded in the marketplace, and the distribution of surpluses between consumers and producers. The difference between price and marginal cost is of particular interest because this affects the returns to, and hence the viability of, participating firms; these, in turn, may influence the nature of the structure of the industry. Important aspects of pricing behaviour are the nature of the demand curve confronting the firm, the
expectations that the firm has with respect to the responses of competitors to its price changes, and the extent to which the firm can practice price discrimination.32

The conduct of firms in the pricing arena is heavily influenced by the structure of the industry in which the firm is operating. The ability of firms to establish prices varies along the spectrum of market structures. Firms participating in purely competitive market structures, wherein a large number of competitors each supply a small proportion of the total output offered to consumers, will have generally little, if any, latitude in establishing the price of their product(s). At the other extreme, the firm that is the lone seller, the monopolist, will have absolute control over what price prevails in the marketplace. Intermediate market structures exist wherein firms may have some degree of control over the prices of their output. The principal determinants of the extent of this control are the substitutability of the products, and, most importantly, the firm's expectations regarding how its competitors will react to changes in the price(s) of the firm's product(s); the number of competitors is considered to be of little importance.33 Where a firm participates in a purely competitive market structure, it may sell all of its output at a market-determined price; its demand curve is perfectly elastic. The firm is termed a "price taker" because it cannot influence the going price by altering its supply of product to the marketplace. The firm
could choose to sell at a lower-than-market price, but rational firms will not do so because they could earn larger revenues for the same incurred cost by selling at the market price. Conversely, they could raise the price of their goods or services, but since other firms supply perfect substitutes, any such price increase will result in zero sales for the price-raising firm.

The monopolist will, if free to do so, price so as to be able to sell that level of output that will maximise profit. It accomplishes this by setting its price such that, the difference between total revenue and total cost is maximised. This price is associated with the level of output at which marginal revenue (MR) equals marginal cost (MC).

Two problems may arise in monopoly pricing. If the industry is such that average costs are declining over all possible quantities of output, it will not be possible for the monopolist to price at MR = MC, since this would mean that total revenue (TR) would be less than total cost (TC). This situation occurs in cases where market demand is such that minimum efficient scale cannot be reached, even by the monopolist. The other problem in monopoly pricing is that in seeking to maximise profits, the monopolist will constrain output to maintain the profit maximising price. There is a social welfare loss in this situation as there are consumers who would be willing to pay the marginal cost of additional output, yet who are unable to acquire the
good or service due to the behaviour of the monopolist. To address these difficulties, some form of second-best pricing may be sought by the monopolist (in the case of the declining cost situation), or be imposed by regulators (in the attempt to reduce welfare loss in the second scenario).

Firms operating in intermediate market structures are faced with relatively more complicated pricing decisions than are pure competitors or monopolists. The complication arises in these industries since the firm, in establishing its price(s), recognises that its competitors will react, altering their prices accordingly. If a monopolistic competitor or oligopolist decides to reduce its price, for example, it should enjoy short term increases in sales. However, its rivals, experiencing a loss of sales as the result, are certain to take similar action once they become aware of the first firm’s actions. Where "price wars" ensue, firms may be financially damaged.

Price wars can mean downward price spirals that may see prices fall to where \( P < MC \), and firms experience negative economic returns. While price wars may be a boon to consumers in the short run, over the longer term, sustained losses may drive more marginal firms out of the industry. If the number of failing firms is substantial, the surviving firm or firms may, once the shakedown period is over, emerge with sufficient market power to charge price premia due to decreased...
competition. The deliberate pursuit of this strategy is known as predatory pricing, and is specifically prohibited by legislation in many jurisdictions, including Canada and the United States.36

In contrast to the problem posed by price wars, oligopolists may agree to raise prices/restrict output as a group, thereby to capture the benefits normally associated with monopolists. Such pricing agreements are known as collusive price agreements. If oligopolists can collude successfully, they can sustain monopoly prices, and will maximise the total revenues of the firms as a group. The same social welfare loss that is associated with monopoly will result. Such collusive agreements necessitate voluntary restraints by the individual firms on the amount of output that each offers to the marketplace. The group of firms engaging in such behaviour is known as a cartel.37

Cartels tend toward instability. Cartels suffer from the unavoidable presence of temptation for individual firms to cheat on the cartel by offering more output to the marketplace than has been allocated to it by the agreement. Alternatively, the defector may cheat by price-cutting: offering the good or service in question to marginal customers, who are not consuming at the cartel price. Such cheating behaviour is known as defection. The defector is motivated in this direction because it recognises that it can earn greater surplus by selling more than its agreed upon share at the cartel price. Since all
cartel members face this temptation, it is almost inevitable that one will take this course of action, not necessarily because it wishes to break the cartel, but because it believes that others are planning to, and it wishes to not be left "holding the bag," so to speak. 38

A final aspect of pricing behaviour that is significant to the firm is price discrimination. Price discrimination refers to the practice of charging different consumers different prices for the same product, based on differential valuations placed on the product by different groups of consumers. 39 Price discrimination shifts the distribution of surplus away from the consumer and toward the producer. Surplus is the difference between what it costs to produce the good or service, and what the consumer would be willing to pay for it. 40

The most advantageous form of price discrimination, from the firm’s point of view, is that in which each individual consumer is charged exactly what he is willing to pay for the product in question. In this way, the firm is able to capture the entirety of the available surplus. 41 While ultimately desirable, the application of perfect price discrimination is complicated by the requirement that the firm be aware of each consumer’s valuation of the product. It is more commonly practicable for firms to only be able to price discriminate on a group-by-group basis.
In actual practice, the firm accomplishes price discrimination by identifying groups of consumers having common traits in terms of their willingness to pay for the firm's product. Successful price discrimination has two requirements: the groups must have different price elasticities of demand for the product; there must be a means of preventing the resale of the product by members of the group being charged the lower price to people in the group being charged the higher price.42

2.2.4 Non-Price Behaviour

Non-pricing behaviour refers to actions taken by the firm in other aspects of marketing such as product differentiation, selection of geographic areas in which to compete, and advertising. It also encompasses the realm of inter-firm agreements related to the foregoing marketing activities.

Firms also pursue activities in the non-price realm in order to further their interests. These activities can be classified into three general areas, in keeping with the standard concepts of marketing. These areas are product, place, and promotion. The product concept focuses on the qualitative attributes of the good or service being offered, which extends to innovation and invention. Research and
development activities come under the purview of the product classification. The place aspect of conduct refers to where the firm decides to offer its goods or services. Place covers both the geographic component of where the product is offered, and the terms of conditions for sale of the goods or services. Finally, promotion encompasses those activities that are aimed at building and sustaining consumers' awareness of, and loyalty to, the firm's products. The prevalent aspect of promotion is the firm's advertising behaviour.

The quality of the firm's product(s) is important to the fortunes of the firm in the marketplace. Where a firm faces competition, any deficiency that is observed in its products will make the firm lose market share to its competitors. Once a poor perception is created in the minds of consumers regarding a firm's goods or services, it can be difficult to win back customers. This forces firms to be vigilant with regard to the satisfaction that the consumer receives from consumption of its products. If competitors are observed to be offering better goods or services, the firm must be prepared to respond in kind, or endure losses of sales. The on-going attempt to sustain market share, and/or to win customers away from competitors influences the firm's conduct.

Conduct relating to changes in the qualitative attributes of a firm's products depends upon two primary factors: the sensitivity of
consumers to the qualitative aspects of the product(s), and the expected reaction of competitors to such changes. Where consumers are expected to react quickly to qualitative improvements to a product, there is, by implication, relatively high demand elasticity facing the firm. If the product can be improved, the firm may enjoy increased sales as the result of qualitative improvement. The question arises as to the extent of consumers' reactions to the quality improvement. Where consumers are more sensitive to quality, the magnitude of the elasticity can be expected to be relatively great in contrast to situations where consumers exhibit what may be termed "threshold" behaviour. Threshold behaviour means that the consumer will only react to relatively significant changes in product quality. The firm can be expected to incur additional costs in improving product quality, thus raising the marginal cost of the output. Therefore, the marginal revenue, determined by the elasticity of demand for the product, must be weighed against the addition to marginal cost associated with the proposed qualitative improvement, in order to determine the desirability of effecting such improvement to product quality. The optimum expenditure on qualitative improvements to the firm's product(s) is identified by that expenditure that equates the marginal cost of the change(s) to the marginal revenue that is expected to result from providing the improved product(s). For the firm that is starting from a condition of equilibrium (ie. its current behaviour is such that MR = MC for the product line), the change in the product must
incurred no greater change in MC than the anticipated increase in MR that will result from offering a superior product.

The place aspect of marketing concerns the firm's behaviour with respect to where and how it offers its goods or services to the consumer. There are two dimensions to the where aspect of place behaviour: there is a geographic concept and a demographic concept. In terms of geography, the firm may choose to offer its products on a wide distribution basis, or may elect to concentrate on a specific area. Similarly, the firm may choose to offer products that have a broad appeal, or may concentrate on groups of consumers that have particular needs or preferences. The determinants of the firm's place strategy are the opportunities presented by the marketplace, the financial resources of the firm, and the firm's objectives.

The how aspect of place behaviour concerns the methods of distribution that the company uses to get its products to the consumer. A firm may act as its own agent, selling directly to the consumer, or may employ the services of other parties to do so. In some cases, the other parties are companies that are at the same stage in the production process with whom the firm may enter into agreements aimed at achieving synergies. In other cases, the other parties are players at other levels in the distribution chain.
Finally, there is the non-price behaviour of firms in terms of promotion. Promotion is aimed at building and sustaining customer loyalty to the firm. The chief means of promotion is advertising. Advertising performs two essential functions: it informs and persuades. Informational advertising is that which relates to consumers the attributes of the firm's products. This form of advertising helps the consumer to identify those products that will meet their needs from amongst the many available options in the marketplace. Persuasive advertising attempts to convince the consumer that there are benefits to be obtained from the product that are outside of the strictly performance realm.

It should be noted that the relationship between the cost of pursuing any non-price activity and the benefits that are expected from so-doing (as described in the section concerning product quality differentiation), hold true for the other realms of non-price behaviour. The ultimate consideration is whether the activity will contribute more to the firm than the cost the firm incurs in following the particular behaviour.

2.3 Performance

2.3.1 Elements of Performance
In evaluating the performance of an industry, there are two major perspectives that should be considered: the allocative efficiency of the industry, and the technical or productive efficiency of the industry. Four additional considerations under the subject of performance are the technical progress of the industry, the quality of the products being offered, and the opportunities for employment and investment within the industry. The performance of an industry is rated in terms of its success in meeting society's objectives with respect to the above-described dimensions.

2.3.2 Allocative Efficiency

Allocative efficiency refers to the extent to which society's scarce resources are appropriately distributed in order to meet the needs of consumers. The fundamental premise of allocative efficiency is that product prices should directly reflect the real costs required to bring the goods or services to the marketplace. Such prices reflect the value that society places on the resources being devoted to the production of the products, so that consumers can, by their purchasing decisions, signal producers what goods and services are desirable to
produce. Prices should include a normal rate of return on the capital resources that have been devoted to the industry, thereby signaling investors what industries should be expected to grow, hence will benefit from the addition of capital. To the extent that prices deviate from reflecting actual resource costs, society's scarce resources will be misdirected, thus allocative efficiency will be sub-optimal.45

The important concept regarding allocation is that of Pareto efficiency. An allocation is considered Pareto efficient if one party's well-being can only be increased at the expense of another party. In other words, no one may be made better off without someone else being made worse off. Output restrictions in an industry where there is a degree of monopoly power have the effect of maintaining price above marginal cost. This means that there are some consumers who would be willing to pay the cost of additional output, but who are unable to acquire the product because of the strategy of the producer(s). This represents a deadweight loss to society: neither the producer nor the consumers is capturing the benefits that additional output would provide. If output was expanded to meet the demand of these additional consumers, with the condition that the producer(s) could retain their level of profitability, no one would be made worse off, while the added output would make these marginal consumers better off. Therefore, since for monopolies, P > MC, Pareto efficiency is not
Another dimension of allocative efficiency concerns the allocation of society’s scarce resources to alternative production activities. Ideally, resources should be so allocated so that the value that the consumer places on the product (P) should match that which is placed on alternative uses for its constituent resources (MC). In competitive industries, this criterion is automatically satisfied, since price is equivalent to marginal cost: \( P = MR = MC \). However, in monopolistic market structures, where \( P > MC \), allocative efficiency problems arise: price does not reflect the true opportunity cost of the resources devoted to the production of the good or service; fewer resources are devoted to this production than are warranted by the pattern of consumer demand.\(^47\)

### 2.3.3 Productive Efficiency

The performance of an industry in terms of its productive efficiency will be influenced by structure and conduct. Productive efficiency requires that the production process be such that no alternative process exists that would provide the same level of output at lower total cost.\(^48\) Competitive industries necessitate that participant firms employ the most efficient production process available; those
that do not soon find that their marginal cost of production exceeds the industry average. By definition, such a firm will not be competitive in the market, since the efficient firms' marginal costs will determine the market price. Conversely, where the firm has some degree of market power, the force of competition as a promoter of productive efficiency may be reduced or, in the extreme, wholly absent. Two cost increasing factors may come into play.\footnote{49}

First, the firm will not be motivated to make the most efficient use of its factors of production. Managers will not have competitive pressures upon them to optimise the conversion of resources into finished products. The resulting excess of costs over what could be otherwise achieved in an efficient production process is termed "X-inefficiency."\footnote{50}

The second form of productive inefficiency associated with monopolistic industries is that of rent seeking. Rent seeking involves the devotion of resources into pursuits aimed strictly at strengthening the market power of the firm.\footnote{51} Manifestations of this behaviour are many: product differentiations having no qualitative basis, but rather serving to make entry more difficult for potential competitors; investments in capacity expansion that are not needed to meet peak demand variations, but rather that serve to discourage entry by allowing immediate output increases in the face of incipient
competition. Regardless of the vehicle used to accomplish a strengthening of the firm's market power, the effect is to increase the total cost of producing any level of output. In turn, this increases the marginal cost of the product, leading to increased prices, resulting in yet further reductions of the quantity supplied to the marketplace. Rent seeking both transfers surplus from consumers to producers, and contributes to the quantum of deadweight social loss.  

2.3.4 Other Aspects of Performance

Other performance considerations are notable. Industries should be evaluated on the basis of the progressiveness of the production and distribution processes they employ. An industry that is performing well in other respects cannot be considered a good performer if it is not taking advantage of the most effective means of bringing its products to the consumer; such an industry would not be optimising the use of scarce resources. Important dimensions of industrial progressiveness are the extent to which producers innovate to increase productivity, and the extent to which they introduce new products to the marketplace.  

Industries may have their performance with regard to product quality. It should be such as to provide the consumer with the maximum value for
his expenditure. An industry producing poor quality products can hardly be considered a good performer. Net value benefits are associated with product improvements that are non-linearly related to product price. When product quality increases, this represents an increase in the utility that the consumer enjoys from the consumption of the product. Coupled with a less-than-linear price increase, the consumer's utility is further increased due to the income effect: his money income can purchase a greater level of satisfaction than previously available.

Conversely, the industry can have negative effects on society's utility. An industry producing "bads" as well as goods and services will adversely affect social welfare. Pollution in its many forms is the most evident example of an industry's poor performance outside of the realm of product characteristics. Where an industry imposes costs upon society that are not explicitly recognised as part of the money cost of production, negative externalities are said to have been created. Negative externalities have the effect of reducing the utility of affected parties. In considering the performance of an industry, its generation of negative externalities must be taken into account.

Finally, an industry should provide opportunities for interested investors and labour to participate therein. Industries that are
Footnotes to Chapter Three

1. Reid, p.11
2. Needham, pp.1,2
3. Reid, p.12
4. Scherer, pp.88,89
5. Bonsor, p.22
6. Gillem et.al. [1985], p.107
7. Scherer, p.70
8. Needham, p.198
9. Scherer, pp.69,70
10. Reid, p.15
11. Scherer, p.405
12. Brander, p.28
13. Scherer, pp.12,13
14. Scherer, pp.79,519-521
15. Brander, pp.82,83
16. Needham, pp.56,57
17. Brander, p.80
18. Morrison and Winston [1987], pp.53,54
19. Needham, p.1
20. Reid, pp.26,27
21. Needham, pp.121,122
22. Brander, p.232
23. Scherer, p.5
24. Waterson, p.3
25. Needham, p.3
26. Galbraith p.85
27. Galbraith, pp. 40-41, 81-82
28. Thurow, pp.32-39
29. Galbraith, pp. 79,85
30. Needham, p.5
31. Needham, pp.10-14
32. Needham, pp.55,64-66
33. Needham, p.61
34. Needham, p.251
35. Scherer, p.200
36. Brander, p.203
37. Scherer, p.158
38. Waterson, pp.47-52
39. Needham, pp.68,69
40. Sassone and Schaffer, pp.73-80
41. Brander, p.205
42. Kraft et.al., p.117
43. Needham, p.93
44. Reid, p.13
45. Brander, pp.16-18
Footnotes to Chapter Three (cont.)

46. Needham, pp.237-239
47. Brander, pp.77,78
48. Needham, p.231
49. Scherer, p.405
50. Waterson, p.13
51. Brander, p.49
52. Brander, p.50
53. Scherer, pp.4,5
1. The Structure of the Air Transportation Industry

1.1 Technological Structure of the Industry

1.1.1 Flight Equipment

Airlines are in the business of transporting passengers and cargo between different points on the earth's surface. Airlines utilise different types of aeroplanes in order to accomplish such movements. While airlines may differ in the scope, and scale, of the services they provide, the technological nature of their operations is greatly similar.

The dynamics of aircraft operations are such that there are economies of distance for airline flights. These economies exist because aircraft have two operating costs that apply to every flight: the cost of getting the aircraft from the ground to cruising altitude; the cost of cruising at that altitude from the point at which it is attained to the destination. Cruise altitude is that altitude at which the aeroplane operates most efficiently in terms of its fuel consumption,
speed, and range. The greatest expenditure of energy, hence fuel, is made to accelerate the aircraft to takeoff speed, thence to climb to the cruising altitude. Therefore, it is most economical to have an aircraft cruise as far as possible once the given cruising altitude is achieved. These fundamental operational characteristics are common to all different classes of aeroplanes.

Aeroplanes may be classified according to two dimensions: their maximum gross take-off weight (GTOW), and their form of powerplant. Three classifications exist regarding GTOW: light aircraft have GTOW of 12,500 lbs. or less; medium aircraft have GTOW of between 12,500 and 300,000 lbs.; heavy aircraft have GTOW of more than 300,000 lbs. Two general types of aircraft propulsion systems also exist: piston engines with propellers, turbine engines with propellers, and pure jet engines. (Since we are concerned in this paper with airline operations, the following discussion will relate only to those aeroplane classes used in such operations.)

Airlines generally utilise medium and heavy aeroplanes in providing their services. An exception is the use of light aeroplanes by feeder airlines. Since the 1960s, airlines have used turbine-powered aircraft types almost exclusively. Turbine powered aeroplanes include both pure jets, and turbo-props. The suitability of a class of aeroplane for a given operation depends on the stage-length of the flight and the
volume of traffic that is expected.

For long stage-lengths, all airlines use pure jet aircraft types. Pure jet types include turbojets and turbofans. Turbojets are the original jet engine form. They provide power by ingesting and compressing air at the front of the engine, using this air to oxidise kerosine fuel, and exhausting the resultant gases rearward to produce forward thrust. Turbofan engines are similar to turbojets, but with the addition of a ducted fan that propels a sizeable amount of non-combusted air rearward utilising the power generated by the turbojet component of the engine. Turbofans are more powerful, more fuel efficient, and quieter than turbojets. As the result, all new airliners have these engines as they afford airlines cost savings and fewer operational restrictions related to noise externalities.

Turboprop systems employ a small turbojet engine, whose power is transmitted, via a drive-train, to turn a propellor. Turboprops are used to power aeroplanes at the smaller end of the medium size-class of aircraft. Turboprops have the advantage of being more fuel efficient than pure jets for operations conducted at lower altitudes. Turboprop aircraft types also require far less runway length for take-off and landing. They have therefore have been the mainstay of airline operations on relatively short stage lengths (those of 600 miles or less), and/or on routes serving airports having relatively short
Assembling a proper fleet of aeroplanes is important to the short- and long-term costs of the airline. The airline must have the right number and types of aircraft to meet the needs of both its existing route structure, and the anticipated opportunities that will be presented in the future. There are three general methods of aircraft acquisition: outright purchase, capitalisation, and leasing.

The purchasing of aircraft has strategic implications for the firm. The acquisition of aircraft from manufacturers involves lengthy lead times; as much as two years may elapse between the ordering of an airliner and its delivery. The price of modern airliners is extremely high: the market price of aircraft in the A310/B767 size range is upwards of $50 million. The nature of the relations between airlines and airframe manufacturers is such that large purchase orders from loyal customers make the manufacturers inclined to offer their products at a lower per unit price in contrast to smaller orders from less frequent customers.

Outright purchase was more common in the earlier days of airline operations. The astronomical cost of contemporary airliners almost completely precludes one-time cash payments, as an airline would need to have cash reserves on the order of scores of millions of dollars per
aircraft purchased. The only way in which modern airlines make outright purchases of flight equipment is through the equity acquisition of a competitor or subsidiary. Other methods of asset financing are more likely.

The most common method of financing is through what is known as an equipment trust. The equipment trust is a form of chattel mortgage, usually held by large banks or insurance companies. Sometimes equipment trusts are provided by the manufacturers themselves—a means of inducing sales of their product line. Manufacturers may finance aeroplane purchases by accepting payments during the course of the production period. This payment scheme is known as the progress payments method. Installments are made at different stages of the production process. The stages might be as follows: on signature of the contract; upon fuselage completion; on completion of the inner and outer main planes; at receipt and mounting of the engines; on completion of the control surfaces; on final completion. A simpler version sees the carrier make payments at six month intervals.

Besides the issue of payment schemes, the nature of the contractual agreement between the airline and the airframe manufacturer is a salient fleet planning consideration. A carrier wants to negotiate contracts with manufacturers which allow for conditional changes such as inflation or failure of the product to meet performance
specifications. For this reason, the inclusion of options along with firm purchases has come into vogue in the industry.

Options spread the risk of aircraft purchase over airlines, manufacturers, and leasing organisations. Airlines benefit from these arrangements due to relief from capital payments for aircraft that have turned out to be unusable in the short term. They also have the advantage of being able to acquire marginal aircraft, that have turned out to be needed, in less time than if they had to place firm orders. Options allow a carrier to be flexible and conservative at the same time.

Leasing of aircraft is an alternative means of acquisition. Lease aircraft are available from various organisations including manufacturers, airlines, and leasing companies. Leasing is advantageous in that it is likely that an aircraft can be obtained from a lessor more quickly than from a manufacturer. This allows for faster fleet reconfiguration than could be accomplished through purchasing. Aircraft may be acquired through capital leases or operating leases. Capital leases are essentially a form of borrowing to purchase the aircraft. As such, the lessee assumes the risks associated with ownership. Conversely, operating leases are analogous to the long-term rental of flight equipment. Most North American airlines have opted for operating leases.
Due to the volatility of the demand for airline services, and the enormous cost of purchasing flight equipment, the riskiness of aircraft ownership is transferred from the airline to the leasing company through the leasing on an operating lease basis. The disadvantages of operating leases are their cost premia (charged to reflect the risk being assumed by the lessor), the possibility that, in times of general expansion of airline activity, there may not be sufficient lease aircraft available to meet all airlines' needs, and that the aircraft's salvage value cannot be recovered by the airline. That lease payments are higher than would be the capitalisation payments for owned aircraft means that the leasing airline must be extra vigilant regarding its cash flows during periods of recession.

Leasing of flight equipment has grown in popularity. There are numerous advantages to leasing: it eliminates the need to borrow; it provides the lessor and lessee an investment tax credit; it allows the airline to avoid hefty progress payments (which can be as much as 20 per cent of the purchase price); it acts as a hedge against inflation; it reduces the risk of technological obsolescence. Leasing is most likely for companies having higher earnings since they stand to benefit the most from the investment tax shields. The aircraft are usually leased over a term of from 4 to 18 years, with 10 to 12 year leases being most common.
Leasing has become so popular that some airlines own but a small fraction of the aircraft that they operate. Table 2 shows the fleets of major United States carriers as they were composed on December 31, 1990. Leased aircraft accounted for 51 per cent of the total flight equipment in their use at that time.

Table 2.

EXTENT OF LEASED AIRCRAFT IN U.S. CARRIER FLEETS

<table>
<thead>
<tr>
<th>Company</th>
<th>Total A/C</th>
<th>Leased A/C</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>America West</td>
<td>924</td>
<td>70</td>
<td>76</td>
</tr>
<tr>
<td>American</td>
<td>552</td>
<td>315</td>
<td>57</td>
</tr>
<tr>
<td>Continental</td>
<td>340</td>
<td>245</td>
<td>62</td>
</tr>
<tr>
<td>Delta</td>
<td>444</td>
<td>186</td>
<td>42</td>
</tr>
<tr>
<td>Northwest</td>
<td>342</td>
<td>130</td>
<td>38</td>
</tr>
<tr>
<td>Southwest</td>
<td>106</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>TWA</td>
<td>207</td>
<td>135</td>
<td>65</td>
</tr>
<tr>
<td>United</td>
<td>462</td>
<td>203</td>
<td>44</td>
</tr>
<tr>
<td>USAir</td>
<td>456</td>
<td>209</td>
<td>46</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,001</td>
<td>1,535</td>
<td>51</td>
</tr>
</tbody>
</table>


1.1.2 Computer Reservations Systems

Aside from aircraft, the most important technology internal to the airlines is that of the computer reservations system (CRS). Computer reservations systems are the means by which airlines distribute their products to the consumer. They also permit the airline to optimise the allocation of seats on board a particular flight so as to maximise
revenue. Airlines may have their own CRS, or they may utilise the CRS of another airline for a fee. Airlines sell tickets directly through the CRS as operated by the airline’s own personnel, or customers can obtain tickets from a travel agent that has access to the CRS via a computer terminal on the travel agency’s premises.

1.1.3 Air Transport Infrastructure

There are two infrastructural technologies that are important determinants of airline conduct which are external to the carriers: airports and air navigation systems. Airports and airways are infrastructures provided usually by governments.

Airport technology has significant influence over the conduct of airline operations. Important aspects of airport technology are airfield capacity and terminal facilities. The most important technological factor in airport operations is the capacity of the airfield. Airfield capacity is usually expressed as the number of aircraft movements that the airport’s runways can accommodate per hour. An aircraft movement is a take-off or landing conducted by an aircraft. An airfield is considered to be at its optimum capacity when the number of aircraft movements is such that the average departure delay per aircraft is four minutes. At many airports, airfield capacity is
insufficient to accommodate all of the flights that airlines would like to operate at a given time. Therefore, a means of capacity rationing must be employed in response to the air traffic congestion that would occur if carriers were free to schedule as they wished. There are two options for capacity rationing that can be used to limit the congestion problem: peak-load pricing and capacity allocation. Canadian airports use a form of peak-load pricing; American airports usually employ the allocation method.

There are three methods that may be practiced for capacity allocation. The first method is allocation by airport committees. These committees are composed of representatives from the airport operator(s) and the air carriers. The airport operators establish the number of aircraft movements that will be permitted, then the representatives from the individual carriers decide on the allocation of traffic between the airlines. The efficiency of this method is contingent upon two factors. The first, that the carriers involved will recognise the need to find allocations that are acceptable to all participants. Implicit in such an allocation is the individual carrier's awareness of the valuation of each time slot to its own operations and to the operations of the other companies. By trading-off relatively lower-valued slots, the airline hopes to be able to obtain slots that it values more highly from other carriers.
The second method is allocation by lottery. This scheme sees slots randomly assigned to carriers through a lottery event, after which time the carriers are free to exchange their allotted rights in an open market. The rights remain in force until the time of the next lottery, when a completely new round of lottery allocation and re-allocation through market exchange takes place. The advantage of the lottery system is that the valuation of the slot times is made explicit through the amounts that carriers actually are observed to pay to acquire desired times. In turn, this allows the airport operator to determine the optimum number of slots to offer, thus more closely matching capacity to actual demand.

The third possibility for slot allocation is the auction method. Under this plan, the slots are offered at auction to the carrier that is willing to pay the most for the particular slot time. The auction scheme is similar to the lottery method in that the allocation of rights remains in effect until the next auction occurs, and in that the companies are free to exchange rights after the initial distribution has taken place.

The alternative to the capacity allocation methods is the use of peak-load pricing. The basis of peak-load pricing is that the user will be charged a different amount for the use of the facility depending on the time, day, and season that the slot time is associated
with. Peak-load pricing is intended to keep the demand for the airport's capacity at acceptable levels by ensuring that only those operations that truly value the slot time are able to get access to it. The price of a particular slot is determined through an iterative process, homing in on the market value of the slot. Peak-load pricing is more efficient than direct capacity allocation methods.⁹

There are several advantages to the use of peak-load pricing: users that value the slot times at least as much as the price can always get access at that time; the airport operator does not have to guess at the appropriate amount of capacity to ration; strategic behaviour is eliminated with respect to access rights; the revenues from the sale of slots accrues exclusively to the airport operator, allowing the airport to better cover operating costs.

A physical solution to the capacity problem would be to build additional capacity at existing airports, or to construct wholly new airfields. In a simple world, construction of new facilities would be undertaken when the net present value of the additional capacity met or exceeded the cost of construction. Aside from the problem of the substantial funding required for such projects, the decision as to whether or not to build (or expand) capacity is complicated by the fact that the required land for construction or expansion must be available, the total social costs of the airport plan must be considered, and the
possibility of strategic behaviour on the part of interested parties must be taken into account.

A study by the United States General Accounting Office concluded that most large- and medium-sized airports in that country have sufficient land available on which airport capacity expansion could be undertaken. In Canada, the congestion-prone airports at Toronto and Vancouver also have available land for capacity expansion. A larger obstacle to airport capacity expansion is posed by interest group opposition.

Airport planners in both Canada and the United States have encountered strong opposition to expansion plans. This opposition comes largely from community groups who are concerned about the addition to the noise pollution (and, to a lesser extent, road traffic congestion) that will accompany increased flight operations, and from environmentalists who are concerned about negative effects on wetland areas, water courses, and urban atmospheric conditions. The true cost of airport operations should include the social cost borne by third parties in terms of noise, road congestion, and other negative externalities. Determination of these costs complicates the evaluation of the true net present value of airport projects, and the studies that are required to estimate these costs slows the process of airport expansion. Nonetheless, there is legitimacy to these considerations,
so they must be factored into project evaluations.

A further complication to the determination of the welfare effects of airport projects is the strategic behaviour of incumbent airlines. Since these companies are often closely involved with airport operators and planners they can influence these groups through both direct and indirect means.

The technology of airways and approach aids influences the operations of air carriers. Airways are the highways of the air. They are navigation tracks, provided by high-frequency (HF) and very-high-frequency (VHF) radio signals, that guide an aircraft from point to point during the en route phase of the flight. There is a finite capacity to the airways system due to the need to maintain separation between aircraft, and due to the workload on air traffic controllers. Therefore, aircraft operating on highly travelled routes may experience delays due to the holding procedures that are necessary to maintain aircraft separation.

Where there are insufficient terminal facilities airlines may also be prevented from offering services. The biggest problem related to terminal facilities is that of gate unavailability. To load and off-load passengers, an airline must have access to gate facilities. Unavailability of gates will not permit service to be offered. In the
United States, the structure of the organisations responsible for airport facilities allocation is such that, as described previously, incumbent airlines have influence over the dispensation of gate and service counter facilities. Once again, the behaviour of incumbent carriers with respect to control over facilities allocation may prevent entrant carriers from accessing an airport. The nature of airport administrative structures in the United States makes this an issue of particular concern in that country.

1.2 The Supply of, and Demand for, Airline Services

The market for airline services shapes the conduct of the air carriers. On the supply side, the industry can be analysed from two perspectives: at the macro level, or at the micro level. The macro level involves looking at the industry on a national (or international) basis. The micro level involves looking at specific airline markets, or city pairs. Decisions taken at the micro level tend to determine the structure of the industry at the macro level.

1.2.1 The Supply of Air Transport Services

Dealing first with the supply of airline services, the output of an
airline is measured in terms of the number of available-seat-miles (for passenger operations), or the number of available-ton-miles (for cargo operations). The supply of available-seat- or ton-miles offered by a carrier in a particular market determines the cost of operation in that market.

The choice of a particular aeroplane type to use in a specific market depends on the distance between the origin and destination airports, and the expected volume of traffic. In general, a large aircraft will have a lower cost-per-seat-mile-produced than will a smaller aircraft. This is due to the distribution of fixed or constant costs versus variable costs. The costs of providing service on a particular flight may be divided into flight costs and terminal costs.

Fixed flight costs include the cost of the flight crew, maintenance (which is directly related to the amount of time the aircraft flies), and the fuel that is required to get the aeroplane, at operational weight, from the flight origin to the destination. The variable costs of a flight operation include the costs of the fuel required for the payload (passengers and/or freight), and the cost of meals for the passengers.

Terminal costs are those expenses incurred to get passengers and cargo onto and off of the aircraft. They include ticket processing (at
the airport counter), baggage handling, ground crew expenses, and aircraft servicing in terms of the cleaning of the aircraft interior.

The nature of operational costs makes it more economical for airlines to service a given market using a larger aircraft. This is because, of the above-described costs, only the flight costs vary with aeroplane type utilised, for a given volume of traffic. For a flight of given distance, the same number of people (or cargo) may be transported more cheaply using larger aircraft types because of the enhanced labour productivity associated with larger aircraft. The size of the flight crew varies less than proportionately with aircraft size, therefore the labour expense associated with a smaller airliner versus a larger one is largely similar. Since a larger aircraft has more seats to spread the labour expense over, it will usually have a lower per-seat labour cost. As the labour component accounts for a large proportion of total flight cost, savings in this area translate into lower total costs per available-seat-mile.

The other cost factor militating in favour of the utilisation of larger aircraft is the relationship between fuel requirements and aircraft size. In general, the larger the aircraft, the lower the per-seat-mile cost of production. A complication to the costing of a particular airline service is posed by the need to allocate the non-joint common costs and overhead costs associated with air
transportation. Since modern aircraft carry both passengers and cargo on most flights, some allocation of the fixed flight costs must be made between different classes of passengers and freight. The nature of all allocation methods for such common costs is that arbitrariness is inevitable. The same holds true for the allocation of overhead costs. Airline overhead costs include those related to administration, advertising, and ownership charges for flight and ground equipment. In costing any particular flight, the question of how to properly allocate these costs has no definitive answer.

Turning now to the macro perspective on the supply of airline services, the determinants of the cost level of the airline’s overall operations warrant discussion. Of particular interest in this regard are the possibilities of various economies of airline structure. Inevitably, the question of whether or not there are economies of scale in the provision of airline services arises as the starting point in such discussions.

Economies of scale would exist in air transportation if it could be shown that the cost of supplying an available-seat-or ton-mile of capacity decreases with the increase in the number of points served in the airline’s route network, or the available capacity offered by the airline. Many analysts have considered the question of scale economies in air transport; they invariably conclude that constant
returns to scale exist in air transportation. This implies that any airline should be able to serve a particular market equally as cost-efficiently as any of its rivals, regardless of the size of its overall network.

Research into airline economics has shown that there are other economies that exist in airline operations: economies of scope and economies of density. Economies of scope are present in air transportation because of the contributions to total revenue that result from carrying different types of payloads on a given flight. Passengers on the same aircraft may come from different consumption groups, having different willingnesses to pay for the same flight. An airline offering differentiated services on the same aeroplane can serve these different consumer groups more cheaply than could multiple airlines specialising in each type of service. Moreover, the carriage of air freight by what are primarily passenger airlines results in scope economies because both passenger and freight revenues combine to cover flight costs. In summary, airlines can offer available-seat- or ton-miles more cheaply by performing services of different qualitative characteristics on the same flight.

If per-unit costs are found to decrease with an increase in the amount of capacity offered within a given network, economies of density are said to exist. Economies of density arise because the fixed costs
of ground operations and overhead expenses associated with servicing a
given number of cities in an airline network can be spread over more
traffic units as the volume of traffic increases. Economies of density
have been identified as having sizeable magnitude, and are found to
persist up to relatively large traffic volumes. 16

An important cost consideration rooted in the technological nature of
the provision of air transport services is the absolute perishability
of the airline product. Once the airliner leaves the departure gate, any
un-sold capacity on the flight is permanently lost to the airline.
Airlines can therefore not afford to be flying unused capacity around
if they are to operate at minimum cost. Efficiency dictates that the
airline take two measures to avoid this form of inefficiency: to
schedule aircraft of appropriate capacity for the route segment; to
optimise the load factor for the particular flight. Capacity is stated
in terms of the available-seat- or ton-miles offered in a market. Load
factor is the ratio of revenue-passenger-miles or revenue-ton-miles to
available-seat-miles or available-ton-miles. In order to determine the
appropriate aircraft type and load factor for a particular service, the
airline must consider the demand characteristics of the market to be
served.
1.2.2 The Demand for Air Transport Services

The demand for airline services is shaped by influences both internal and external to the firms, and by influences on both industry-wide and market-specific bases. The fundamental nature of the demand for airline services is that it is a derived demand. People undertake air travel in order to get to where they want, or need, to be; cargo goes by air for essentially the same reasons. Air transportation is characterised as being the fastest, and one of the most reliable, means of transport. Passengers and shippers desiring these qualities therefore select air transportation.

The pricing of airline services affects the quantity of those services that will be demanded. Airline services are normal goods in that the quantity of services demanded is negatively related to the price charged for the service. In Canada and the United States, airlines are free to establish any prices they wish for their services—with the exception of services in remote areas, for which fares may be disallowed.17

Airlines can also influence the level of demand for their services. They can accomplish this by changing the qualitative nature of the services they offer. Qualitative dimensions include the flight frequency, flight scheduling, and in-flight service. Of these, flight
frequency and flight scheduling are most important. Travellers and shippers choose air transportation largely because of their valuation of time. While the speed of aircraft clearly is superior to that of any other form of conveyance, what really matters to the customer is the total time that must be devoted to transportation. Total transportation time includes time spent en route and at the terminal, but also includes schedule delay time. Schedule delay time is the difference between the time that the passenger wishes to commence the journey and the time that the flight is actually scheduled to depart at. By scheduling flights at more opportune times for the customer, the airline decreases the schedule delay time for the consumer, prompting an increase in demand for its services. A means of reducing schedule delay time is increasing the frequency of flights. When there are more departure times to choose from, the customer will select that flight that minimises his schedule delay time. Increasing flight frequency may also divert traffic from other modes (particularly automobiles) for relatively short distance trips, thereby increasing the demand for air services.

Other factors influencing the demand for a carrier’s services that are controllable by the firm are in-flight amenities, on-time performance, related travel services (eg. rental cars, hotel arrangements), and corporate image (eg. safety record). Inter-airline alliances also affect demand. Such arrangements offer the traveller a
service that is substantially similar to on-line travel. They increase the number of points effectively served by the carrier, while reducing the terminal time component, and the probability of baggage loss, associated with inter-line travel.

While in the previous section it was asserted that economies of scale are absent from airline operations in terms of cost savings, it is generally conceded that there are demand-related benefits accruing to airlines that have large route networks. Consumers recognise that the large carrier can offer services to a greater number of destinations than can a smaller rival. There is a greater probability that the large carrier can accommodate the customer's travel plans without the need for inter-lining than can a smaller airline. There is also a reduction in the information costs required to secure passage since a large-network airline can be expected to be able to meet the customer's needs more readily. Finally, a large carrier's frequent flier program is more attractive to the consumer than is a smaller airline's. These demand-related characteristics confer advantage to large carriers.

There are significant determinants of demand that are outside of the ability of the firm to control. Foremost among these exogenous influences is the consumer's disposable income. Air travel is substantially a luxury good: increases (decreases) in consumer income result in greater-than-proportional increases (decreases) in the amount
consumed. Oum and Gillen (1983) found that the income elasticity of demand for airline services was in the range of 1.6 to 2.5. Therefore, airlines face dramatic shifts in demand in response to the changes in consumers' disposable incomes.

More predictable sources of demand variation in air transportation are hourly, daily, and seasonal variations. Hourly variation occurs because travellers wish to depart from, or arrive at, locations at particular times of the day. Because of the synchronisation of many (primarily economic) activities, the demand for flights is not constant over the day. Hourly demand tends to peak at between 7 and 9 a.m., and then again between 4 and 6 p.m. in major markets having substantial volumes of business travellers. Daily variation refers to the shifts of demand that are related to the day of the week. Seasonal variation refers to the shifts of demand associated with different times of the year. Seasonal variation arises largely because of the changes of destinations for vacation travellers: people like to journey to warm destinations in the winter, and to temperate climes in the summer.

Other sources of demand shifts are noteworthy. Publicity surrounding airline accidents may negatively affect the level of demand for airline services. Such incidents are likely to affect the general level of demand for air travel. In similar fashion, episodes of terrorism involving airline flights will deter people from flying, particularly
on routes where such situations are most likely. Geographical factors may also impact the demand for air transportation on specific routes. Increases (decreases) in business opportunities at a given location will likely lead to increases (decreases) in the demand for travel to that location. Changes in demographics will also influence the level of demand for services to/from particular points. Moreover, increases in population, whether of a city, region, or country, are likely to increase the level of demand for air transport services involving that area.

Naturally, for an individual firm, a significant external influence on demand is posed by the actions of rival firms. Price cuts, and service improvements in terms of amenities, on-time performance, flight frequency, and scheduling will all have adverse effects on the quantity demanded of the firm’s services.

Finally, the level of demand will be affected by the availability of substitute means of transportation. Short-range air services are particularly vulnerable to substitution, as alternate transport modes such as automobiles, trains, and ships can potentially provide services that are comparable when considered in terms of the total-travel-time/price trade-off.

Demand elasticities influence the structure of the air transport
industry. Own-price, cross-price, and income elasticities are all important factors determining the both the overall, and market-specific, structures of the industry.

Own-price elasticity is a measure of the responsiveness of quantity demanded to a change in the product's price. Research examining the elasticity of demand for air transportation has shown that air fares have a decided impact on the volume of demand. Oum and Gillen (1986) determined that, in Canada, a 10 per cent drop in price would increase demand by 11 to 13 per cent. This implies a price elasticity of demand for air transport services of 1.1 to 1.3. Moreover, Oum, Waters, and Yong (1992) assembled the results of 13 different studies of air transport demand elasticities, and state that the majority of such estimates are in the range of 0.4 to 2.0 (in absolute value). The width of the foregoing interval is accounted for by differences in elasticity between different groups of consumers of airline services.

Air travellers can be generally categorised into two groups: business travellers and vacation travellers. Business travellers are expected to be less price-sensitive than vacation travellers because they are undertaking non-discretionary trips, and because the person travelling does not pay for his own ticket. Oum, Waters, and Yong report common elasticities for business travellers of between 0.65 and 1.15, with the majority being somewhat less than unity. Conversely, vacationers'
elasticities of demand are substantially higher. This group of travellers is making discretionary voyages, and will fly only if the price of air travel fits their budget. Most estimates of demand elasticity for this group are greater than unity: in the range of 0.40 to 4.60, with those above 1.4 being common. 24

Turning to the matter of income elasticity of demand, it has been affirmed that there is considerable volatility in the relationship between income and the quantity of air transportation consumed. Oum and Gillen (1983) estimate that income elasticity of demand for air transportation is in the range of 1.6 to 2.5. In general, business travellers are seen to have lower responsiveness to changes in income than are vacation travellers. Oum and Gillen estimate the income elasticity for the former group to be 1.5, as opposed to 2.1 for the latter. 25

Finally, the cross-price elasticity of demand for an airline’s services should be considered on two dimensions: the effect of a change in the price of some competing mode’s services; the effect, for an individual firm, of a change in a competitor’s services prices. Where competing modes are concerned, cross-price elasticity becomes an issue in short stage-length markets. The consumer may be confronted with a choice between air travel and other modes only to the extent that air transport’s qualities of travel time and cost are comparable to that of
alternative modes.

Where the responsiveness of demand facing the individual firm is affected by changes in the prices of competitors' services there can be differential elasticity effects expected depending on the direction of price changes. Since airlines provide basically indistinguishable products, there should be substitution of one's services for another if price differentials appear on the same route.

Airlines should face kinked demand curves for any given market. If an airline raises its fares in a market, other companies should not be expected to follow suit, as they could capture more traffic by maintaining their existing fares. Conversely, if an airline drops its fares, it should expect that its rivals will do the same. Thus, demand for the individual airline's services in a particular market should feature relative inelasticity with regard to price decreases, and relative elasticity with regard to price increases.

1.3 The Regulatory Structure of the Industry

A significant determinant of the structure of the airline industry is the character of governmental regulation concerning the industry. Canada and the United States are somewhat unique countries in that
their air transport industries feature economic deregulation. Since 1978 in the United States, and 1984 in Canada, the relevant governments have had a hands-off policy with regard to the economic affairs of air carriers.

1.3.1 The Era of Regulation

Prior to deregulation, the economic affairs of the airlines were closely monitored and largely controlled by government agencies. These agencies were the Civil Aeronautics Board (CAB) in the United States, and the Air Transport Committee (ATC) in Canada. The CAB and ATC regulated which carriers could serve which routes, and determined the fare structure that would prevail in each market. Additionally, the regulators could award subsidies, and had to approve any mergers and/or inter-firm agreements.26 Flight frequencies were not directly controlled by the CAB. In Canada, the ATC could specify not only the frequency of flights to be provided, but also the type(s) of aircraft that were to be operated, the number of intermediate stops that had to be performed, and the types of traffic that could be carried.27

Entry and exit from markets was directly controlled during the regulation era. The authority to operate services on a route was granted to a carrier on the basis of "public convenience and necessity
The onus was on the entrant carrier to show that the travelling public would benefit from the inception of its services. Incumbent carriers, who had substantial influence with the regulatory agencies, could often block such entry. Airline firms were generally unable to construct efficient route networks because of entry and exit restrictions. They were also often required to provide uneconomic services on low-volume routes on the basis of cross-subsidy from more profitable markets. Inefficient resource allocation was inimical to this structure of air transport services.

Under this regulatory regime, the responsible government agencies determined fare structures. These were based on the cost structures of the participating airlines in a given market. Qualitative aspects of services were also dictated by regulatory agencies. This led to high prices for the consumer because of the absence of competitive discipline on fare levels, and the fact that airlines could pass cost increases on to the ticket buyer quite readily. Major beneficiaries of this structure were airline owners (especially those with holdings in airlines having better-than-average efficiency), and airline labour (whose wage demands could be accommodated by passing the resulting cost increases to the consumer).28

The regulation of prices prompted airlines to engage in service competition. Services that were provided are considered to have been
of a higher quality, in terms of in-flight service, direct flights, and aircraft types, than was actually valued by consumers at large. This high level of service quality increased the cost of providing air transportation. Since regulated prices were based on the average cost of service provision in the particular market, unnecessarily high service quality reinforced the high price for air travel. This discouraged travellers who would have been prepared to pay to fly at a price dictated by a lower level of service quality; regulated high prices prevented these types of services from being offered.29

Travellers also had to endure a substantial degree of inter-lining: flying on more than one carrier from point of departure to destination. Inter-lining was necessary because often the airline that served the departure airport did not have authority to carry the passenger to the ultimate destination. The air traveller had to contend with circuitous routings, terminal delays due to the need to collect his baggage from one airline and transfer it to another, and schedule delays due to the lack of coordination of flight times between carriers. Coupled with the monopolistic nature of air fares, these time costs presented the passenger with a significant overall cost of air travel.

The foregoing factors influenced the concentration of the airline industries in both Canada and the United States. In Canada, the industry was dominated by the crown carrier, Air Canada. The other
major Canadian carrier was Canadian Pacific Air Lines (CP Air). These two companies performed nation-wide and international services. There were five regional air carriers: Pacific Western Airlines, Transair, Nordair, Quebecair, and Eastern Provincial Airways. Though there was a reasonable number of carriers, the allocation of routes was such that competition at the individual route level was minimal; the average number of competitors per route in Canada was 1.3. The regulatory structure divided the country into regions, each being served by the two national carriers (Air Canada and CP Air), and (usually) one of the regional carriers. The regional carriers acted as feeder services for the two trunk airlines. There were no substantial equity positions held by any of the above-listed airlines in each other.

In the United States, there were many large airlines prior to deregulation: at the inception of deregulation, in 1978, there were 23 large carriers providing scheduled passenger services using jet aircraft in the US.

1.3.2 Economic Deregulation of Air Transportation

In 1978, the United States Congress passed the Airline Deregulation Act. This Act provided the framework for the removal of governmental controls over the economic affairs of US air carriers. Impetus for
deregulation was provided by research regarding both the efficiency consequences of the existing regulatory structure versus what could be anticipated under deregulation, and by direct comparisons of the federally regulated air carriers' performances with the performances of intra-state carriers who were not subject to the federal regulatory regime.

The essential feature of the Act was the elimination of the controls over prices and entry that were exercised by the CAB. The airlines were to be able to establish fares at their own discretion, with restrictions being limited to those of market forces. Airlines could offer services in any market they so desired, providing that they met the "fit, willing, and able" (FWA) criteria. "Fitness" required that the airline be owned by US citizens. "Willingness" meant simply that the firm have the desire to provide such services. "Ability" referred to the airline's possession of the technical expertise to maintain a safe operation, and that the company had the proper insurance as required by federal regulations concerning air transportation.

Canadian deregulation was officially ushered in with the National Transportation Act (NTA) of 1988. De facto deregulation of the Canadian industry was introduced prior to this time. In 1979, in response to the deregulation of the United States industry, the Canadian government made the first substantial move away from close
control over the economic conduct of the carriers. In that year, restrictions on the ability of CP Air to compete with Air Canada in the lucrative transcontinental markets were removed. Charter carrier Wardair was given freedom to offer advance booking charters (ABCs) on domestic routes. Prior to this time, Wardair had only been able to offer ABC services on international routings.

Between 1979 and 1984, Ottawa introduced several general reforms to policy regarding charter services. These reforms made such services more readily available to consumers by reducing the restrictions surrounding access to charter fares. ABCs had originated as discount fares available only to "affinity groups": groups of people having some identifiable relationship. Eligibility for ABCs also was premised on booking seats far in advance of the departure time, without exception. Ultimately, policy was reformed to the point where ABCs were available to individuals (with no group affiliation) and a portion of seats on a charter flight could be purchased without any advance requirement.

Effective deregulation occurred in Canada in 1984. The "New Canadian Air Policy" was announced on May 19 of that year. It was not a piece of legislation, but rather a policy statement. It made use of the powers of the Cabinet to make orders allowing conduct outside of the letter of administrative law. The Policy gave the airlines the freedom to offer fare discounts at will and removed the mandatory restrictions
surrounding eligibility for these fares. Entry and exit from routes was left to the discretion of the carriers, with some advance notice of service termination being required. Capacity and aircraft type restrictions were eliminated, as was the Regional Carrier Policy. The New Canadian Air Policy based the granting of operating licences on the criteria of "fitness, willingness, and ability" rather than public convenience and necessity. These reforms were primarily applicable to operations in southern Canada; those in northern Canada remained closely monitored and controlled.

Official deregulation in Canada came with the NTA, which came into force on January 1, 1988. As in the United States, governmental control over the normal economic affairs of air carriers was terminated under the NTA. Canada too opted for FWA criteria for the granting of operating certificates for air carriers. The pricing freedoms introduced under the New Canadian Air Policy are legislated under the NTA. There are neither restrictions on capacity nor on flight equipment to be operated. Entry and exit has been decontrolled, except for services wholly within, or to or from, northern Canada.

It must be noted that the deregulation of air transport in both Canada and the United States only pertains to domestic services. International services, including those connecting points in Canada with points in the United States, continue to be regulated in terms of
access, capacity, and fares.

1.3.3 The Existing Structure of the Airline Industry in Canada and the United States

In Canada, the airline industry has evolved into a duopoly market structure. Two major airlines, Air Canada and Canadian Airlines International, provide international, and nation-wide domestic services. Their affiliations with regional or commuter carriers are so extensive that 92.8 per cent of all revenue-passenger-miles consumed in Canadian domestic markets were performed by these two organisations in 1992.32

There are four substantial charter carriers in Canada: Air Transat, Canada 3000, First Air, and Royal Airlines. Revenue-passenger-miles accounted for by these carriers represented the majority of the remaining 7.2 per cent of the total domestic output of Canadian air carriers in 1992.33

In the United States, the industry has come to be dominated by five mega-carriers: American Airlines, Delta Airlines, Northwest Airlines, US Air, and United Airlines. There are three additional carriers that continue to provide significant services, but have been in such
precarious financial positions that their survival, even in the medium term, is in doubt: these are Continental Airlines, Pan American World Airways, and Trans World Airlines (TWA).

Like their Canadian counterparts, the major American carriers have created extensive networks involving feeder carriers.

Taxation

A final form of regulatory structure that influences airline economics is the regime of taxation that the firms are subject to. Countries have differing tax regimes confronting their carriers. Canada and the United States impose taxes on air carriers in such a way that the effective cost of doing business in the two countries differs significantly.

McKenzie, Mintz, and Scharf (1992) concluded that the Canadian air carriers are decidedly disadvantaged versus their American counterparts by the tax regime in Canada. Their analysis showed that effective tax rates on fuel and capital are lower in the United States than in Canada. Canadian labour inputs had a somewhat lower effective tax rate as compared to the United States. These effective tax rates appear in Table 3. The differential in taxes on aviation fuel is particularly
dramatic.

Table 3.
EFFECTIVE TAX RATES

<table>
<thead>
<tr>
<th>Input</th>
<th>Canada</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>18.1%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Labour</td>
<td>5.6%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Capital</td>
<td>22.6%</td>
<td>19.5%</td>
</tr>
</tbody>
</table>

Source: Directions, pp.1659,1663

It is interesting to note that the differential in effective labour tax rates between the two countries is 3.6 per cent. This is the exact percentage that Windle (1991) found was the labour input cost advantage to Canadian firms in comparison to US carriers.35

The effective tax rates affect the cost level of any quantity of output. Where taxes are higher, the cost of producing a given output is similarly higher. Since Canadian companies on balance face greater effective tax rates, their input costs are higher than those of U.S. carriers. These taxes have created a cost structure that has necessarily contributed to the higher average fare levels experienced in Canada relative to the United States.
2. Evidence on the Conduct and Performance of Air Carriers

2.1 The Pricing of Airline Services

The fare structures of airlines in the deregulated era are aimed at profit maximisation through the use of price discrimination. Being at liberty to establish their own prices, airlines have sought to structure fares so as to tap into the differential surpluses of different groups of consumers. An airline’s primary pricing goal is to set prices so as to sell as many full fare seats as possible per flight. The remaining seats are then sold to more price-sensitive travellers, to maximise per flight profit.\(^36\)

The passenger that must undertake a non-discretionary journey will be relatively price-insensitive: he will fly, even when fares are relatively high. Business travellers are the major group of passengers that exhibit low price elasticities of demand. Three factors help to make business travellers price-insensitive: the need to travel often becomes evident very close to the desired departure time; the company pays the cost of the traveller’s ticket; the cost to the company of the ticket is less than the stated price because of the tax-deductibility of travel expenses.\(^37\)

As the result of the characteristics of business travellers’ demand,
airlines price services aimed at this market segment at relatively high levels. In return for the price premium, the business traveller is able to book a seat with little advance notice, is able to change his travel plans reasonably readily and without penalties, and, usually, can travel at hours that allow him to maximise his time productivity.

With regard to the leisure traveller, airlines recognise that price will significantly impact the volume of such traffic. Therefore, carriers offer a wide variety of fares intended to extract the maximum of consumer surplus from this group, while maintaining demand so as to optimise per-flight profits. Discount fares are the means by which the airlines entice leisure travellers to opt for their services. On any given flight, there may be many different fares being charged for the what is apparently the same quality of service; the passenger travelling on a discount fare may be paying but 20 per cent of the price paid by the full fare customer. Airlines face considerable common and joint common costs: different classes of passengers are all flying on the same aircraft, and using the same terminal facilities. Given the relatively good ability of airlines to practice price discrimination, coupled with the considerable extent of non-separable costs in air transportation, air fares can be most appropriately characterised as value-of-service prices.

The charging of differential fares results in different revenues per
passenger-mile. Revenue-per-passenger-mile is referred to as yield. To optimise flight revenues, the firm must allocate seats to the different passenger categories in a systematic, efficient manner, making its allocation decisions on the basis of the different passenger groups' demand elasticities. This practice is termed yield management.

The successful implementation of yield management rests on three bases: that demand for a particular flight is predictable; that the discount fares will induce demand for the service; that diversion of passengers having a higher willingness-to-pay for a seat on the flight can be substantially prevented. The emergence of computer reservations systems has allowed airlines to develop sophisticated yield management activities. They provide the means of storing historical data regarding demand for individual flights and fare offerings.

With the possession of a sufficient number of observations regarding historical demand, the airline may accurately predict the number of full fare passengers to expect for a given flight. This allows the firm to determine the number of seats to allocate to full fare travellers, leaving the remainder of capacity available for discount travellers. The airline takes into consideration the variability of full fare demand when allocating capacity. Since full fare travel is usually booked relatively near to the departure time, the proper allocation of such capacity is both complicated and crucial:
complicated because discount travellers book in advance, so are first to make reservations, hence affirming claim to capacity; crucial because it is full fare customers that offer the highest yield, thus making the greatest contribution to flight revenue. The proportion of full fare travellers that are unable to obtain seats is referred to as the spill rate. An important yield management objective is the minimisation of spill rate.

The airlines have discovered that the magnitude of the discount, and the severity of the restrictions surrounding eligibility for the discount are significant determinants of the quantum, and proportions, of induced and diverted traffic. Deep discounting induces people to select air travel over alternative modes. However, sizeable discounts also make full fare travellers more likely to opt for discount travel. To prevent this, the carriers erect "fences" around the discount fares. Fences are restrictions regarding discount tickets, which may take several forms: the time in advance of the flight date that the ticket must be purchased; the minimum interval between the departure and return times; a requirement that the traveller spend a Saturday night at the destination; penalties surrounding the making of changes in the return date or time, or with regard to trip cancellation.

Deregulation, in both Canada and the United States, has had a decided impact on average air fares. Ironically, fares have generally
increased for short-distance flights—those of up to 1,500 kilometers. Morrison (1992) has shown that, in Canada, increases in these fares have been in the range of -0.5 to 25 per cent in real terms. For flights in the 1,500 to 2,500 kilometer range, real fares have been largely unaffected by deregulation. Long distance flights have seen fares decrease by between 0 and 25 per cent.40 These results have been influenced by economies of distance and the distortion of fares that existed under regulation. The non-linear decay of yield with flight distance has a technological basis, so has not been affected by regulatory changes. Conversely, short-distance air fares were under-valued during regulation. Deregulation led airlines to increase fares for these services, to reflect the true cost of their provision.

Oum, Stanbury, and Tretheway (1991) examined the trend in average air fares for the United States and Canada over the period 1977 to 1989. This time frame included that from deregulation in the United States, to one year after official Canadian deregulation. Their study showed that, in constant dollar terms, fares in the United States decreased at the rate of 8 per cent over the period 1977 to 1984, while Canadian fares, which remained regulated, decreased at the rate of 4 per cent. 1984 saw the substantial deregulation of Canadian air transport under the "New Canadian Air Policy." From 1984 to 1989, Canadian air fares decreased at a 10 per cent annual rate, whereas US fares declined at 15 per cent.41
Oum, Stanbury, and Tretheway (1991) also examined the differential in the magnitude and utilisation of fare discounts on domestic services within the two countries. US companies have offered progressively larger average discounts over the period from 1980 to 1989. The average discount in United States markets in 1989 was 63 per cent. The average discount in Canada has also progressively increased, with the 1988 average being 45 per cent.42

The proportion of passengers travelling on discounted fares has been different in Canada and the United States. In the United States, the proportion of total travellers flying on discounted fares has leveled off at approximately 90 per cent. In Canada, some 60 per cent of passengers travel on discounted fares.43

A less glowing report on the pricing behaviour of United States airlines is presented by Dempsey (1990). Dempsey examined real yields over the period from 1967 to 1988. He found that real yield decreased during these years, with the post-deregulation rate of decrease being larger than that during regulation. Dempsey calculated 1967-1977 real yields to have decreased at the rate of 1.7 per cent; 1978-1988 real yields were determined to have declined at the rate of 2.4 per cent. However, Dempsey shows that, when real yields are adjusted to account for changes in real fuel prices, the post-deregulation performance is
not as good as it first appears. The fuel-price adjusted rates of
decrease were 2.7 per cent for the pre-deregulation period as opposed
to 2.0 per cent since deregulation. Critics of Dempsey’s approach
point out that the author’s selection of 1978 is inappropriate as the
starting year for the deregulated era in the Unites States, as fares
were liberalised beginning in 1977, so 1976 should be considered the
watershed year.

Generally, analysts have agreed that deregulation has brought lower
average prices for air travel. However, as discussed previously, the
change in price levels has not been unidirectional from market to
market. Aside from the technological basis, in terms of economies of
distance, for price increases in some markets, the question of
concentration arises with respect to pricing. The effect of the number
of carriers in a market, and the distribution of traffic amongst the
carriers, must be considered with respect to their influence on air
fares.

Borenstein (1989) examined the effect on market concentration on fare
levels in city-pairs having a significant proportion of total traffic
being carried by a single airline. The airline in each case operated a
major hub at either the origin or destination end of the route. Borenstein compared the yields for the dominant carrier in each case,
to those for other carriers serving the routes. He found that there
was a direct relationship between an airline's share of traffic on a route and at an endpoint airport, and the magnitude of the price premium that it was able to charge. He estimated that a 1 per cent increase in route traffic share led a carrier to raise price by 0.03 to 0.22 per cent. He also calculated that, where the carrier is dominant at both ends of a route, it may sustain prices that average 6 per cent higher than those of competing airlines.

Morrison and Winston (1989), in analysing the effects of the number of competitors on a route, found that the withdrawal of a company from a market could have a substantial effect on the average price charged in that market. They calculated that fares increased from between 2 and 32 per cent when a competitor ceased operations on a route. They found that there was a negative relationship between the increase in the average fare and the number of competitors remaining in the market. Naturally, the greatest fare increases were experienced where the cessation of service by a firm resulted in a monopoly on the route.

Morrison (1992) examined the trend in Canadian airline pricing over the years 1983 to 1990. Morrison concluded that there was no discernable effect of route concentration on Canadian airline prices. He attributes this to the contestability of Canadian markets. The contestability hypothesis suggests that an operating airline cannot charge supra-normal prices without inviting entry by competitors.
because of the near-risklessness of entry into a particular airline market.

The difference in the Canadian versus the US experience with respect to the effect of concentration on price levels is likely to be rooted in airport access. The control that US carriers often have over hub airports imposes significant costs on competitors wishing to introduce or increase their services on routes involving the hub airport. The existence of such significant costs violates the riskless entry premise of the contestability hypothesis. The outcome is that incumbent firms reap some degree of monopoly rents. The nature of the demands on capacity at Canadian airports, and of the capacity allocation mechanism used in Canada, have doubtlessly prevented the charging of price premia by Canadian carriers.

Comparing Canadian air fares to those in the United States, it is apparent that Canadian prices are somewhat higher than those south of the border. Morrison (1992) found that Canadian fares in 1990 were, on average, 7 per cent higher than US fares. He points out, however, that there is some difficulty in making direct comparisons between prices in the two countries because of the way in which fare data are reported. Canadian services, involving intermediate stops, have the fares disaggregated between flight legs; US fare data report the total fare from the origin to the destination. This practice is cited as a
reason why short-haul fares in Canada appear to be lower than those in the United States; the distance taper effect is obscured by the apportionment of long-haul fares by individual flight legs.

2.2 Airline Marketing Practices

Conduct relating to the development and applications of computer-reservations-systems (CRSs) has had a significant impact on the performance of airlines. It is the CRS that allows the air carrier to implement yield management and the accompanying price discrimination that exists in the provision of airline services. Airlines that own CRSs have garnered competitive advantages over non-CRS-owning carriers. These advantages stem from numerous sources: the hierarchy of flight information presentation on the systems; the fees that are charged to non-owners for "hosting" their flight information on the CRS; the rewards to travel agents for utilising the systems; the control over bookings in geographic areas where a particular CRS is dominant.

One of the first anti-competitive behaviours that was noticed with regard to CRSs was the practice of listing the owning airline’s flights first on the display screen. The effect of this practice was to increase the likelihood that the travel agent would book the traveller on the vending-airline’s flights, rather than those of a hosted-
No relevant content available.
There are advantages accruing to the CRS vendor from its relationship with the travel agent. Travel agent commission overrides (TACOs) and the "halo effect" are two forms of vendor-agent conduct that are viewed as having anti-competitive results. TACOs see the commission paid to the travel agent increase non-linearly with the number of tickets sold. This gives the agent the incentive to sell as many seats on the vendor's flights as possible, so as to maximise the average commission the agent receives. The "halo effect" refers to the practice of favouring the vending carrier, and is related to the TACO and the fact that the vendor supplies a more detailed and up-to-date package of information relating to its own flights compared to those of hosted airlines.54

In US markets associated with major hub airports, the concentration of ticket sales through the dominant carrier's CRS is often much higher than the national average. For example, Sabre processed 88 per cent of all tickets sold in the Dallas-Fort Worth market in 1985.55 This level of concentration of CRS patronage in hub airport markets is considered to present a significant barrier to entry.56 In turn, this reinforces the ability of the dominant carrier to charge price premia in the concentrated market.

In Canada, in 1989, 82 per cent of all air segments booked were done
so using the Gemini Reservations System. At that time, Gemini was owned by Air Canada, Canadian Airlines International, and Covia (the CRS of United Airlines); each partner owned one third of the company. While the partnership of the country's two major carriers in a single CRS may have been beneficial to consumers in that the sort of CRS-related problems that were outlined above for the United States are absent from Canada, there remained the problem of the anti-competitive effects that Gemini posed for other Canadian air carriers. In response, Canada's Competition Tribunal established rules of conduct for Gemini to follow, so that the CRS would fairly represent the flight information of its owners and of other carriers.

An outgrowth of the introduction of the CRS was the development of frequent-flier-programs (FFPs). The principle of the FFP is that the consumer can be enticed to travel almost exclusively on one airline by offering him free travel or seat up-grades based upon the number of miles he has flown with the company.

The nature of these programs confers advantages to carriers having large networks: the traveller can more readily accumulate travel "points" if an airline can fly him to a wider variety of destinations; the accumulated bonus miles can be use for trips to more and varied destinations. Therefore, the customer has an incentive to patronise the FFP of the airline that operates the greatest number of flights,
and to the greatest number of destinations, from his "home" airport.

Since network size confers an advantage in terms of the attractiveness of a FFP, smaller airlines are put at a distinct disadvantage with respect to the demand for their services. Tretheway (1989) noted that this may force the smaller company to offer points more readily: the customer of the smaller carrier will be given equivalent reward after having flown less distance than with the larger airline. This adversely affects the cost structure of the smaller carrier, since it must endure both the opportunity, and out-of-pocket, costs of awards of free travel more frequently than its larger rivals.59

FFPs have been particularly effective at capturing business travellers' loyalties. There is a principal-agent effect in the purchasing of business air travel: the company buys the tickets, yet it is the employee that accumulates the travel points. The company is able to offer the travel advantages of the FFP, without incurring tax expenses for itself or the employee. The United States General Accounting Office (GAO) queried travel agents about the extent to which the pursuit of FFP point accumulation dictated their customers' selection of flights. The GAO found that 81 per cent of the travel agents they surveyed believed that, more than half of the time, their customers chose flights with the aim of accumulating travel points on
The principal-agent problem can be cited as a cause of a non-optimal amount of air travel being consumed. The pursuit of free leisure travel may encourage unnecessary business trips, trips involving point-accumulating, circuitous routings, or travel on carriers that do not offer the least expensive fares for a given origin/destination combination. The result is an excessive level of airline services being consumed, with an associated reduction in social welfare.

To overcome the advantages that large airlines have with respect to FFPs, coalitions of some smaller carriers have agreed to honour points earned on each others' FFPs in the hope of luring the point-conscious consumer away from the larger carriers. More significantly, FFP disadvantages are considered to be a leading motivation for the consolidation of smaller airlines into larger networks. This type of consolidation is not based on any cost-savings, so does not improve the productive efficiency of the industry.

Another effect of the growth of FFPs is the implications that free tickets have on the availability of seats for paying passengers. Social welfare considerations dictate that the paying-passenger should have precedence over those travelling on points when it comes to securing a seat on a given flight. However, the nature of the booking
process does not discriminate between these types of customers. The consumer who is willing to pay the actual cost of the service will find that he is unable to fly at his desired time because the seat that would have been available to him has gone to a "points" ticket-holder. Social welfare is thus adversely affected because capacity is allocated on other than the basis of willingness to pay.

2.3 Airline Conduct in Other Non-price Areas

In order to capture economies of both density and scope, airlines have opted to construct hub-and-spoke route systems. These route structures increase average traffic densities by consolidating traffic bound for various ultimate destinations onto flights through hub airports. Hub-and-spoke networks have had important effects on airline costs and on the demand for airline services.

McShan and Windle (1989) found that, in the United States during the period 1977 to 1984, airline costs were reduced by 0.11 per cent for every 1 per cent increase in the proportion of the airline's departures emanating from hub airports. As evidence of the recognition by the carriers of the advantages of hubbing, McShan and Windle also observed that the rate of increase in hubbing was 6.9 per cent per year since deregulation; the pre-deregulation rate was 1.7 per cent per year.
The scarcity of airport capacity in the United States, the mechanisms for allocation of capacity amongst airport users, and the recognition, by the carriers, of the cost advantages of hubbing have prompted airlines to establish "fortress hubs" where possible. The fortress hub is one in which a single airline dominates the traffic into and out of that airport. By dominating an important airport with a hubbing operation, an airline is able to capture a large proportion of the traffic to and from that city. Moreover, it is able to (as discussed previously) extract economic rents from consumers. Where a strategic hub is shared between carriers, it is said to be a "strong hub" for each of these airlines.

On the demand side, the practice of hubbing has been shown to have increased the attractiveness of air travel. Hubbing allows the carriers to serve more destinations from any given point of origin through the use of on-line connections. The increase in the traffic densities enables the carriers to offer more frequent flights, thereby reducing the schedule delay time confronting the passenger.

The practice of hubbing has had negative effects on passenger utility. Hubbing adds to the flight time of the average passenger: the extra distance that is associated with non-direct flights, the time that is required to land at the hub, the terminal time to board the
connecting flight, and the time it takes that flight to take-off for the next leg of the journey. These additions to total travel time may be substantial where there is the need to travel through congested hub airports, wherein congestion-related delays are significant.

Oum and Tretheway (1990) estimated that the disutility of making a transfer between flights was equivalent to a time delay of 45 minutes. Assuming a valuation of time of $30 per hour based on the estimates of Kanafani and Gobrial (1985), Oum and Tretheway assign the disutility of hub connection to be worth $22.50 (in 1990 dollar terms). The disutility of the extra travel time associated with hubbing is expected to vary directly with the passenger's valuation of time.

For the business traveller, who presumably has a high opportunity cost of time, the circuity of routing through hub-and-spoke route structures represents a negative aspect of the conduct of the airline industry. US air carriers have not eliminated direct services, probably in recognition of the needs of the business traveller. McShan and Windle (1989) observed that the proportion of total departures accounted for by hub airports was 38.6 per cent in 1984. If a strictly hub-and-spoke network was being employed, departures from hub airports would account for 50 per cent of all departures; McShan and Windle did not observe this division of departures. The provision of direct services has continued in the United States. Aside from meeting
the needs of passengers having high time valuations, direct services are provided where there would be significant "backtracking" if the service was conducted through the nearest hub airport, or where the volume of traffic between two non-hub airports is sufficient that direct service is warranted. Huston and Butler (1988) showed that following the merger of TWA and Ozark Airlines, the new carrier was able to offer each city in the newly created network an average of 28.7 per cent more destinations than the two companies could before their amalgamation. The merger afforded the new company a better route structure in general, and specifically, better utilisation of its hub at St. Louis—where TWA and Ozark both had hubbing operations prior to the merger. The merger did have the effect of raising average restricted fares by 19.2 per cent, and unrestricted fares by 5.7 per cent, on the airline's flights through the St. Louis hub. More dramatically, average unrestricted fares rose by 13.1 per cent, while average restricted fares increased by 45.9 per cent, for TWA-Ozark's services having St. Louis as an end-point.

Airlines in the United States recognised early on in the era of deregulation that the ability to substantially control access to important airports afforded them significant advantages in terms of costs and competitiveness. The desirability of establishing a hub operation at an airport depends on the location of the airport vis-a-vis the overall network that the airline intends to operate, upon the
origin and destination traffic characteristics of the city that the airport serves, and upon the physical capacities of the airport. The airlines that have been the most successful in the United States are those that have been able to establish, and defend, fortress hubs at key airfields.

Each of the five largest US air carriers has a major hub operation at at least one airport. There is no location at which two of these airlines have their most important hub. This is evidence that the carriers realise that there must be domination at their central hub in order for the network to be effective. Note also that there is no primary hub that is located at an airport that is near the margins of the continental United States—with the possible exception of Pittsburgh. Effective hub-and-spoke layouts require a somewhat centralised main hub.

An airfield capacity problem exists at four congested airports in the United States: O'Hare (Chicago), LaGuardia and John F. Kennedy (New York), and National (Washington). In 1969, the "High Density Rule" came into effect at these airports. This policy required carriers to make advance reservations for slot times. There are separate slot allocations for air carrier, commuter, and international services.70

Originally, the slot times were administered by airline
representatives. Though this system worked well, its format was rendered inappropriate with the advent of deregulation. With deregulation, a conflict of interest emerged regarding this slot allocations scheme in that established airlines on the allocative committees became responsible for conferring slots to new rivals. Since the new airlines had no representation on the committees, they had no negotiating strength with which to secure access to slot times.

A 1985 amendment to the High Density Rule allowed airlines to buy, sell, and lease slots. The objective of this amendment was to create a market for the airport slots. Existing slot allocations were grandfathered, and the committees were disbanded. However, the strategic nature of the possession of slot times resulted in the hoarding of slots by incumbent carriers. Sales of slots actually decreased since the inception of the program. Instead, slot-holding airlines have preferred to lease their unused slots to other carriers.

Slot leasing has increased since 1986. In many cases the slots are leased to the majors’ feeder carriers. This represents an under-utilisation of the slots because they were intended for use by large aircraft; feeder carriers generally use smaller, turboprop equipment, meaning less passenger movements per aircraft movement. Thus, a sub-optimal number of passenger movements is realised at the slot-controlled airports.
Code-sharing partners have also been favoured recipients of leased slots.

Incumbent carriers therefore continue to hold the rights to the optimum slot times for services into these facilities. This affords these airlines on-going control over access to these important airfields. Potential entrants find that they are effectively barred from operating into these airports because slots are simply not available on bases that would permit viable operations. Those slots that are available are at unfavourable times of the day, or are available only on a short-term lease basis. There is no value in securing slot times in the middle of the night since most travellers have no desire to fly at these times; short term leases make investing in establishing operations at these airports very risky.

Another dimension of the physical scarcity problem is that there are insufficient terminal facilities to accommodate expanded operations at many airports in the US. Terminal facilities refer to ticket counters, baggage check-in areas, passenger waiting rooms, baggage claim areas, and the actual gates for enplaning and deplaning. Gate availability is of particular importance to the issue of airport accessibility.

Gates may be unavailable because they are not allocated to flights on
an as needed basis, but rather they are on leases to the airlines. The General Accounting Office (GAO) determined that close to 88 per cent of all gates at large and medium-sized airports in the United States are under lease. At large airports, the percentage of gates leased to airlines for their exclusive use is higher yet: 90 per cent are controlled on this basis. The durations of the leases vary, but some gates are leased for periods in excess of twenty years.

The long term nature of a substantial proportion of gate leases presents a substantial barrier to entry, particularly at large airports. The vast majority of gate leases at these airports are for what are classed as long terms. Roughly 60 per cent of these leases have 10 years left on them, and another 35 per cent have more than 20 years until expiration.

Since the provision of terminal facilities in the US is accomplished through private financing, established carriers have made substantial investments to develop airport terminals. In addition to direct investment in terminal facilities, incumbent carriers have long-term leases on more than 80 percent of available gate space. Therefore, these facilities are not going to be readily available to entrants to introduce competitive services.

The Canadian experience with airport domination has been decidedly
different from that in the United States. There are only two Canadian airports that experience capacity problems: Lester B. Pearson International in Toronto, and Vancouver International Airport. Terminal capacity allocation at these facilities is done by the Airport Authority (in the case of Vancouver) or by Transport Canada (in the case of Toronto). Transport Canada also allocates the use of gates at other major Canadian airports, and distributes landing and take-off slots at all Canadian airports.

Canadian carriers have not really developed hub-and-spoke networks in Canada. The reason for the absence of such networks in Canada is the demography of the country. The major air travel markets in Canada involve flights in close proximity to, and parallel with, the Canada-US border. Such a physical structure gives rise to linear route networks, and only permits the use of directional hubs. It is for this reason that Toronto is the only real hub airport for the Canadian majors.

What has developed in Canada is regional hubbing. Regional hubbing is the accumulation of traffic at regional airports outbound from, or destined to, communities served by the regional, or feeder, airlines.

The government provision of airport facilities coupled with the general absence of congestion has not led to single airline dominance of Canadian airline markets. Both of Canada’s major carriers provide
services in most markets in Canada. This is a marked contrast to the situation in the United States, as outlined in the preceding paragraphs. While the Canadian industry is certainly dominated by Air Canada and Canadian Airlines International, neither company lays individual claim to an overwhelming share of the revenue-passenger-miles on any significant domestic route. In 1989, of the 146 most travelled domestic city pairs, 77 per cent had at least two competitors offering services on the route. 75

3. Conclusions on the Relationship Between the Structure of the Air Transport Industry, and Airline Conduct and Performance

3.1 Pricing of Air Transport Services

The preceding paragraphs have outlined the price characteristics of air transportation in North America. In general, air fares represent good value to the consumer. The practice of price discrimination has allowed airlines to increase their per flight profitability. It has afforded a higher level of output than would be possible in the absence of price discrimination. Therefore, the pricing procedures of North American air carriers should be seen as being beneficial in a social welfare sense.
While there has been concern that cartelisation has occurred in the industry, there is evidence that this is not the case. Though there has been evident collusion in airline pricing, the positive economic rents that are expected in a cartel situation have not materialised in air transportation at the aggregate level. In specific airline markets, however, there rent accumulation has occurred. This has been generally associated with U.S. domestic routes where at least one endpoint-airport is the strong or fortress hub of a major carrier.

Fares in Canada tend to be higher than those in the United States, over routes of equivalent distance. Morrison (1992) found that airline yields in the fourth quarter of 1990 in Canada averaged 7 per cent greater than those in the U.S. It should be noted that international comparisons of air fares can be misleading because of difficulties regarding exchange rates and differences in the means by which data are reported between countries' statistical agencies. Also, operational considerations may dictate differential fares between countries. Since Canadian carriers operate in a generally more hostile climate than do U.S. operators, their costs tend to be somewhat greater than those of U.S. carriers.

Canadian carriers cannot capture the economies of density that are available to their U.S. counterparts. This is due to the generally lower traffic volumes in Canadian markets. Moreover, since the pattern
of traffic is linear in Canada, the Canadian air transport market does not allow Canadian carriers to develop true hub-and-spoke route structures, as have been created in the United States.

The number of carriers participating in the industry on a nation-wide basis does not appear to influence the average price level. Though the airline industries of both Canada and the United States have become more concentrated since deregulation in the respective countries, the average real air fares in both countries have declined slightly over time. What does affect average fares is the extent of competition in an individual city-pair market. The more concentrated the market, the greater the average air fare. This has been most readily apparent in the United States, where carriers have the potential ability to control access to an airport through possession of slots and gates, and through the dominance of its CRS system with travel agents in the region where the airport is located. 81, 82

3.2 Quality of Airline Services

The qualitative performance of the industry has several dimensions, though the convenience and safety of the system are foremost considerations. Convenience measurements include schedule delay times, terminal delay times, and congestion delay times. The measure of
safety is the number of accidents and incidents per flying hour.

The deregulation of the industries in both Canada and the United States has resulted in reduced schedule delay times. This is due to the increase in flight frequency afforded by the creation of hub operations, and from the freedom of the carriers to allocate aircraft to routes on the basis of their technical merits. As we have seen, the economies of scope associated with hubbing allow for more flights per day to/from any given location. More departures imply less schedule delay time, hence an increase in service quality.

Unfortunately, the current hub networks also have increased the average traveller's terminal and congestion delay times. Congestion delays have appeared at several US airports, and at Toronto and Vancouver in Canada. These delays are largely due to the timing of flights that is associated with hubbing operations. Morrison and Winston (1989) estimate that there would be a welfare gain of $11.0 billion annually in the United States if more capacity was provided, and there was a more efficient means of capacity allocation employed. 83

In the realm of safety, the evidence shows that there has been a steady increase in the safety of air transport in Canada and the United States. There is a long-term declining trend in the number of fatal accidents per 100,000 departures in both countries. This trend has not
been disrupted by deregulation.

3.3 Barriers to Entry

Meaningful entry barriers exist in both the Canadian and United States airline industries. There are some forms of barriers common to both countries; other barriers are associated with only one of the countries.

Common barriers to entry are the advantages of large airlines with respect to consumer demands, and the vertical integration of feeder carriers into the large carriers' organisations. The large airline can get the passenger to more places, without the need for interlining. Moreover, the existence and nature of frequent flier programs endows the large carrier with advantages that small carriers or new carriers find exceedingly difficult to match.

The necessity of having feeder carriers to serve smaller communities also confers advantage to the established airlines in both countries. Any new carrier would have to establish its own feeders, as those that existed in Canada and the United States at the times of their respective deregulations have been closely allied with, or purchased outright by, existing companies.
The United States industry has particular entry barriers not found in Canada. The most imposing such barrier is the control that incumbent airlines have over the allocation of airport facilities at key locations. To have any hope of becoming a viable competitor, an entrant would have to access these airports. This may not be possible in the medium term, as the slot rights, and more particularly gate leases, are held by incumbents for periods of up to twenty years. Furthermore, CRS penetration by dominant carriers at hub cities make it difficult for an entrant to establish a presence in many markets. This even holds true where the would-be entrant is an existing large carrier having some share of the markets involving a city where another carrier is dominant.

The Canada-specific entry barrier is the relatively low volumes of traffic in markets in that country. The existing large Canadian carriers find it difficult to provide profitable services on domestic routes in Canada. An entrant would be hard-pressed to capture any market share without losing money on its operations. This is because the entrant would have to serve the highest density markets to have any chance of wrestling traffic from Air Canada and Canadian Airlines International, yet would not have these carriers' advantages of traffic accumulation through their feeder operations. They also do not have the FFP enticement that the large carriers have, and would be unlikely
to be able to construct such programs given the scale of their operations.
Footnotes to Chapter Four

1. Tretheway [1991], p.1
2. A.I.P., RAC 4-1
4. O’Connor, p.72
5. O’Connor, p.74
6. Taneja, p.85
7. Directions, pp.1425,1428
8. Directions, pp.1476,1477
9. Directions, p.1482
10. G.A.O. [1990], p44
11. Directions, pp.1447,1461
12. Operational weight is the weight of the aircraft itself, the flight crew, and the necessary fuel to get from origin to destination, including mandatory reserves of fuel: for flight to an alternate airport plus fuel sufficient to provide 45 minutes of flight for contingency purposes.
13. Tretheway [1991], p.2
14. Bonsor, p.54
15. For example, see Gillen et.al. [1985].
16. Tretheway [1991], p.3
18. Oum et.al. [1991], p.10
19. Tretheway [1991], p.8
20. Taneja, p.131
22. Oum et.al. [1992], p.149
23. Oum et.al. [1992], p.149
24. Oum et.al. [1992], p.149
25. Tretheway [1991], p.8
26. Directions, p.1175
27. Transport [1981], p.20
28. Taneja, p.127
29. Directions, p.1180
30. Directions, p.1151
31. Jordan, p.318
34. Directions, p.1663
35. Windle, p.45
36. Kraft et.al., pp.117,118
37. Shaw, p.24
38. Kraft et.al., p.115
39. Coyle, p.74
40. Directions, p.1157
41. Oum et.al. [1991], p.12
CHAPTER FIVE.

POLICY ALTERNATIVES AND ANALYSIS

1. General Alternative Strategies for Transborder Airline Services Reform

1.1 General

The goal of liberalisation of the Canada-United States air transport relationship is to provide air travellers of both countries with improved services at the least expensive prices. To accomplish this, a new regulatory regime should also encourage industry efficiency. In keeping with the equity principle of the Chicago Convention, industry participants in both Canada and the United States should receive balanced benefits from the new regulatory regime.

Three general concepts on which to construct the new bilateral agreement have been advocated:

1. A new regime of specified transborder rights, in similar form as the existing bilateral;

2. An open border concept, allowing unfettered point to point service across the Canada-United States border;
3. An open border accompanied by limited cabotage rights;

1.1.1 Specified Rights

The most conservative approach would be to negotiate a new set of specific routes. The result would be a new bilateral, having the same substantial form as the existing agreement. This plan would increase both the number of city pairs served, and the amount of competition on existing routes. It represents a furtherance of the managed competition that has prevailed in the transborder sector.

1.1.2 Open Border

The second concept, that of an "open border," allows carriers of either country to serve any cross-border city pair. This policy is aimed at increasing the number of city pairs that would enjoy direct services, and would increase the amount of competition on existing routes. Any Canadian or United States airline could serve any transborder market that it wished. Pricing should have a double disapproval regimen. The open border plan introduces effective market discipline to transborder routes.
1.1.3 Cabotage

The third concept is a cabotage regime. This scheme would allow carriers of one country to offer domestic services in the other country. Again, the objective is to increase competition. In this case, competition would be increased in both transborder and internal markets. Naturally, a cabotage regime would be combined with open border privileges.

Numerous analysts have researched the options available to Canada and the United States with regard to what the structure that a new bilateral air services agreement should be. These studies have considered several variations on the three general types of bilateral regimes, as described in the foregoing subsection. The findings of these inquiries will be discussed in the following section of this paper. In addition, research regarding ancillary issues related to Canada-United States air services issues will be considered in the following paragraphs. Such research includes studies of the pricing of international air services under liberal versus closely-regulated bilaterals (Dresner and Tretheway, 1990), the division of traffic among carriers under liberal bilateral regimes (Dresner and Windle, 1992), the relative efficiencies of international air carriers (Windle, 1990),
and the barriers to entry confronting carriers wishing to serve markets in the United States (United States General Accounting Office, 1990).

2. Literature Survey

2.1 Dresner and Tretheway (1990)

Dresner and Tretheway (1990) sought to establish the effect of structural variables on air fares. In particular, they analysed the effect of the introduction of liberalised, bilateral agreements on air transport prices in international air services markets. Their data were for the years 1976-1981, a period in which the United States entered into a series of reformed bilaterals that intended to achieve more competitive pricing for airline services. The authors set out to determine whether price competition had in fact been realised in international markets involving the United States through the liberalised approach.

Dresner and Tretheway assumed that a carrier operating under a liberal bilateral agreement would engage in price competition. This Bertrand-type behaviour would lead to low price equilibria.¹ In contrast, carriers operating under traditional, restrictive bilaterals were assumed to have colluded with regard to pricing, thereby producing
price levels above those where liberalised conditions prevail.\textsuperscript{2}

Dresner and Tretheway made the following assertions regarding the effect of liberal bilaterals on prices:

1. Liberal bilaterals had no significant effect on "full fares": those usually associated with non-discretionary travel markets;\textsuperscript{3}

2. Liberal bilaterals had significant effects on fare levels for discount travel in markets where competitive routes prevail;\textsuperscript{4}

3. The average differential in discount fares as between competitive and non-competitive routes was 34.7 per cent.\textsuperscript{5}

Dresner and Tretheway demonstrated that liberal bilaterals did have the desired effect of reducing fare levels in comparison to traditional bilaterals. They recognised that it was important to define what constituted a liberal bilateral. They used a broad definition of liberal, which had the following characteristics:

1. Freedom for carriers to determine capacity levels;

2. Freedom from intervention by regulatory authorities with
respect to pricing;

3. Freedom of other airlines to enter routes to which the agreement was applicable.

While the authors have shown that liberalisation has positively affected particular fare classes, the applicability of their conclusions to Canada-United States markets will be limited. First, Dresner and Tretheway used routes of 4,000 kilometers or more in their analysis. The majority of Canada-United States transborder routes are much shorter than this, presenting the opportunity for intermodal competition. Second, the third characteristic of liberal (as delineated above) requires that there be freedom of entry to the routes in question. For Canada-United States services, entry may be theoretically free, yet may be actually prevented by airline control over airport facilities.

A further complication to the application of the authors' findings to the Canada-United States situation is that Dresner and Tretheway examined routes between countries having inherently high densities and (presumably considering the years involved) few attractive alternative routings (as the traveller would have had to make intermediate stops via third countries, and using inter-line services). For Canada-United States markets, most densities are relatively lower, and there are
numerous routing and carrier alternatives. (Note that "thinly" travelled routes were intentionally deleted from Dresner and Tretheway's data set.)

2.2 Dresner and Windle (1992)

Dresner and Windle (1992) examined the impact on passenger volumes and U.S. carriers' market shares that resulted from liberalisations of bilateral air transport agreements. They studied the effects of bilateral liberalisations between the United States and 51 other countries. Their data were for the period from 1975 to 1987.

Dresner and Windle categorised the countries into two agreement groups: partially liberalised bilaterals, and fully liberal bilaterals. Fully liberalised bilaterals were those in which both prices and capacity restrictions had been removed. Conversely, partially liberalised bilaterals were those retaining either price restrictions or capacity restrictions, but not both.

The authors found that there were significant effects from the presence of fully liberalised bilaterals. Their model showed that such agreements could be expected to cause an 11 per cent increase in the rate of passenger growth. The model results indicated that partially
liberalised bilaterals would not lead to higher traffic growth rates.

With respect to US carrier market shares, Dresner and Windle found that the liberal bilaterals led to non-significant changes. This conclusion was reached through the weighted-averaging of US carrier market shares over more than 600 routes to the various countries in the study. It should be noted that there were particular situations wherein dramatic changes in US market share were evident (eg. the United States-Singapore markets). Dresner and Windle determined that the proportion of US citizens heavily influenced the selection of US carriers.

In summary, Dresner and Windle concluded that:

1. Liberalised bilaterals positively affect the total passengers in a market;

2. Liberalised bilaterals positively affect the rate of traffic growth;

3. Partially liberalised agreements affect neither the total traffic level nor the rate of growth;
4. Neither type of liberalisation affects the share of U.S. carriers in aggregate markets.

Dresner and Windle do not speculate as to the reason(s) for the robustness of the U.S. carriers' market shares. It would be instructive to know whether the consistency of these shares was the result of nationalism on the part of US air travellers, or whether there were structural factors that militated in favour of US carriers. With regard to the latter, it is possible that there is an advantage conferred to US companies from the fact that they probably owned the CRS systems that customers utilised to book their flights through. If this was indeed the explanation, it would have implications for Canada-U.S. services under a liberalised regime in that US CRS systems can be expected to become more widely used in Canada with the anticipated exit of Canadian Airlines International from the Gemini system.

2.3 Windle (1990)

Windle (1990) measured the productivity and unit costs for U.S. and foreign air carriers. The aim of his research was to reveal the factors that caused differences in efficiency between airlines in various countries. In turn, these results were intended to give direction as to what forms of international deregulation would be most
appropriate for future air policy.

The metric of total factor productivity (TFP) indicates the ratio of conversion of inputs into outputs. Windle grouped airlines by region, with Delta Airlines as the base case; Delta’s TFP had the value 1.000.

Table 4.

<table>
<thead>
<tr>
<th>Region</th>
<th>TFP</th>
<th>% higher than US</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>1.113</td>
<td>n/a</td>
</tr>
<tr>
<td>Canada</td>
<td>1.107</td>
<td>-0.6</td>
</tr>
<tr>
<td>Europe</td>
<td>0.920</td>
<td>-19.0</td>
</tr>
<tr>
<td>East Asia</td>
<td>1.297</td>
<td>15.3</td>
</tr>
<tr>
<td>Others</td>
<td>0.688</td>
<td>-48.1</td>
</tr>
</tbody>
</table>

SOURCE: Windle, p.37

Three Canadian carriers (Air Canada, Canadian Pacific, and Pacific Western) appeared in the study. Their TFPs were dispersed over the sample: Canadian Pacific ranked 3rd; Air Canada ranked 13th; Pacific Western ranked 37th. The total sample size was 41. The results for TFP show that Canadian firms were slightly less efficient than their U.S. counterparts.

Unit costs were used to extend the analysis to consider what the airlines must pay for their inputs. This measure was used to account for efficiency differences that arise because of input price
differentials between countries. Retaining the previous groupings and base case, Windle found the following results:

Table 5.

COMPARISON OF UNIT COSTS BY REGION

<table>
<thead>
<tr>
<th>Region</th>
<th>Unit Costs</th>
<th>% higher than US</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>0.910</td>
<td>n/a</td>
</tr>
<tr>
<td>Canada</td>
<td>0.903</td>
<td>-0.9</td>
</tr>
<tr>
<td>Europe</td>
<td>0.976</td>
<td>6.9</td>
</tr>
<tr>
<td>East Asia</td>
<td>0.700</td>
<td>-26.3</td>
</tr>
<tr>
<td>Others</td>
<td>0.911</td>
<td>0.1</td>
</tr>
</tbody>
</table>

SOURCE: Windle, p.39

Windle concluded that the unit cost differences were largely explained by labour prices and traffic densities. US firms enjoyed economies of density superior to those of Canadian carriers. Canadian companies had labour price advantages over their US counterparts.

Windle states that Canadian companies had firm specific effects that offset US carriers' traffic density advantages. However, he does not speculate as to what these firm-specific effects might stem from. The "firm" variable used by Windle represented a carrier group average, having been created from a cost-weighted average of that group's individual firm dummy variables. However, Gillen, Oum, and Tretheway (1985) concluded that the performance of models employing firm dummies should be considered suspect. That Windle analysed data only for one year (1983) leaves open the possibility that these firm specific
effects could actually reflect some anomalous influence, confined to that year, and only affecting an individual firm or a specific country's firms.

Windle recommends that any policies aimed at increasing traffic densities should be pursued since this promotes efficiency. He identifies several means by which traffic growth would occur, resulting in higher traffic densities:

1. Induced traffic due to population growth and/or fare reductions;

2. Network re-configuration;

3. Mergers;

4. Attrition of weaker airlines, leaving remaining carriers with greater traffic densities.

In making these recommendations, Windle has neglected to consider the effect of demand-side factors that influence the density of traffic realised by carriers. These factors include those related to CRS ownership, and frequent flier enticements. For example, the proclivity to select United States carriers on the part of U.S. citizens (as noted
by Dresner and Windle [1992]) probably bears a relation to the fact that these consumers obtained their tickets through U.S.-owned CRS systems, and, moreover, was likely motivated in a substantial way by the desire to accumulate frequent flier rewards. Encouraging the attrition of weaker airlines to increase traffic densities for the remaining carriers may be a means of increasing the returns to what many analysts have considered to be anti-competitive tools.  

2.4 United States General Accounting Office (1990)

The United States General Accounting Office (GAO) (1990) examined whether the structure and conduct of the US airline industry had resulted in conditions that made it difficult for new competitors to enter domestic markets in the United States. Their inquiry focused on capacity constraints at US airports, and on the marketing practices of carriers, as possible barriers to entry.

With regard to capacity constraints at airports, the GAO examined several issues:

1. whether the property rights associated with airport slots had allowed incumbent carriers to block the entry of new competition;
2. whether the practice of leasing airport gates and other physical facilities represented a barrier to entry;

3. whether there were limitations on airports to their future expansion (where physical facilities were concerned);

4. whether noise control programs presented an entry barrier;

5. the extent to which airline marketing practices constituted an entry barrier.

Four key airports in the United States feature slot controls: Washington National, Chicago O'Hare, and John F. Kennedy and LaGuardia airports in New York City. The Federal Aviation Administration (FAA) was responsible for administering the slot allocation program. 95 per cent of the slots that existed at the outset of the program were "grandfathered" to the holding carriers. The remainder were made available to entrant airlines through a lottery. 10 After slots had been acquired, they could be sold to other carriers. Although the FAA had introduced the "Buy/Sell Rule," under which airlines could buy and sell their slot rights, the GAO determined that this program had not met its objective of efficiently allocating slots. Incumbent airlines were found to have been able to hoard slots; would-be entrants have been
excluded from slot-controlled airports.11

Airlines cannot offer services to airports without having gate and ticketing facilities. The GAO examined the availability of such facilities at US airports and discovered that the control of incumbent carriers over these facilities presents a sizeable entry barrier in many markets. The essence of the problem is that incumbent airlines hold long term leases over these facilities. The GAO found that the major airlines lease over 80 per cent of all gates at large-and medium-sized airports in the United States.12 Moreover, while these carriers allowed other airlines to utilise their gates to some extent, 76 per cent of leased gates were used solely by the leasing carrier.13 Considering that only 12 per cent of all gates at large- and medium-sized US airports were not under lease control in 1990, the influence that incumbent carriers had over market access was enormous.14

The most serious anti-competitive effect of airline control over airport facilities was found to be where long-term, exclusive leases were in force. The GAO noted that effective "use it or lose it" lease provisions reduced the adversity posed by lease controls.15 They also noted that while it might be possible to develop a more equitable policy surrounding capacity allocation, the implementation of such policies would be complicated by the fact that existing leases have terms of up to 20 years, thereby delaying the time at which sweeping
reforms could be introduced.\textsuperscript{16}

The GAO concluded that airport noise restrictions did not generally pose a barrier to entry to most airline markets. The exception to this finding was that, where incumbent carriers had been granted exemptions from noise restrictions, there could be an anti-competitive effect.\textsuperscript{17}

With regard to the potential for anti-competitive ramifications of airline marketing practices, the GAO considered the effect of frequent flier programs, CRS ownership, volume incentives for travel agents, and code sharing.

Frequent flier programs (FFPs) were determined to have influenced the selection of an airline by the consumer. The GAO found that 81 percent of business travellers selected carriers on the basis of expected frequent flier rewards more than half of the time they booked a flight.\textsuperscript{18} The anti-competitive effects of FFPs were that they discouraged consumers from switching from well-established airlines to new entrants, and that they served to further strengthen the ability of an airport-dominant airline to capture the majority of traffic originating from the area surrounding that airport.\textsuperscript{19}

The GAO concluded that the control over CRS systems gave those airlines so-doing advantages over carriers that had to purchase CRS
services. The outcome of the nature of the provision of CRS services has been to transfer millions of dollars from airlines purchasing CRS service to airline who were CRS owners. The GAO determined that the fees that had been charged for these services were roughly double the cost of their provision. Non CRS-owning airlines were at a further disadvantage in that travel agents were found to have booked a disproportionate number of flights on the CRS-owning carriers. (This is the "halo effect," as discussed in Chapter V, Section 3.2)

A related marketing strategy that the GAO found to be anti-competitive was the practice of offering travel agents volume incentives for booking with the airlines. These incentives involved rewards to the agent in the form of free travel, commissions that increased non-linearly with the number of tickets sold, and other such incentives. The outcome of these programs was that, to be competitive, all airlines had to offer similar rewards. This put smaller and/or incipient carriers at a disadvantage versus larger, well established airlines, who could spread the cost of such programs over a larger traffic base. The GAO reported that its survey of travel agents revealed that the objective of capturing these rewards influenced almost two-thirds of travel agents to select a favoured carrier.

Finally, the GAO study considered the possible anti-competitive effects of code-sharing. They reported that the significance of the
anti-competitive effects of code-sharing were indeterminate. They did, however, find that agents had observed that, where their customers expressed a preference, they preferred code-shared services to interline services by a margin of two to one.\(^{25}\) The GAO believed that code-sharing should not be prevented as it conferred benefits to the travelling public in the form of better connecting times, more convenient gate locations, and less baggage-related problems.\(^{26}\)

In conclusion, the GAO determined that the greatest anti-competitive forms of conduct in the United States airline industry were:

1. The control that airlines had over the allocation of airport facilities, especially at the four slot-controlled airports;

2. The long-term leases that were associated with gates and terminal facilities. This was a particular problem where majority in interest clauses were associated with the leases, and where there was little or no room for physical expansion;

3. Frequent flier programs, which the GAO claims affects the selection of airline by over half of the market;
4. The methods of CRS use and availability, which confer advantages to owning airlines at the expense of non-owning carriers;

5. Travel agent incentive schemes.
3. The Specified Rights Option: Revising the Status Quo

3.1 Policy Objectives Favouring the Adoption of Specified Rights Options

Specified rights alternatives would be selected where the objective of the regulators was to achieve a better balance of benefits between the two countries' carriers.

Specified rights options are forms of managed competition. They allow regulators to directly influence the distribution of benefits between both the two countries and the individual airlines. The structure of the existing bilateral has afforded the pre-eminence of US companies in scheduled services. With regard to the division of transborder opportunities as between the Canadian carriers, Air Canada has realised the majority of the benefits of the current bilateral regime. Their operating authority extended to 16 routes versus 5 for Canadian Airlines International as of December 1988. Air Canada is advantaged by the current route allocation, beyond a mere numerical superiority: it operates on 8 of the 10 highest volume, transborder routes; it has exclusivity on the Toronto-Los Angeles route (which ranks sixth in terms of volume); Canadian Airlines International operates on only one of the top ten routes. The disparities with regard to transborder opportunities between the countries and their
carriers could be directly addressed through the use of a new specified rights regime; a more equitable distribution of service provision could be achieved.

Given the current disparity in the distribution of benefits between Canadian and US airlines, the majority of interested parties in Canada have advocated that any new agreement give preferential treatment to Canadian carriers. The consensus is that any new bilateral agreement with the United States must satisfy the goals of equity between benefits and opportunities for both countries' carriers, while at the same time preserving the viability of the Canadian airline industry.\textsuperscript{31,32}

3.2 The Structural Implications of Specified Rights Options

3.2.1 Alternative Means of Route Allocation

The specified rights option would retain the essential structure of the current transborder regime. The Ministerial Task Force on International Air Policy proposed several means by which a new specified rights regime could be developed:

1. Status Quo: Under this scheme, no new transborder routes would
be created. Existing routes would continue to be served by the country and carrier currently providing the service. Routes that have been authorised but have not been actually operated could see services initiated; 33

2. Increased Double Tracking and/or Multiple Designation: Existing routes would have the number of countries authorised to operate them expanded through additional double tracking. Existing routes would have the number of airlines authorised to operate them expanded through multiple designation. This could apply to both operating and non-operating existing routes; 34

3. Designation of Named Routes: New transborder routes would be specified. The particular routes would be agreed upon by a bi-national panel. They would then be allocated between the countries through bilateral negotiations, and to their individual carriers, by the country concerned; 35

4. Allocation of New Routes by Quantum: Under this scheme, each country would be allocated a fixed number of new routes that its carriers could operate. The actual city-pairs to be served would be determined by the individual countries; 36
5. Round Robin Route Selection: Under this format, the countries would alternate turns in selecting routes that their carriers wished to operate. The selection process would stop when one of the countries had no more routes that it wished to select.\(^37\)

3.2.2 Entry and Exit

Whichever means of achieving a new set of specified routes is used, the resultant structure will be similar. The entry of carriers into the specified routes will depend on the approval of the appropriate regulatory authority of the carrier’s home government: the Minister of Transport in Canada; the Department of Transportation in the United States.\(^38\)

The exit of airlines from operating routes would require prior notification, as under the present agreement. A provision allowing airlines to buy and sell route rights might also be incorporated, however this would have to be confined to exchanges between airlines of the same country. (The Royal Commission on National Passenger Transportation advocated the freedom of Canadian air carriers to sell designated routes to each other.)\(^39\)
3.2.3 Barriers to Entry

It will be necessary, particularly where services to presently unserved, hub airports in the United States are concerned, to make airport access guarantees part of the new bilateral. These guarantees would encompass access to landing slots, gates, and other essential terminal facilities.\(^{40,41}\)

The utilisation of user charges as the means of airport capacity allocation in Canada do not pose a discriminatory barrier to U.S. carriers with respect to introducing new services to Canada. Although Pearson International Airport (Toronto) has a slot allocation system in place that is administered by a committee of airport management, airline representatives, and the federal government, the general basis of allocation remains user charges rather than property rights.\(^{42}\) Proposed changes to the user fee policy may affect the fortunes of U.S. carriers wishing to introduce new transborder services.

The National Transportation Act Review Commission has recommended that Canada adopt a new procedure for slot allocation that "recognises the precedence of established airlines but at the same time makes new entries possible."\(^{43}\) As plain user charges cannot confer favour to incumbent carriers, it appears that some measure of property rights are being considered for future Canadian airport policy. If applied only
to Canadian carriers, such policy would give these airlines parallel influence to that enjoyed by US carriers over airports in the United States. The wording of the recommendation is such that US carriers could conceivably secure such rights at Canadian airports, as the recommendation refers only to "established airlines." Of course, US carriers are well established at many Canadian airports.

The pursuit of a specified rights regime implies the continuation of barriers to entry at the individual route level. Although double tracking and multiple designation would increase the potential if not actual number of airlines contesting any particular transborder route, the intent of specified rights is to ensure that there is equity of opportunity between the two nations' carriers. The equity consideration can only be achieved through the constraint of the number of carriers that have access to transborder routes. While the industrial structure of the total transborder sector will likely see a large number of carriers participating, individual routes will feature very high concentration. (High market concentration will have price effects that will be discussed in the following Section.)

The restriction on route entry by regulation will maintain very high concentration for individual routes, thereby sustaining the ability of carriers to charge price premia. While the existence of alternative routings will moderate the magnitude of these premia for most markets,
the time cost of (what will probably be) circuitous routings will undermine the desirability of these alternatives. The agreement must therefore continue to provide regulators with a means to review prices, to prevent the airlines from transferring surplus from transborder travellers to themselves through unreasonable pricing.\textsuperscript{45} Double approval pricing will therefore be a component of any new specific rights regime.

3.2.4 Inter-Airline Relationships

Inter-Lining

It will often not be possible for the transborder traveller to complete a journey using the services of a single carrier. Therefore, inter-lining will be a necessity for many transborder trips. Where inter-lining is possible through the use of the services of allied carriers, the consumer receives superior service quality, approximating that of single line service. Carlton, Landes, and Posner (1980) estimated that the benefits of single carrier service were between 7.0 and 9.8 per cent of the total cost of air travel—the fare plus the value of the passenger's time.\textsuperscript{46} The benefits of allied carrier service can be expected to be within the range of 0 to 9.8 per cent, as all of the benefits of actual single carrier service may not be fully
captured by alliance arrangements. The value to Canadian consumers and Canadian carriers of alliances between Canadian and US carriers has been recognised, and should be supported as part of a new specified rights agreement.

Foreign Ownership and Code Sharing

Related to international carrier alliances are the issues of foreign ownership and code sharing arrangements. It has been asserted that the effectiveness of alliance relationships varies directly with the extent of exchange of equity between the participating airlines. There exists a conflict between the efficiency gains (and thereby consumer benefits) that would be realised if Canada-United States airline mergers would be permitted, versus the general consensus that one of the objectives of any new bilateral should be to preserve a viable, Canadian airline industry. As the aim of a specified rights regime is (partly) to promote the survival of the Canadian industry, the limitation of equity exchanges will be a component of this type of agreement. Nonetheless, there is considerable support for the relaxation of foreign ownership restrictions. The proposed foreign ownership guidelines would permit up to 49 per cent of Canadian carrier voting equity to be held by non-Canadians. Such an amendment would facilitate closer alliances between Canadian and foreign
carriers. Though the National Transportation Act (1987) would need to be amended to permit increased foreign ownership, the scope of the application of the new regulations would need to be moderated by the reciprocity of opportunity for Canadian interests to make similar acquisitions of foreign countries' airlines. To accomplish this, the adoption of conditions within bilateral agreements specifying these rights would be appropriate. As the United States is considering the adoption of a similar policy (as discussed in Chapter III, Section 3.3), this condition could well be adopted as part of a specified rights agreement.

Related to the issue of alliances between Canadian and US air carriers is the practice of code sharing. Code sharing allows a carrier to provide nominal services without actually flying the routes involved.

There is concern, where code sharing is practiced for international services and no underlying route rights exist for the non-operating carrier, that it may undermine the intended equity of route specific bilateral agreements. The ability to effectively offer services on a transborder route through code sharing is viewed as being parallel to multiple designation status for the route. This may have the effect of diverting traffic away from the designated domestic carrier where code sharing exists between a non-designated domestic carrier and a
carrier of the other country. 57

Supporting the allowance of code sharing are the beneficial effects that the practice is deemed to have for both carriers and consumers. Code sharing benefits include greater choice of flights, reduced connection time, improved CRS positioning, and the opportunity for customers to take advantage of more extensive frequent flier programs. 58, 59 While the practice may divert traffic away from the designated domestic carrier for the transborder portion of the service, it encourages competition between the home country's carriers for the domestic portions of the international markets.

On balance, code sharing should be permitted as part of a new specific rights bilateral. Canada and the United States should include a condition that code sharing be permitted, with the proviso that the regulatory authorities in each country have the power to review, and if deemed necessary, disallow particular code sharing situations. This is in accord with the position taken by the Ministerial Task Force, which recommended that code sharing be subject to the approval of the National Transportation Agency where the code sharing carrier has no underlying route authority. 60 Implicitly, code sharing authorisation would thereby be on a double approval basis, with approval being assumed unless a regulatory body took issue concerning a particular case. This would provide the consumer and carrier benefits
anticipated, whilst safeguarding designated carriers from commercial arrangements that undermine the equity objectives of the bilateral.

In summary, the use of any of the alternative specified rights solutions will result in a transborder market structure with several common characteristics. Individual transborder markets will have a limited number of potential or actual competitors; the maximum number of competitors will be double the number of Canadian carriers that are able to provide transborder services. Most routes will be highly concentrated—this will have implications for fare structures, which will be explored in the following section. The nature of the demand for transborder travel is such that US carriers will continue to have advantages over their Canadian counterparts. US carriers will retain the ability to connect a greater number of cross-border city pairs because of their extensive hub-and-spoke networks. Overall, transborder markets will be more competitive than Canadian domestic markets because of the larger number of actual and/or potential competitors involved, yet will remain less competitive than US domestic markets for similar reasons.
3.3 Expected Conduct and Performance of Carriers

3.3.1 Pricing

It has been shown, in both Canada and the United States under regulation, in current United States markets where a dominated hub is an end-point, in the current transborder environment, and in other international markets governed by traditional bilaterals, that where market entry is restricted fare structures tend to result in some degree of rents to the airlines, with an accompanying decrease in consumer welfare.\textsuperscript{61,62,63,64} The entry restrictions inherent with specified rights bilaterals can be expected to maintain price premia to some extent.

Oum (1990) determined that, under the existing agreement, prices for transborder flights of 540 miles or less are lower than those for domestic flights of equivalent distance within either Canada or the United States.\textsuperscript{65} These results are probably a reflection of the market-driven fares associated with the adoption of the Regional, Local and Commuter Air Services Agreement in 1984. Average transborder fares were seen to be lower than average Canadian domestic fares for equivalent stage lengths up to 1580 miles; average transborder fares were determined to be greater than average fares for US domestic services for equivalent stage lengths of greater than 540 miles.\textsuperscript{66} The
origins of the differences in average fares between the intra-Canada and intra-United States markets, and those of the transborder markets must be understood in order to determine the likely outcome of future bilateral structures.

There are two possible explanations for the transborder fare structures that have been observed: that costs associated with the production of transborder services are higher than for most intra-United States services, and for some intra-Canada services; that the nature of competition on transborder routes has produced the observed fares. Of course, there could be interaction effects between these two influences.

There is no obvious reason that the costs associated with the production of transborder air services should be any greater than those for the production of domestic services in either Canada or the United States. As discussed in Chapter VI, Section 2.2, standard production technologies are employed in air transport, regardless of the markets being served. Differential costs and factor productivities have been shown to exist between countries, and between individual carriers. Canadian carriers produce available-seat-miles at a higher cost structures than their U.S. counterparts. Furthermore, it has been shown that real average domestic fares in Canada are higher than those in the United States. This presents the possibility that
transborder fare levels are higher than US domestic fares because of the proportion of transborder services provided by Canadian carriers, who charge generally higher fares for their services; by implication, United States carriers serving transborder routes would then set fares according to the "umbrella effect" afforded by the high fares of Canadian carriers.

That the observed differential between transborder and intra-United States fare levels are the result of Canadian carrier participation in the production of these services is unlikely. Although several studies have shown that Canadian fares are higher than those in the United States, Morrison (1992) pointed out that there are complications involved in comparing Canadian and US average domestic fares due to the nature of the data supplied for fares in the respective countries. Jordan (1991) suggested that the use of exchange rate adjustments for making international comparisons would lead to inaccurate conclusions; purchasing power parity data were indicated as the appropriate means of international comparison.

The extent to which fare discounts are available and utilised would have an effect on the actual average fares experienced in any market. Oum, Stanbury, and Tretheway (1991) observed that United States domestic markets featured greater discounts, and that the rate of utilisation of these discounts was greater than in Canada.
the actual average yields for individual markets are known, it is difficult to compare average fares as between the two countries.

Dresner and Tretheway (1990) concluded that liberalised bilaterals had no significant effect on the average fares for non-discretionary travellers. By implication, traditional, specific rights bilaterals support premium fares for this market segment. If there is a large proportion of business travel between Canada and the United States, the relatively high fares observed could be the result of a greater proportion of patrons of these services being non-discretionary travellers, having low elasticities of demand.

Finally, Canadian carriers would have to charge higher fares at all route distances in order for the claim that they are responsible for high transborder fares to be valid. Oum (1990) has shown that this is not evident: average intra-Canada fares are lower than average transborder fares for flights of over 1580 miles. Therefore, it follows that the source of the differential between intra-United States and transborder average fares is accounted for by the difference in structure between these markets.

The structure of specified rights bilaterals prevents the entry of additional firms that would otherwise compete away economic rents in such markets. Dresner and Tretheway (1990) have shown that competitive
bilateral agreements have led to reduced prices for travellers utilising discount fare classes. Their definition of a competitive bilateral included a provision that additional airlines were free to enter routes covered by the agreement. The implication of their research is that the adoption of a specified rights bilateral for Canada-United States services should not be expected to lead to lower (more competitive) fares for transborder services.

There is extensive evidence to show that, wherever there are barriers to entry, airline markets will feature price premia. We have reviewed the effects of barriers to entry and the resultant market concentration in previous Chapters of this paper. Assuming that the nature of the entry barriers is non-significant--that only the existence of barriers is meaningful--the implications of the results of studies conducted concerning non-competitive markets in general can be applied to the transborder situation.

Applying the conclusions of Adrandi, Chow, and Gritta (1989), Borenstein (1989), Graham, Kaplan, and Sibley (1983), Huston and Butler (1988), and Morrison and Winston (1987) to transborder markets suggests that it is the inherent concentration in these markets that has resulted in relatively high fares, and therefore the use of specified rights regimes will inevitably lead to fare premia.
Borenstein (1989) studied the advantages of airport and route dominance by United States carriers. He calculated that, for every 1 per cent increase in a carrier's route traffic share, it was able to increase its prices by between 0.03 and 0.22 per cent.\textsuperscript{81} He observed that such price increases tended to be applicable to low-end fares.\textsuperscript{82} (Note that Dresner and Tretheway (1990) found that liberal bilaterals tended primarily to influence low-end fares.)\textsuperscript{83}

Adrandi, Chow, and Gritta (1989) concluded that there was a positive relationship between a carrier's market share, and its profitability. They asserted that this finding supported the implications of the structure-conduct-performance hypothesis: that market power, rather than firm efficiency, determined price levels.\textsuperscript{84} It should be noted that their conclusions may be less applicable to transborder markets because their study considered airline market shares, costs, and profitability on a system-wide basis.

Graham, Kaplan, and Sibley (1983) tested the extent to which airlines were able to set fares in concentrated markets above fares in less concentrated but otherwise similar markets. They pointed out that the ability of airlines to mark up fares above long run marginal cost was a function of the market elasticity of demand.\textsuperscript{85} Entry barriers reduced demand elasticity, allowing for higher margins; transborder services, under route specificity, feature explicit entry barriers, hence permit
price premia. The authors found that concentration affected average fares, but the effects of increases in concentration were greatest for markets having Herfindahl indexes of 0.5 or less. Their findings suggest that, once route duopoly has been achieved, the affects of changing route shares on raising fare levels have been substantially realised.

Morrison and Winston (1987) investigated the implications of the contestability hypothesis in the context of the United States domestic airline industry. They analysed the extent to which actual and potential competitors influenced the difference between the optimal and actual welfare distributions between producers and consumers. Morrison and Winston determined that each additional actual competitor on a route reduced the gap between actual and optimal welfare by $0.0044 per passenger mile. Their calculations of the effects of potential competitors on welfare optimisation showed that each potential competitor lessened the difference between actual and optimal welfare by $0.0015 per passenger mile. Their findings would suggest that, where transborder markets are governed by specified rights, and the number of carriers is restricted to below that which traffic densities would otherwise profitably support, there will be fare premia.

In summary, there is extensive evidence that, wherever entry barriers are present, airline markets will feature fare premia. Moreover, the
connection between the number of actual and/or potential competitors and the extent to which airlines are able to mark up fares above marginal cost has been established. The average higher fares for intra-Canada, and transborder markets versus those for intra-United States markets can be explained by the greater number of average competitors per market in the United States. Morrison (1992) calculated that the average number of effective competitors at the route level in Canada was 1.7 in the second quarter of 1987, and 1.6 in the fourth quarter of 1990. In contrast, we have calculated that the average number of such competitors in US domestic markets was 2.8. When applied to transborder services, these findings suggest that the structure of these markets, with the explicit limitations on entry, has resulted in observed fare levels greater than those for otherwise similar, intra-United States markets. Therefore, the continuation of a specified rights regime can be expected to maintain premium fares in transborder markets.

While double tracking and multiple designation will provide for greater competition in transborder markets, the achievement of the equity objectives of a new transborder regime will limit the competitive benefits of these agreements.
3.3.2 Behaviour in Non-Price Areas

Windle (1990) found that Canadian firms were slightly less efficient, in terms of total factor productivity, than US carriers. Since Canadian firms have the opportunity to exact price premia in single tracked-single designated transborder markets, they can be expected to capitalise on this ability to enhance overall revenues. Therefore, an increase in the proportion of Canadian-provided services, under the specified rights option, could well mean an increase in average fares for transborder services.

An increase in the number of double-tracked and double-designated routes should serve to discipline prices. Under the existing regime, a carrier having the sole authority to serve a transborder city-pair has limited incentive to minimise fare levels. The incentive that exists is in the form of the option that the traveller has to select alternative routings. However, there is a relative scarcity of acceptable alternatives because of the limited number of transborder routes available. Moreover, there is a good chance that any alternative routing will mean significantly greater total travel time. Recognising this, the airlines can price their transborder services to capitalise on the value of the passenger's travel time alternatives, keeping fares just below the level at which diversion to alternate routings would occur. If there was an increase in double-tracking or
double-designation, there would be an increase in intra-route competition rather than the current inter-route competition. Intra-route competition exerts downward pressure on fares in a market, thus increased double-tracking and double-designation would be a desirable feature of a specified rights regime.

With the increase in the number of cross-border city pairs receiving direct services, there should be an increase in inter-route competition. Having a greater number of alternative routings to choose from, the consumer should be able to maximise the value of his air travel expenditure. The increase in alternative routings should serve to exert downward pressure on transborder fare levels in general.

A confound to the benefits expected from an increase in the number of transborder city-pairs should be recognised in that there is likely to be a time cost involved in the selection of alternative routings. There is no guarantee that the new route alternatives will be distributed amongst the carriers in such a way that the passenger will be able to avoid inter-lining on any new transborder origin-destination combination. If carriers are successful in securing the service rights to new transborder routes such that they could take advantage of their marketing and service alliances, the cost to the consumer with respect to the costs of inter-lining would be reduced. There is, however, no
guarantee that the routes would be so-awarded. Furthermore, since the carriers currently have somewhat "weak alliances," the route allocation that best avoided inter-lining at the inception of a new specified rights regime might not continue to do so with changes in alliances in the future. Yet again, the practice of multiple-designation would eliminate this problem: carriers could operate on routes that best suited their overall network and alliance structures.

As discussed in section V.3.3, there will be an obstacle to the efficient provision of transborder service under a specified rights schema, even if that regime should incorporate multiple-designations. This obstacle is the existence of fortress hubs in the United States. Airport dominance will, yet again, allow dominating carriers to charge price premia: in this case, for transborder services involving a hub, regardless of the number of alternative routings available. This eventuality should be of particular concern to policy makers as many of the new routes being contemplated under the specified rights option involve establishment of direct services between Canada and dominated US hub airports such as Atlanta.

Transborder prices can therefore be expected to continue to be higher (per mile) than those of all United States domestic flights of comparable stage lengths, and of many domestic services in both countries.
The allocation of the new routes created under the specified rights option is an important consideration in evaluating the expected performance of the transborder sector. Both of Canada's major carriers would like to have authority to operate on as many of the new routes as possible. On superficial consideration, it should be expected that both Air Canada and Canadian Airlines International would attempt to secure authority for operating on all new transborder routes. The comprehensive geographic coverage that both carriers' networks have in Canada suggest that neither would attempt to emphasize the acquisition of route authority on new transborder routes which originate/terminate at any particular Canadian airport. More careful assessment of route benefits suggests that, because of alliances with US carriers, there could be some differential in the attractiveness of particular transborder routes to the two Canadian firms.

Air Canada, due to its marketing alliances with United Airlines, and its interest in Continental Airlines, would probably urge that it be granted the rights to serve the Canada-Chicago, Canada-Denver and Canada-Houston markets. Canadian Airlines would seek authority to serve the Canada-Dallas/Fort Worth and Canada-Chicago markets due to its evolving relationship with American Airlines. Conflict would arise over the Canadian designation of which Canadian carrier would receive new routings between Canada and Chicago as both Canadian companies have
an interest in securing these routes because of their alliances with US airlines. A solution to this problem would be for Canada to double designate the Canada-Chicago routes so that both Canadian carriers could operate them.

The question of route awards as between US carriers is much simpler than the Canadian situation. The United States has made multiple designation a part of its transborder policy to date. Furthermore, the US carrier will seek those routes that connect Canadian cities with US centers at which the carrier operates a hub. The small number of Canadian urban centres makes the value of routes more related to the characteristics at the US end rather than the Canadian terminus. As with domestic routes, the US carrier is primarily concerned with intensifying the returns from its hubbing operations. US firms have little incentive to seek particular routes, other than to further add to the scope economies that they presently enjoy from their domestic hubbing operations.

An achievement of absolute equity between Americans and their Canadian competitors requires a negotiated increase in Canadian carriers' market shares. As this form of regulatory revision is not likely to be traffic generating, market share gains for Canadian companies must come at the loss of US market share. US carriers are experiencing difficult times, so it is doubtful that they would be
agreeable to such legislation.

Transborder passengers may also not approve of this solution. Since the specification of routes retains protection of the airlines from open competition, fares can be expected to be higher than economically justified.

The net effects of a revised specified rights regime should be as follows:

1. The greater number of route choices will promote decreases in real transborder fares by increasing inter-route competition.

2. The impact of increased routing options on fares will be limited by the time cost of alternative routings where such routings increase total distance flown. Where these routings necessitate inter-lining, their attractiveness will be reduced.

3. Double-tracking and multiple-designation of routes will promote intra-route competition, exerting downward pressure on fares.
4. The award of routes to Canadian carriers on an exclusive service basis may result in relatively higher fares on these routes due to the cost structure of Canadian firms. Inter-route competition will, however, mitigate these fare premia to a significant extent.

5. The actual allocation of new routes will affect efficiency and performance in transborder markets.

a). If airlines can secure routes that integrate well into their existing networks (including services provided by alliance partners), efficiency will be enhanced, and fares should reflect these efficiency gains. However, where this results in the strengthening of market power, the net effect on fares will be negative (from the consumer's perspective).

b). If routes are distributed somewhat randomly, with no provision for the firms to exchange rights on a market basis, there will be a negative effect on efficiency. The value of service for the consumer will be reduced by the complications that will arise because of the need for circuitous routings and/or inter-lining.
The selection of the specified rights option will produce moderate benefits to interested parties in Canada and the United States. Canadian air carriers should benefit from the acquisition of rights to serve more cross-border city pairs, in many cases on an exclusive service basis. To make such an agreement acceptable, it is essential that US carriers also receive new route authorities as well; they will benefit to some extent with these new route awards. Transborder travellers will be able to fly to more cross-border destinations directly as the result of these new services, thereby increasing the value of travel expenditures through time savings.

There are obvious disadvantages associated with the specified rights option. First and foremost, it does not allow market forces to determine the structures of both route networks and transborder fares. The benefits that have been realised from domestic deregulations in both Canada and the United States will not be fully available in the transborder markets. Fares should experience real decreases, but these price reductions will be limited by the restrictive nature of the proposed agreement. The regime would confer additional rights to Canadian carriers, but will do so at the expense of transborder travellers. Whether Canadian carriers actually capture the benefits associated with a greater share of transborder rights is uncertain as travellers may elect to patronise US services. Gillen, Hansen, and Ramos (1990) anticipate that the pursuit of the specified rights option
will not meaningfully increase the Canadian carriers' traffic shares.93

The main advantage of the specified rights option is that it accommodates the pursuit of the equity principle as per the Chicago Convention. This equity concept was established in the 1940s, and should be scrutinised as to its applicability to the North American market of today. With the emergence of the Canada-United States Free Trade Agreement and the North American Free Trade Agreement, and the general policy goal of creating a tariff-free economy on the continent, the national notion of equity should perhaps be weighed against an equity that is considered at an organisational or individual level of scrutiny. The historic concept of equity (in air law) and the implicit protectionism of managed competition in air transportation is vestigial in the emerging world of free trade areas. The European Community has abandoned the equity consideration from its internal aviation policy. Canada and the United States should consider following the same ideology. If they do, the sole advantage of the specified rights solution is lost. Therefore, with a view to the future of trade in North America, the specified rights scheme should not be pursued.

The eventual goal of Canada and the United States (and, for that matter, Mexico) is to enjoy a continental economy free of regulatory impediments to efficiency. The conclusion of a new specific rights regime today will serve only to delay the time at which free market
discipline will allow and encourage companies to maximise efficiency. The choice of this option does not address the fundamental reasons for the inability of Canadian carriers to effectively compete with their US counterparts. The greatest long term difficulty facing the Canadian airline companies in continental competition stem from demographic inevitabilities, the Canadian government's policies regarding taxation and capital accumulation, and from the paucity of dense air travel markets in Canada. Alternatives that address these issues will promote increased efficiency for airlines in Canada, and more competitive services for consumers in both Canada and the United States.

To encourage airline competition and airline efficiency, regimes involving greater integration of the air transport industries of both countries warrant consideration. As indicated above, these methods involve opening transborder markets to free competition, and/or allowing cabotage rights. Recognising the disadvantages facing the Canadian industry at the present time, the method of implementation of more liberal approaches would have to be done in such a way as to avert a crisis for Canadian carriers. To accomplish this, it has been suggested that the approach taken should be to confer differential rights of access. This would be accomplished by granting one or a combination of transborder, cabotage, and/or fifth and sixth freedom rights to carriers in some prescribed manner. Of course the suggestion is to give these expanded rights to Canadian airlines first in order to
promote a "leveling of the playing field."

We now turn to a discussion of these more liberal transborder structures.
4. The Open Border Option

4.1 The Structural Implications of an Open Border Regime

4.1.1 Basic Philosophy

The open border concept allows any carrier from either Canada or the United States to establish direct, transborder services without the need for governmental approval. This strategy would allow market forces to dictate which cross-border city-pairs would enjoy direct services, what prices would prevail, and which carriers would provide services. The United States promoted the open border policy in its position paper of 1985.

The underlying premise of the Open Border approach is that market forces can allocate air transportation resources more efficiently than can the efforts of any regulatory authority. This belief was the basis for the deregulation of domestic air transport industries in Canada, the United States, and other countries. In the case of the Open Border strategy, the deregulation would only apply to cross-border services; domestic operations in each country would remain contestable only by carriers that were nationals of the particular country.

The aim of an Open Border regime would be to increase the efficiency
of transborder air services through the application of market discipline to this sector. The benefits of such a policy can be expected to accrue to transborder travellers, who should receive higher quality transportation at reduced prices, and to those airlines that can most efficiently serve transborder markets.

4.1.2 Regulatory Structure

The introduction of an open border regime would mean the end of route allocation through regulation. An open border policy would permit any carrier, whether of Canadian or United States nationality, to offer services on any transborder route. This principle would apply to both scheduled and charter operations. Attempts to provide for the equitable distribution of routes between the airlines of Canada and the United States, and between specific firms in each country, would be implicitly abandoned.

To fully realise the benefits of a deregulated market structure, it would be necessary to deregulate pricing in transborder markets. Therefore, the open border policy would include the end of the existing scheme of double approval pricing; fares would no longer need to be approved by the relevant regulatory agencies in each country. Instead, a double disapproval provision could be employed, so that if both
countries' agencies objected to the fare(s) being offered, the fare would be disallowed.

As further protection to consumers and firms, competition legislation in Canada and the United States would continue to provide a structure through which claims of anti-competitive pricing could be investigated and, if need be, remedied. The US Department of Transportation and Transport Canada would probably be given the right to review fare offerings, when they have received a complaint from an interested party. If one of these agencies found the fare(s) in question to be either predatory or excessive, they would have the ability to challenge the fare through means provided for under competition legislation. Complications may arise under such a scheme however, as the issue of jurisdiction over transborder fare offerings would have to be addressed.

The open border regime could include provisions for "blind sectors," co-terminalisation, and change-of-gage operations. The intention of these provisions is to enhance the number of transborder markets that can be served by carriers. With these rights airlines can establish quasi-hubs in the other country's territory allowing for traffic consolidation that will increase traffic density through scope economies. The inclusions of such provisions into an Open Border agreement would be of particular significance to Canadian carriers.
"Blind sectors" are flights that are consecutive to transborder segments, departing from the first airport of entry into the foreign country, and terminating at a second airport in the same foreign country. The carrier is not permitted to offer seats to those travellers journeying strictly between the points in the foreign country. For example, Air Canada could operate a flight from Toronto to Kansas City, thence on to New Orleans. It could sell seats for Toronto-Kansas City and Toronto-New Orleans, but not for Kansas City-New Orleans.

Related to blind sector operations are co-terminalisation hubs. Co-terminalisation hubs are hubbing operations involving interchanges of passengers between several transborder and blind sector flights. This allows the transborder carrier to capture economies of scope and density by consolidating traffic from diverse origins at the co-terminal hub, and distributing it between various flights to numerous destinations. For example, Canadian Airlines could establish a co-terminal hub at Salt Lake City. Transborder flights from Vancouver and Calgary would arrive at Salt Lake City roughly simultaneously. Blind sector flights would subsequently depart from Salt Lake City to Phoenix and Dallas. This would give Canadian effective services for Vancouver-Phoenix, Vancouver-Dallas, Calgary-Phoenix, and Calgary-Dallas. The advantage of this structure is that it allows for higher load factors.
(thus economies of density) over the operation of four separate, non-stop services.

While blind sector operations would be attractive to both Canadian and US carriers, co-terminalisation would appeal almost exclusively to Canadian carriers due to the nature of the demographics of, and demand for, transborder services.

It must be noted that co-terminalisation is not a form of cabotage as it does not entail the rights to offer seats to domestic passengers at the co-terminal airport.

Finally, the practice of United States Customs pre-clearance at Canadian airports can be expected to continue under an open border regime. While the disadvantages of pre-clearance, as it has been instituted, have been incident on Canadian airline companies, benefits of the program have been realised by transborder travellers. Since the abolition the present manifestations of pre-clearance has not been advocated, even by Canadian carriers, it can be anticipated to endure. However, recommendations have been made that pre-clearance not be extended to other Canadian airports, so as to avoid giving further advantages to US carriers. It should be recognised that the failure to permit the establishment of additional pre-clearance facilities will undermine the advantages of an open border policy from the perspective.
of the consumer.

4.1.3 The Structure of Transborder Air Service Demand

The demographic and geographic structures of transborder markets will not be affected by the adoption of an open border regime. While the liberalisation of transborder markets should lead to reduced fares due to efficiency gains, and thereby induce added demand, the essential nature of these markets will be unaltered. Forces related to economic and cultural interactions between Canada and the United States have shaped the flow of air travel between these countries. The character of such travel is that most passengers are Canadian nationals. The demographics and geography of travel see many more destinations in the United States than in Canada. An open border policy should be expected primarily to influence the distribution of traffic between carriers, with some degree of traffic inducement occurring due to improved efficiency.

An important demand-related consideration is the influence of economies of scale. Economies of scale have been demonstrated to be largely absent from air transportation from a cost perspective.\textsuperscript{99,100} As discussed in Chapter IV, economies of scale have been recognised as being significant regarding their effects on carrier choice on the part
of consumers. Because the more comprehensive networks of U.S. carriers will, for the foreseeable future, allow them to serve a greater number of transborder markets, they can be expected to be more appealing to transborder travellers under an open border regime than their Canadian rivals.

4.1.4 The Structure of Transborder Air Service Supply

The ultimate market structure of transborder airline services will depend on the conduct of the individual carriers, in conjunction with the influence of the exact regulatory regime that is adopted. Nonetheless, there are factors that will influence the supply of such services that can be readily anticipated.

The advantages of hubbing operations have been discussed previously. The hub operations of US carriers will be extended to further include Canadian points in these networks. The retention of pre-clearance facilities in Canada can be expected to be a part of an open border regime.

In conjunction, these factors will confer competitive advantages to United States carriers; they can be expected to dominate the transborder sector (to an extent even greater than under the current regime) with the adoption of an open border agreement. US firms have
cost advantages: the average cost per available-seat-kilometre in the United States in 1990 was $0.0665; the average cost per available-seat-kilometre in Canada was $0.1053 in 1990.\textsuperscript{102} These differences in cost per available-seat-kilometre necessitate the achievement of higher load factors for Canadian carriers in order to make a given service economic. It must be concluded that, in open competition, particularly on relatively low volume routes, US carriers have a competitive advantage that should allow them to capture the majority of traffic. Gillen, Hansen, and Ramos (1990) have estimated that an open border agreement would reduce the share of transborder traffic carried by Canadian companies by 0.04 per cent, given no traffic-inducing effects with the introduction of the policy.\textsuperscript{103}

The resultant general market structure of transborder airline services under an open border regime will almost certainly be an "n" firm oligopoly--as in the present situation. The absolute number of participating firms should be little affected by the change in policy. What can be expected to change is the number and identity of airlines that are operating any particular transborder route.

The nature and composition of alliances between Canadian and U.S. carriers may be affected by the emergence of an open border regime. The existing alliances between Air Canada, Continental, and United, and between Canadian Airlines International and American Airlines could be
either strengthened or strained by the emergence of an open border environment. We believe that they are more likely to be strengthened as the result of an open border policy; the basis for this belief will be discussed in the following section on airline conduct.

The number of individual transborder routes can be anticipated to increase with the opening of the Canada-United States border to unfettered airline competition.

To gage the nature of the eventual structure of transborder airline services that are likely to emerge under an open border policy, we turn now to a consideration of the expected conduct that airlines will follow. In turn, the conduct of the carriers will determine the performance of the transborder sector. We will also discuss the probable performance of the industry under the contemplated regime.
4.2 Expected Conduct of Carriers and Performance of the Transborder Industry

4.2.1 General Network Strategies

An open border agreement should result in a considerable restructuring of routes between Canada and the United States. Airlines of both countries can be expected to re-configure their transborder routes. In general, the route networks should conform to the structure that is suggested by gravity models of spatial interaction. The route configuration strategies of carriers should differ according to the carrier's nationality.

Gravity models of spatial interaction suggest that the number of trips between centres is a function of the attractiveness of those centres, in terms of their population and economic activities, and of the distance between the centres. Direct air services will be established where the size (in terms of population) and economic importance of the two centres in question generate sufficient traffic density to warrant it. (Note that the existence of a major hub at a city would be one such important economic factor.) Where densities are insufficient to justify direct services, markets will be served through the use of hub-and-spoke systems, co-terminalisation or through bilateral partnerships.
Canadian carriers may be expected to add more transborder flights to their networks. This should be especially true of Canadian Airlines International, which has few transborder services under the present agreement. In general, Canadian carriers can be expected to link major Canadian airports to co-terminalisation hubs in the United States. (Note that we have presumed that the Canadian carriers would be given the right to establish co-terminalisation hubs, and change-of-gage operations, under an open border agreement.) These co-terminalisation hubs would be located at US cities having the greatest measure of attractiveness to Canadian travellers. (A superficial examination of the traffic between Canada and the United States would suggest that New York, Tampa-St. Petersburg, and San Francisco would be likely locations). Blind sector flights would then distribute passengers to their ultimate U.S. destinations. For services between Canadian points and northern tier cities in the United States, direct flights can be expected, often being operated by Canadian level II carriers. Toronto's significance as a hub for Canadian carriers should further increase.

U.S. airlines would reorganise their transborder flights to better fit with their domestic hub operations. They will introduce services linking Canadian cities with these airports to offer more comprehensive connections to transborder travellers through the hub networks. They
may be expected to introduce direct transborder services where traffic volumes justify such flights and where the time cost associated with connecting through hubs is anticipated to lose passengers to competitors who offer direct services. In general, US carriers will link Canadian cities to their nearest major hub airport. Oum (1990) has shown that this form of hubbing, termed "Entry Point Hubbing," is superior to "Central Hubbing," wherein the airline connects the cross-border city to a centrally located hub, because it minimises total passenger travel time. 107

Allied carriers can be expected to follow the network organisation strategy of US carriers. A distinctive characteristic of allied-carrier operations would be the connection of smaller Canadian cities to northern-US hubs through the services of Canadian level II carriers.

4.2.2 Significance of Hubs in the United States

U.S. airlines can be expected to offer transborder services through extensions of their hub networks. This will allow them to connect a large number of cross-border origin/destination pairs most efficiently. In addition, the US carriers will be able to provide services between Canadian centres, using mirror image routings associated with this type of hubbing operation. 108
In order for Canadian carriers to be competitive, they would have to establish co-terminalisation hubs in the United States. These hubs would allow the Canadian carriers to replicate the number of transborder city-pairs that can be served by their US counterparts. The creation of these hubs will be complicated by the problems of access at US airports, as outlined in Chapter VII. Although there are somewhat underutilised airports at large cities in the United States that have been suggested as likely candidates for Canadian hubs, the effectiveness of hub systems depends on the total number of points that can be connected via the hub. Without an extensive number of US destinations associated with the co-terminalisation hub, the Canadian carriers' returns to their operations from potentially attractive hub locations will be much less than those enjoyed by US firms.

Allied-carrier networks would also be affected by the location of US hubs. As a US partner can usually more effectively serve customers through hubbing, its Canadian partner will likely feed traffic to, or collect traffic from, the US hub rather than choosing to operate a stand-alone service. By implication, this calls into question the sustainability of Canada-US alliances.
4.2.3 Canada-U.S. Carrier Alliances and the Open Border Environment

Canadian carriers could choose to compete with their present U.S. affiliates in providing direct services on such origin-destination pairs. The economics suggest that they should not elect to do so, as direct services will, in many markets, not realise the traffic volumes necessary to make such operations profitable. By cooperating with a US partner, and taking advantage of its hubbing operations, the Canadian carrier may share in the economies of scope associated with the hub-and-spoke system. However, the trade-off would be limited growth opportunities for Canadian carriers.

Conversely, a U.S. carrier could choose to simply operate transborder services on its own. However, the continuation of an alliance with a Canadian firm gives it better geographic coverage. As discussed in Chapter VI, demand-based returns to scale exist in terms of the number of points served. To have the same number of Canadian points served, US carriers would have to have inter-line agreements with alternative Canadian carriers in the event that they should defect from existing alliances. There are few unaffiliated Canadian regionals for US carriers to establish feeder arrangements with. US carriers would have to establish new feeders in Canada, or at least underwrite existing small Canadian charter carriers to acquire the necessary assets to be
able to inaugurate such services. This would be problematic given the guidelines of the National Transportation Act (1987) that limit the amount of foreign equity holdings in a Canadian transport company, as discussed in Chapter II, Section 2.

As noted in Chapter IV, Section 3, the evidence surrounding the demand for airline services indicates that FFPs have a significant effect on carrier choice. Airlines enjoy economies of scale from a demand perspective in that the firm having the ability to carry the passenger to the greatest number of destinations is likely to be the first consulted by the consumer when he wishes to travel. In an open border environment, the comprehensive geographic coverage offered by the Type 3 Carrier should make it the first choice for the transborder traveller seeking passage. By flying with the Type 3 Carrier, the customer will be able, not only to access most North American destinations more readily, but will also be able to maximise his frequent flier benefits. These benefits will be maximised because he can patronise one such carrier to almost all destinations in Canada and the United States, collecting frequent flier points as he goes; when he wishes to utilise free travel, he can do so to the extensive number of destinations served by the Type 3 Carrier, not only in North America, but anywhere these allied carriers fly to.

A related advantage favouring the Type 3 Carrier is the CRS. The
allied carriers happen to include the two airlines having the most widely used computer reservations systems in the United States: American Airlines and United Airlines. Though the Gemini CRS currently prevails in Canada, it is legitimate to anticipate that this situation will not persist given the wishes of Canadian Airlines International to participate in the Sabre CRS of its U.S. partner, American Airlines. This will leave Gemini with Air Canada and Covia as its remaining partners. Since Covia is the CRS of United Airlines, and is one of the most widely used systems in the United States, it is expected that Gemini will be converted to Covia in Canada as well. Presuming that the benefits associated with CRS ownership endure, it will be difficult for any non-Type 3 carrier to compete effectively in the provision of most transborder services.

4.2.4 Anticipated Characteristics of Transborder Markets

The distribution of traffic between carriers will be determined by the characteristics of the travellers’ origin-destination centers, and by the competitive advantages of the carriers.
These origin-destination pairs can be divided into six general categories, giving the following O/D matrix:

### TRANSBORDER MARKET CATEGORIES

<table>
<thead>
<tr>
<th>Canadian Centre</th>
<th>Large</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Center.....</td>
<td>.......</td>
<td>.......</td>
</tr>
<tr>
<td>Dominated Hub...</td>
<td>Category 1...</td>
<td>Category 4...</td>
</tr>
<tr>
<td>Large.....</td>
<td>Category 2...</td>
<td>Category 5...</td>
</tr>
<tr>
<td>Small.....</td>
<td>Category 3...</td>
<td>Category 6...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Within each of the foregoing categories, it is anticipated that a particular type of carrier will have a service advantage that will allow it to capture a majority share of the traffic on that type of origin-destination pair. These four types of carriers are defined as follows:

| Type.....Description.........Examples................|
|---------|------------------|----------------------------|
| Type 1: US Carriers American, Delta, United, USAir, Northwest, TWA |
| Type 2: Canadian Carriers Air Canada, Canadian Airlines International |
| Type 3: Allied Carriers Air Canada-Continental-United, American-Canadian |
| Type 4: Multiple Carriers Any Type 1, 2, or 3 Carrier |
For Category 1 services, it should be expected that Type 1 carriers will predominate. The advantages that have been identified with hub-and-spoke operations in the domestic markets of the United States will be extended to transborder services in an open border environment. Flights connecting large Canadian centres with United States hub airports will have relatively high frequencies. There will be some competition on such routes, primarily from Type 2 Carriers. Where the services in question link large Canadian centres with the dominated-hubs of American, Continental, and United Airlines, Type 3 carriers can be expected to be the primary operators, assuming that the existing inter-airline alliances can be sustained.

It should be noted that, to the extent that the alliances between Canadian and US carriers change, so too will the dominant Type of carrier on these transborder services. Moreover, if traffic is distributed between allied carriers in such manner that one (or more) partners is displeased, the resulting strain on the alliance may lead to its termination. Given the relatively "weak" nature of the existing alliances, this eventuality has a reasonable probability.

Category 2 services should be the most competitive of all transborder markets. These markets should have sufficient volumes of traffic that many airlines could profitably participate; Type 4 Carriers are
expected to offer services in these markets.

Due to economies of scope, Type 1 Carriers should enjoy an advantage in Category 2 markets. These scope economies are related to the consolidation of traffic through major centres, as noted by Morrison and Winston (1990). They found that the competitiveness of a carrier in a market was directly related to the number of network connections associated with the end-point airports of a particular city-pair. US carriers will be able to offer high quality services in terms of reduced schedule delays due to increased flight frequencies by the routing of Category 2 passengers through U.S. hub airports. The business traveller will find such increased flight frequencies particularly appealing; scope economies should allow for discretionary travellers to take advantage of deep discount fares in these markets.

Category 3 markets can be expected to be dominated by Type 1 carriers. The most efficient means of serving these markets will be by traffic consolidation, utilising the domestic hub networks of U.S. airlines. These carriers need only introduce spoke services to large Canadian centres in order to link most small U.S. communities to these cities. Those U.S. firms having the most extensive domestic networks will enjoy the greatest success in these markets.

Category 4 markets are expected to be dominated by Type 3 Carriers.
Canadian carriers, with their extensive domestic networks, will serve the smaller Canadian communities. Connections with US hub airports will be provided by the allied US carrier that is dominant at the relevant hub airport. This arrangement will provide the traveller with effectively on-line service between these points. Most of these markets will be served through connecting flights involving airports at larger Canadian centres. Where the O/D pair is in close proximity to the Canada-United States border, these markets may be connected with direct flights by the hub-dominating US carrier, using commuter-type aircraft.

In cases where, there is close proximity between the transborder points, the anticipated turboprop services commuter services will usually be provided by the feeder airlines of one or more of the Type 3 Carriers. Where the US hub in question is operated by a US airline having no alliance with a Canadian firm, the US carrier will likely offer the only service in the market. Such services may be conducted by the hub operator itself, by one of its existing feeder carriers, or by contract with a small, local operator in Canada. For example, markets in the vicinity of, and involving, Minneapolis/St. Paul can be anticipated to be served in such manner by Northwest Airlines.

Category 5 markets will have Type 3 Carriers as favoured producers. Once again, allied carriers can consolidate traffic involving small
Canadian centres, and thereby provide the most efficient means of connecting these communities with large, United States cities. In most cases, these markets will be served through connecting flights, often being routed through a hub airport—either in Canada or the United States. There should be reasonably good competition in these markets due to the alternatives that the consumer will have in selecting between Type 3 Carriers who will participate in most such markets. Advantage to a particular Type 3 Carrier will be to the extent of the total time differences that arise due to routing differences based on hub locations. For services linking several large US cities with smaller Canadian points in the Saskatchewan, Manitoba, western Ontario regions, Northwest Airlines can be expected to be a significant, non-Type 3 competitor.

Category 6 markets are likely to be dominated by Type 3 Carriers. Yet again, the ability of these allied carriers to consolidate traffic outbound from, and destined to, smaller communities will give them a competitive edge in these markets. Northwest Airlines can also be expected to be a significant player in the provision of some such services, in the geographic areas alluded to in the foregoing Categories.

There should be relatively high levels of competition in Category 6 markets due to their contestability. Competition will be limited
where traffic volumes make it efficient for only one carrier to exist in the market.

In summary, for most transborder travel, passengers will be best served by alliance (Type 3) carriers. The Air Canada-Continental-United and American-Canadian groups will therefore be foremost in the provision of transborder services in Categories 4, 5, 6, and, to a large extent, in Category 1. Type 3 Carriers should be expected to capitalise on advantages related to FFPs and CRSs, as well as their operational advantages.

Though it is not an allied carrier, Northwest Airlines may be a significant player in transborder markets due to the proximity of its Minneapolis-St. Paul hub to Canadian centers in Saskatchewan, Manitoba, and western Ontario, and because of its ability to supply international connections through its own services to the Far East, and through its alliance with Dutch carrier KLM, which has extensive services to Europe, Africa, and Asia.

Canadian carriers may realise market dominance in certain situations, not indicated in the foregoing discussion. Though it has been suggested that Category 2 markets will be widely contested, Canadian firms have some degree of advantage that may make them pre-eminent in these markets. The fact that the majority of transborder passengers
are Canadian residents, coupled with the inclination of Canadians to patronise Canadian carriers where possible, should yield these firms a competitive advantage with respect to attracting customers in these markets. Canadian carriers should be able to continue their advantage in serving Canadian holiday travellers, who fly from various points in Canada to vacation destinations in the southwestern and southeastern United States.

4.2.4 Pricing

We have explored the bases for airline price structures in Chapter VI, Section 3. Fares were seen to be dependent on three general factors: input prices, productivity, and the extent of competition in the individual market. The adoption of an open border regime would have implications for all three of these factors, and therefore should influence transborder fares.

The least impact will be on input prices. These effects will be confined to reduced fuel prices experienced by Canadian carriers operating transborder services via co-terminalisation hubs. Cost savings may result from the utilisation of US-supplied fuel purchased at the hub site. The realisation of these savings will be dependent upon the trade-off between the lower price of aviation fuel in the
United States, and the extra fuel consumption associated with hub operations.

With the introduction of an open border regime, the extent of hubbing operations incorporating transborder services can be expected to increase. In Chapter VI, Section 3, we explored the effects of the extent of hubbing practices on air fares. We found that there was a significant negative relationship between the two. Therefore, we anticipate that the additional use of hubbing to serve transborder markets would serve to reduce average fares for these services.

Liberalisation would not result in lower fares in all transborder markets. Certain markets would feature premium fares, usually as the result of dominated hubs in the United States. Markets where the origin or destination is a US carrier's fortress hub would be difficult to contest, thereby entrenching market concentration. These markets can be expected to be associated with fare premia. Since many transborder markets are presently served by a lone carrier, the instances where this phenomenon would represent a potential welfare loss to consumers, due to fare premia, would be relatively few.
Expected Pricing Behaviour by Market Category

Fare structures for Category 1 markets should be similar to those for US domestic services involving dominated hubs, with price premia being charged.

Fares in Category 2 markets should be the most competitive of all categories of transborder services, reflecting the wide number of alternatives facing the consumer. These should be the least concentrated of all transborder markets.

Fares in Category 3 markets are anticipated to be moderately competitive. The least competitive fares will prevail where the consumer has limited choices regarding airlines serving the small community in the United States. The possibility of entry by other firms, and the viability of alternative modes of transport to/from these small US centers will help to discipline prices in these markets.

Category 4 markets can be expected to have high fares relative to other transborder services. These price premia are expected because these markets involve a US hub airport. The fare premia that have been observed in United States domestic markets involving dominated hubs should also prevail in this type of transborder market.
Fares in Category 5 markets should be highly competitive. The degree of competitiveness of fares will be a reflection of the number of airline and routing choices facing the consumer. The largest determinant of market competitiveness will be the number of airlines that are serving the small, Canadian community: where there is a monopoly, fares can be expected to be higher. However, the contestability of these markets should exert downward pressure on average fares. Also, the option to travel via an alternative mode to a larger Canadian center at which Category 2 services are available, will discipline prices.

Fares in Category 6 markets can be expected to be very competitive. The variety of routing, and carrier, options for the consumer to choose from will keep fares relatively low. As with Category 5 markets, there should be significant downward pressure on fares due to the possibility of substituting other modes for portions of the trip so as to take advantage of alternative services aimed at other market Categories.
Table 6.

SUMMARY OF EFFECTS OF OPEN BORDER REGIME ON MARKET CATEGORIES

<table>
<thead>
<tr>
<th>Category</th>
<th>Dominant Carrier</th>
<th>Type</th>
<th>Service Characteristics</th>
<th>Fare Characteristics</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type 1</td>
<td>High Frequency</td>
<td>Fare Premia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Type 4</td>
<td>High Frequency, Various Routings</td>
<td>Highly Competitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Type 1</td>
<td>Various Routings</td>
<td>Competitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Type 3</td>
<td>Captive Markets</td>
<td>Fare Premia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Type 3</td>
<td>Various Routings</td>
<td>Highly Competitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Type 3</td>
<td>Various Routings, Alternative Modes Significant</td>
<td>Competitive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3 An Open Border and Traffic Flows

4.3.1 Implications of an Open Border Regime for Intra-Canada Traffic

In addition to the effects that an open border agreement would have on conduct and performance in transborder markets, the policy would also influence intra-Canada airline markets. While theoretically an open border situation could affect travel patterns for domestic markets in both Canada and the United States, there is reason to believe that
only intra-Canada movements would be significantly affected by this policy.

U.S. carriers have both cost and network advantages that should allow them to successfully contest de facto intra-Canada markets. Since the open border policy would permit U.S. firms to connect many Canadian centers to US hub airports, it would be possible for these carriers to offer intra-Canada services through hub connections. U.S. carriers operate hubs at sites close enough to the Canada-United States border that the addition to total travel time facing the consumer would be acceptable, particularly when weighed against the probable advantages in terms of ticket prices and flight times.

The use of hub connections allows a U.S. carrier to reduce per-seat-mile costs, permitting the sale of services at lower yields. This should attract discretionary, intra-Canada passengers through lower prices. The diversion of this traffic away from Canadian carriers may be sufficient to reduce flight frequencies for Canadian-provided, intra-Canada services.\textsuperscript{113} Ironically, the reduction in flight frequencies for these services may prompt non-discretionary travellers to opt for passage on US carriers, as the added total travel time associated with hubbing may be more than compensated for by the reduced schedule delay time US carriers can offer due to greater flight frequency. This effect would be particularly significant in long-haul,
intra-Canada markets in which the passenger is already faced with having to make a connection using Canadian carriers' services. 114

In contrast, the attractiveness of Canadian-provided services for intra-United States passengers is relatively minimal. While there is significant east-west travel in the United States, the prospect of routing through Canada presents substantial additional travel time. Moreover, the existing services of US carriers are of such quality, in terms of both price and frequency, that Canadian carriers would have little hope of contesting these markets. Assuming that the higher yields in Canada would be associated with any Canadian-provided services introduced, the fares for these services would not be competitive with those of US carriers. The frequencies of US carriers' services, made possible by density and scope economies associated with their hubbing operations, would be unattainable by Canadian carriers. Even if Canadian carriers successfully establish co-terminal hubs in the United States, they would be prevented from utilising these facilities to service intra-US traffic as these would be cabotage operations: this would not be legal under the terms of the contemplated open border agreement. Canadian carriers can therefore not be expected to capture significant shares of intra-United States traffic.
4.4 Summary and Conclusions

The anticipated effects of the introduction of an open border regime are as follows:

1. An increase in the number of cross-border city-pairs receiving direct services.

2. The introduction of flights linking major Canadian centers with U.S. hub airports where such routes are not currently receiving services.

3. Increased competition on transborder routes, particularly on those where the origin or destination is not a major U.S. hub airport.

4. Lower real fares for transborder services due to increased intra- and inter-route competition.

5. Diversion of significant volumes of intra-Canada traffic away from Canadian carriers to U.S. carriers through mirror image routings.
In summary, the open border concept has merits. It would lead to greater efficiency in the provision of transborder air services, and hence to lower average real fares. Both Canadian and United States carriers have strengths that should allow them to benefit from an open border regime. There are problems that cast a shadow of doubt over the acceptability of this policy.

First and foremost, the nature of the geography of transborder airline markets gives persistent advantages to US air carriers. Morrison and Winston (1990) determined that the ability to contest a particular air transport market was directly related to the number of connections that were possible at each end-point of that market. The vastly greater number of possible destinations in the United States versus Canada, coupled with the extensive route networks and hubbing operations of US carriers, give them an enormous advantage over Canadian companies in this regard. Even if Canadian carriers can establish co-terminalisation hub operations in the United States, without duplicating the comprehensive route networks of US carriers, their ability to contest all transborder markets will be inferior.

Second, a capacity problem exists at many of the key airports in the United States. This scarcity of capacity may prevent the increase in competition that the advantages of the open border strategy are reliant on. Without assured access to important US airports, Canadian firms
will not be able to expand their transborder operations to reap the benefits of an open border regime. Furthermore, the ability of Canadian firms to establish co-terminalisation hubs in the United States is crucial to their success in an open border environment. The enormous cost of creating these facilities may be beyond the capability of the financially-strapped Canadian carriers.

Third, although alliances between Canadian and US air carriers have been argued to enhance the competitiveness of Canadian-provided services, the nature of the extent of alliances that are currently permitted can be expected to relegate Canadian carriers to the effective role of regional carriers for their US partners, should a plain, open border structure be adopted. Having noted the advantages of allied carriers, it should be noted that the scheme of revenue distribution between the Canadian and US firms would have a bearing on the desirability of sustaining such partnerships. If revenue distribution was based on flight segments provided by each carrier, the Canadian firms would, if the most operationally advantageous route structures were adopted, receive a relatively small proportion of the total transborder fare. Difficulties in arranging a suitable distribution of revenues should be anticipated, and would undermine the introduction and/or persistence of agreements between Canadian and US airlines.
In conclusion, although an open border policy would be beneficial to transborder travellers of both Canada and United States, it has significantly adverse implications for the overall viability of Canadian carriers. As one of the stated aims of Canadian air transport policy is to ensure the viability of national airlines, another form of transborder agreement must be explored.
5. The Cabotage Option

5.1 Basic Philosophy

Under cabotage, all markets within, and between, Canada and the United States could be served by any Canadian or U.S. carrier. The institution of cabotage would necessarily include the structural changes associated with the open border strategy, as discussed in the preceding section of this chapter. Pricing is already deregulated on all services within the two countries; price deregulation would occur on all services between Canada and the United States with cabotage.

The pursuit of a regime of cabotage in North American air transportation would provide both Canadian and U.S. air carriers with the regulatory freedom to enter markets in either country. It is intended to increase the amount of potential, if not actual, competition on both transborder routes between, and on domestic routes within, the two countries. This added competition, whether potential or actual, should benefit consumers in both countries by exerting downward pressure on prices. 116,117,118
5.2 Structural Implications of Cabotage Regimes

5.2.1 Regulatory Structure

Cabotage could be applied either unilaterally, allowing only one of the parties to operate services on purely domestic routes in the other country, or bilaterally, wherein airlines of both countries could operate on routes in either country. The adoption of a cabotage agreement would not change the regulatory authority of the respective governments over air carriers that are identified as national to the respective countries. The existing regulations regarding the granting and retention of carrier operating certificates, personnel standards, and safety requirements, would continue in force. Canada and the United States have largely similar regulations in the aforementioned areas. Therefore, the desirability of a cabotage regime should not be detracted from by the possibility of conflict between Canadian and United States interests in these areas.

Nationality of Carriers

Carriers would continue to have distinct nationality. A carrier that was owned at least 75 per cent by citizens of Canada (the United States) would be considered a Canadian (United States) carrier. Though
there would be no restriction on the entry by either country’s firms into markets anywhere in the two countries, the regulations of the airline’s country of nationality, pertaining to safety, employment, and taxation, would continue in force. Cabotage is not an agreement to facilitate the corporate integration of the airline industries of Canada and the United States, but rather an agreement strictly on access rights to transborder and domestic markets. In the absence of reforms to Canadian and United States regulations regarding taxation, and airport access schemes, Canadian carriers should be expected to be at a competitive disadvantage under a cabotage regime.

Other aspects of regulatory policies in Canada and the United States can be expected to inhibit the acceptability of a cabotage regime. The introduction of cabotage without some substantial modifications to several air transport-related policies in both Canada and the United States will pose problems to the achievement of the potential social welfare benefits of cabotage. Cabotage is intended to increase the efficiency of air transportation within and between both countries. The means of increasing efficiency is to introduce or enhance competition in air services markets. There are existing policies in both Canada and the United States which, if unaltered at the inception of cabotage, will undermine the goal of competition enhancement on terms fair to both Canadian and U.S. interests.
In Canada, the tax regime confronting Canadian air carriers adversely affects their cost competitiveness relative to United States airlines. As discussed in Chapter IV, Section 2.3, there are higher taxes facing Canadian firms with respect to fuel and capital. While taxes on fuel would equally apply to U.S. carriers operating in Canada, the differential in capital taxes would adversely affect only Canadian carriers. In order for cabotage to allow fair competition, it would be necessary for Canadian policy to change regarding capital taxes for air carriers: they would have to be reconciled with U.S. tax rates.

The significant United States policy that would inhibit the realisation of potential benefits from cabotage may be more difficult to change. This is the method of capacity allocation at U.S. airports through the use of private property rights. As discussed in Chapter IV, Section 3.3, airline control over airport infrastructure, and the existing method of slot allocation by the U.S. Federal Aviation Administration at the four slot controlled airports in the United States, pose serious barriers to entry to many U.S. airline markets.119,120,121 The fact that U.S. airport facilities have been financed by the controlling carriers, that, where not explicitly financed, airlines have long-term contractual rights to their use, and that airports in the United States are locally, rather than federally, financed and controlled, pose serious obstacles to the solution of the access question. It is therefore essential that a cabotage agreement
between the United States and Canada contain provisions to ensure Canadian access to U.S. airports.

In summary, there are several areas of air transport regulation that are essentially common to both Canada and the United States. In general, these are in the realms of carrier licensing, and personnel and operational standards. These areas of regulation should not be expected to complicate the introduction of a cabotage regime wherein both Canadian and U.S. firms can equitably participate. However, Canadian tax laws and United States policies regarding air transport infrastructure allocation, if maintained in their present forms, would not allow for equality of opportunities for Canadian carriers under a cabotage regime.

5.2.2 Barriers to Entry

Canada

The nature of the Canadian air transport environment is such that U.S. carriers wishing to operate cabotage services in Canada should encounter few entry barriers. The greatest problem facing U.S. firms should be the feeder carrier networks of the established Canadian carriers. Both Air Canada and Canadian Airlines International have
extensive domestic networks in Canada. These are serviced by regional airlines who are either wholly or substantially owned by the two major airlines. However, the bulk of Canadian air traffic is between large Canadian centres, therefore it would certainly be feasible for U.S. airlines to establish operations serving most Canadian travellers without creating comprehensive networks in Canada.

The United States

As noted in the foregoing discussion of regulatory structure, a sizeable obstacle facing Canadian carriers wishing to compete in U.S. domestic markets is the control that U.S. carriers have over the allocation of capacity at airports in the United States. This control over airport facilities has prevented U.S. firms from contesting many airline markets in the United States. Canadian entrants would be in an even worse position since they have higher costs per seat-mile than their U.S. counterparts.

Morrison and Winston (1990) examined the factors that determined that the ability of an airline to enter a particular airline market in the United States. Using a probit regression, they found that the probability of entry into a market was positively influenced by the extent of that airline's activity at the end-point airports of the
market, and negatively influenced by yields for the market. They found that the elasticity of the probability of entry with respect to an airline's share of total enplanements at the end-point airports was 0.1; the carrier's own network strength was found to be the greatest determinant of entry.\textsuperscript{122} The somewhat counter-intuitive finding that market yield was negatively related to the probability of entry was explained as an indication of the effects of market dominance on fares: where yields were higher, the market was less contestable.\textsuperscript{123} From these findings, we should conclude that Canadian carriers would have difficulty contesting domestic U.S. markets because of the entry barrier presented by the necessity of having a well-developed network. Due to their limited existing presence at U.S. airports, Canadian carrier entry would be discouraged as they would have to create extensive networks immediately and simultaneously to be competitive with U.S. carriers.

The effects of frequent flier programs, and of CRS dominance in the vicinity of many major U.S. metropolitan also reduces the contestability of many U.S. airline markets.\textsuperscript{124,125,126} The conduct of U.S. carriers has largely been to avoid contesting markets where another carrier is dominant. Performance has therefore suffered in that premium prices have been charged for these services. Although cabotage rights would afford Canadian carriers theoretical access to all U.S. markets, those markets that have proved incontestable by U.S. carriers...
carriers should prove to be similarly incontestable by Canadian companies.

5.2.3 Implications of Cabotage for Air Transport Demand

A cabotage agreement should be expected to influence the total level of demand for airline services in Canada and the United States. The policy can be expected to increase the overall volume of air travel in Canada and the United States due to induced demand. This induced demand would be the result of lower average air fares. Lower average air fares are anticipated because of the increase in competition in city-pair markets in both countries. Canadian domestic markets can be expected to be most affected by cabotage, as these markets currently feature the highest average yields in North America due to the relatively low number of average competitors in Canada.
5.2.4 Implications of Cabotage for the Supply of Air Transport Services

Effects on the Number of Potential Competitors

Cabotage permits carriers access to domestic markets in the other contracting party's territory. The total number of airlines operating in Canada and the United States can be expected to remain the same under cabotage. However, we may expect that there would be an increase in the average number of competitors per market in both Canada and the United States. The potential for an increase in the number of competitors should be greatest for transborder markets. Canadian domestic markets should also experience an increase in the number of airlines providing services. U.S markets can be expected to realise the least effects regarding the number of competing carriers because of the relative weakness of Canadian carriers in being able to enter these markets. The average number of competitors on all North American routes can be expected to be in the range of 1.6, the current level in Canada, and 2.8, the current level in the United States. The average number of competitors in Canada should be most greatly affected.
Horizontal and Vertical Integration of Airline Firms

The adoption of a cabotage agreement should have an impact on the integration of airline firms. The policy should not affect the status of vertical integration between firms of the same nationality: for example, AirBC can be expected to remain a part of Air Canada. Where cabotage should influence integration is in the area of the horizontal arrangements between Canadian and United States carriers.

It has been argued, in Chapter II, that the principle motivation for the formation of alliances between Canadian and American air carriers is that such alliances capitalize on the demand-related effects of scale economies. These agreements have been mutually beneficial to the Canadian and American carriers alike for, without them, the comprehensive geographic coverage these arrangements permit would not be possible. With the introduction of cabotage rights, the likelihood of the continuation of these alliances is questionable.

Discouraging the continuation of the existing Canada-United States alliances is the desire of individual carriers to capture shares of markets having high traffic densities. There are many more dense airline markets in the United States than in Canada. This gives an incentive for Canadian carriers to defect from alliances in order to compete against U.S. alliance partners in high-density, U.S. markets.
Conversely, U.S. firms will have an interest in entering those intra-Canada markets having attractive traffic densities: those connecting Vancouver, Toronto, and Montreal. Thus, there would be a divergence of interests between the Canadian majors and their current United States allies.

As outlined in section II, Canadian companies will find that, in the absence of meaningful changes in U.S. policies regarding the allocation of airport and airways capacities, their prospects for entering most of the most lucrative U.S. markets will be slim. The control over access to these facilities that is enjoyed by major U.S. carriers will make effective participation by Canadian companies very difficult. The Canadian firms will therefore have an incentive to sustain their partnerships with their U.S. allies.

The major U.S. airlines are in a better position to benefit from cabotage in the absence of partnerships with Canadian allies. The barriers to entering Canada's major markets are readily surmountable by American carriers. Capacity rationing in Canada is done through user charges rather than property rights. U.S. firms should continue to be able to access Canadian facilities with little difficulty: they need only be able to pay the appropriate user charges. Canadian carriers have no direct control over airport facilities in Canada, therefore they would be unable to block U.S. entry, save for through political
means. U.S. participation in attractive intra-Canada markets is promoted by this ease of access.

At face value, a cabotage policy appears to give U.S. carriers both the incentive and ability to cream-skim intra-Canada routes. Because of a lower cost structure, it will be possible for U.S. carriers to offer lower prices to consumers; they should be expected to capture a sizeable traffic share. This participation will divert traffic from Canadian carriers, causing inevitable strain on cross-border alliances as a consequence.

There are benefits to carriers that militate in favour of the continuation of these agreements. These benefits accrue to both Canadian and U.S. firms.

By maintaining their alliances with Canadians, U.S. companies could continue to offer the traveller service to a greater number of Canadian destinations of all sizes, without the need to create their own feeder-carrier networks. While the introduction of a cabotage regime would allow Americans to create their own intra-Canada feeder-carriers, the cost of so-doing would be substantial. They are of a magnitude that would represent a considerable financial obstacle, even for large U.S. airlines. Demand-related economies of scale, the cost of creating new feeder-carriers, and the fact that this market niche favours existing
Canadian carriers, will promote the continuation of Canada-U.S. partnerships.

The essence of the motivation for the continuation of existing alliances between Canadian and U.S. carriers is in the requirements for additional aircraft that increased competition on all North American routes will necessitate. There are three ways that the additional aircraft necessary to provide greater capacity in this setting could be obtained: through better capacity utilisation (increased flying time per aircraft per diem), through acquisition (whether by purchase or lease), or through operating contracts with other carriers. The latter method being one of the very bases of airline alliances.

An ironic outcome of cabotage could be that Canadian carriers could be forced out of some Canadian domestic markets due to the cost advantages enjoyed by American firms. This cessation of services would render some portion of the Canadian companies' fleets superfluous. They might find that a sale or lease of these aircraft to U.S. carriers would be in order; the U.S. carriers would need this flight equipment in order to make up for aircraft devoted to the conduct of their Canadian cabotage operations. Unfortunately for Canadian investors and labour, their factors of production would not be as readily transferable as is flight equipment.
It is possible that new Canada-U.S. alliances would be formed with the inception of cabotage. As indicated previously, the establishment of Canadian co-terminalisation hubs in the United States would present an opportunity for alliance with local U.S. commuter carriers. A further alliance possibility is that new alliances would emerge between Canadian carriers, and U.S. regional carriers.

The characteristics of an ideal U.S. partner for the Canadian companies would be one which has a strong presence in markets in the southern United States, yet which has a relatively weak presence in many northern U.S. markets. Such a partnership would benefit both companies by allowing them to complete a continent-wide network. The Canadian firm would serve Canada and the northern U.S. from hubs at Canadian cities; the US airline would serve the southern U.S. using its hubs in those regions of the United States. Transborder flights would connect the respective hubs.

Both Canadian majors would be suited to entering into such a partnership. An obvious U.S. carrier to form such an alliance with would be Southwest Airlines. Southwest operates hubs at San Diego, Houston, Phoenix, El Paso, Austin, Albuquerque, Oklahoma City, San Antonio, Tulsa, and New Orleans. Alliances involving Canadian carriers and Southwest would provide feasible network layouts to serve continental markets. However, the thus allied carriers' presence would
be relatively weak in the important northeast region of the United States.

The desirable alliances that would be formed with the inception of cabotage can be predicted (albeit crudely) from the merger activity that occurred as the result of deregulation in the United States. Several significant U.S. carriers were absorbed into larger firms over the period 1979 to 1991. It appears that the purpose of these acquisitions/mergers was both to form more comprehensive networks in the United States, and to gain greater control over important hub airports in that country.

Under cabotage, a similar pattern of behaviour may occur. There would, however, be two significant differences in conduct between the post-deregulation and post-cabotage situations.

First, as has been extensively discussed throughout this paper, airlines operating in the United States face market entry barriers in the form of accessing airport facilities. Where a U.S. carrier acquires or merges with another, it thereby gains the feeder-carrier relations and, more importantly, access to those airports that the acquired or mergee carrier held the property rights at. In the cabotage situation, the motivation related to airport access is somewhat unidirectional: only the Canadian carrier will need to enter
into the alliance to secure U.S. airport access. U.S. carriers may freely access almost all Canadian airports because of the means of capacity allocation in Canada. The U.S. carrier will nonetheless be motivated to alliance by the comprehensive national coverage of the Canadian carriers.

The second difference that will be affect post-cabotage conduct is that the outright merger of Canadian and U.S. companies is prohibited by legislation--as discussed in Chapter II. Any form of such an alliance must therefore remain largely contractual in nature.

Canadian carriers would have an advantage in this setting as there is a greater number of alternative U.S. partners with whom to form alliances with. They would be able to seek the most profitable such relationship, offer the associated U.S. firm the advantage of complete Canada-U.S. coverage. As has been previously asserted, the ability to provide a comprehensive network has significant demand-side effects in airline economics. In contrast, the Canadian companies will likely find themselves in the position that Canadian regional carriers were in after Canadian deregulation: they will have no markets into which to grow. This eventuality suggests that, from the point of view of Canadian carriers, the cabotage option will be no more beneficial than the adoption of an open border regime. Furthermore, with the prospect of non-allied, U.S. majors electing to enter Canadian mainline markets,
Air Canada and Canadian Airlines International may find their domestic traffic base being gradually eroded under cabotage.

On balance, it will probably be better for the Canadian firms to ally themselves with the strongest U.S. carriers. They will find that the marketing advantages (in terms of frequent flier programs and CRSs) urge this conduct. This will also reduce (though certainly not eliminate) the threat to their intra-Canada operations from U.S. competition.

5.3 Expected Conduct Under a Cabotage Regime

5.3.1 Pricing

We have previously discussed the influences that market structures have on airline pricing behaviour. Having seen evidence regarding the extent to which airline fares are determined by input prices, factor productivity, and the extent of concentration in individual air transport markets, we can make the following contentions regarding the nature of air fares that would emerge with the adoption of a cabotage agreement.

First, the allowance of cabotage should not be expected to influence
the level of input prices facing the airlines. Therefore, the cost per available-seat-mile produced by the carriers would presumably not be affected by the introduction of a cabotage regime in so far as the policy's effects on input prices are concerned. For example, although fuel prices are higher in Canada than in the United States, both Canadian and U.S. carriers operating point-to-point services within Canada would face the same fuel prices. Therefore, the bearing of input prices on air fares should be expected to be neutral with respect to the adoption of cabotage.

Second, the permission of cabotage can be expected to increase factor productivity. The expected productivity growth is actually a derivative of the open border component of the policy regime. In a strict sense, cabotage itself should have little impact on factor productivity, save for the effect of induced traffic on density economies.

The greatest impact of cabotage should come from the increase in the number of potential and/or actual competitors for individual air transport markets. We have discussed the significance that the number of competitors has had on price levels in airline markets. The expectation is that cabotage rights should increase the number of potential and/or actual competitors in those airline markets to which cabotage rights would be applicable. Since we have argued that the
greatest impact that cabotage rights would have would be for the number of competitors in Canadian markets, the greatest influence of the policy on air fare levels should be expected for intra-Canada services. The difficulties facing Canadian carriers wishing to enter intra-U.S. markets should be expected to preclude their entry into most such markets. Therefore, the effects of cabotage rights on prices in U.S. domestic markets can be expected to be minimal.

Where Canadian carriers prove able to enter intra-United States markets, they can be expected to assume the role of price-takers. The higher cost per available-seat-mile of the Canadian carriers should prevent them from offering lower prices to entice customers. Moreover, the ready prospect of price retaliation by U.S. firms would appear to preclude this strategy. Presumably, the Canadian carriers would have no ability to charge premium prices in U.S. markets; they would be interested in establishing a market presence, and relatively higher prices would compromise this objective. The pricing behaviour of U.S. firms operating in intra-Canada routes presents a less obvious picture. U.S. carriers enjoy an overall cost advantage over Canadian carriers. However, Windle (1991) has attributed this cost advantage to productivity differences between carriers in the two countries. For cabotage operations in Canada, the U.S. carriers would lose some measure of this productivity differential, as it is based on the traffic density advantages of operating in the United States. Although
the cost per available-seat-kilometre produced by United States carriers in 1991 was $0.0665 versus $0.1053 for Canadian firms, the transferability of these figures to U.S. operations in Canada is limited by the differences in traffic densities between the two countries' markets, and the input price differences (particularly for fuel) between Canada and the United States. When these cost differences are taken into consideration, the apparent cost advantages of US carriers may not be as great for cabotage operations in Canada. The significance of a U.S. firms' cost advantage is that it affords the U.S. carrier the option to undercut Canadian fares, without the penalty of operational losses, and reduces the probability of successful prosecution of potential predatory pricing suits by Canadian competitors.

The eventual conduct of U.S. firms operating intra-Canada services could presumably be that of a price leader, in which case they would take advantage of lower costs to offer fares below those of Canadian carriers, or that of a price taker, in which case they would provide capacity at the same prices as their Canadian rivals. For the following analyses, we consider an average Canadian airline market, assume that there is sufficient traffic volume to permit entry to that market by a lone U.S. carrier, and that the characteristics of the nature of the competitive conduct of Canadian air carriers would remain the same in the face of entry by a U.S. carrier.
A crude estimation of the influence that U.S. carrier entry, on the basis of assuming a price-taking position, would have on individual intra-Canada markets can be made by considering the relationship that was found between average yield and market concentration for United States markets by Graham, Kaplan, and Sibley (1983). The relationship they found between the Herfindahl index for a market and its fare per mile suggested that the decrease of the $H^2$ value from 0.50 to 0.33 (which we use to approximate the effect of U.S. entry into intra-Canada markets based on the assumption that the number of carriers would be increased from two to three, and that all participating carriers would realise equivalent market shares), would result in a roughly 6 per cent reduction in the market fare.\textsuperscript{129}

We base a more sophisticated analysis of the potential impact of U.S. carrier entry to Canadian domestic markets on the conjectural variations model of oligopoly conduct.\textsuperscript{130} The conjectural variations model provides a means by which a firm may estimate the reaction of its competitors to changes in the firm's output and price offerings. The model formalises the relationships between the variables price, market price elasticity of demand, the firms' market shares and cost structures, and a reaction term indicating the expected conduct of the competitors.

The model is developed from the profit, price, quantity, and cost
relationship,

\[ \pi_i^* = x_i^* p(X) - C_i^i(x_i^*) \]

The first order condition

\[ \frac{d\pi_i^*}{dx_i} = p + x_i^* \frac{dp}{dx_i} \frac{dx_i}{dx_i} - \frac{dC_i^i}{dx_i} = 0 \]

gives rise to the definition of the conjectural variation term. Since

\[ \frac{dx_i}{dx_i} = \frac{dx_i}{dx_i} + \sum \frac{dx_j}{dx_i} = 1 + v_i, \]

the term \( v_i \) is the variation in output that firm \( i \) conjectures would occur for the other \( j \) firms' combined output as the result from an alteration in the output of \( i \). Thus, \( v_i \) is the conjectural variation of firm \( i \). \(^{131}\)

Brander and Zhang (1990, 1993) used a conjectural variations model to analyse the conduct of airlines in a duopoly market. Specifically, they examined the conduct of American Airlines and United Airlines in Chicago-based airline markets for which the two carriers' combined traffic share was at least 75 per cent.
Brander and Zhang used the model in its form

\[ v_i = \frac{(p - C_i)(e)(X)}{(p)(s_i) - 1} , \]

alternatively expressed as

\[ \frac{p - C_i}{p} = s_i \frac{(1 + v_i)}{e} , \]

where, \( s_i \) = the market share for firm \( i \), and \( e \) is the absolute value of the market price elasticity of demand.

Brander and Zhang (1990) estimated the conjectural variations terms for American Airlines and United Airlines. The quantum of the conjectural variations term would provide an indication of the nature of the conduct of these firms in their operations in the Chicago-based markets. A conduct parameter value of -1 would imply Bertrand oligopoly behaviour: the firms' cost structures would determine the market price, with that price being equal to marginal cost, and the market being split between the firms in zero-profit equilibrium. A conduct parameter of 0 would imply Cournot oligopoly behaviour: normal profits being secured by the firms through a process of adjustments to the quantity supplied to the marketplace, with each firm making its quantity decisions based on its rivals supplied quantities remaining at
existing levels. A conduct parameter of 1 would imply that there was collusion between firms. This value would indicate a cartel situation, with monopoly rents being divided between the cartel members. 133,134

Brander and Zhang (1990) found that the behaviour of American Airlines and United Airlines for the routes under study tended toward Cournot duopoly. 135

Following the approach of Brander and Zhang, we investigated the conduct of Canadian air carriers to determine the nature of competition in the Canadian airline industry. The purpose of our investigation was to provide an ad hoc assessment of the form of Canadian competition on which to base an estimation of the likely response of Canadian carriers, and thus Canadian airline markets, to entry by U.S. competitors. We used the conjectural variations model, as in Brander and Zhang (1990), using parametric data from a number of sources.
The National Transportation Act Review Commission reported the following information for Canadian and United States air carriers for 1991:

Table 7.

<table>
<thead>
<tr>
<th></th>
<th>Canada</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per available seat km.</td>
<td>$0.1053</td>
<td>$0.0665</td>
</tr>
<tr>
<td>Revenue per revenue pass. km.</td>
<td>0.1529</td>
<td>0.1039</td>
</tr>
<tr>
<td>Interest expense per ASK</td>
<td>0.0040</td>
<td>0.0015</td>
</tr>
<tr>
<td>Wage expense per ASK</td>
<td>0.0324</td>
<td>0.0229</td>
</tr>
<tr>
<td>Fuel expense per ASK</td>
<td>0.0147</td>
<td>0.0096</td>
</tr>
</tbody>
</table>

Assuming that U.S. carriers would face equivalent market-related costs to Canadian firms where cabotage operations are conducted, we impute a cost per ASK for U.S. carriers operating such services. The calculations are based on the premise that U.S. firms would retain cost advantages with respect to interest and wage expenses, while all other costs would be identical to those experienced by Canadian operators.
Based on these assumptions, the cost per ASK for a US carrier’s cabotage operations would be:

Canadian cost per ASK...............................$0.1053....
less: (int. exp\textsubscript{cdn} - int. exp\textsubscript{us})..................- 0.0025/ASK
.......(wage exp\textsubscript{cdn} - wage exp\textsubscript{us})..................- 0.0095/ASK

Implied US cost per ASK in Canada..............$0.0933....

Our analysis proceeds on the assumption that the average prices and costs for Canadian airline markets can be represented by the foregoing figures. We therefore are analysing Canadian carrier conduct for a hypothetical Canadian airline market. We assumed that this hypothetical market would be equally divided between the two major Canadian carriers, Air Canada and Canadian Airlines International, and that these carriers would have identical cost structures.

We rearrange

\[ \frac{p - C_i}{p} = s_i \frac{(1 + v_i)}{e} , \]

to yield the conjectural variations model such that the conduct parameter, \( v_i \), is the objective variable:

\[ v_i = \left( \frac{p - C_i}{p} \right) \frac{e}{s_i} - 1. \]
Utilising the cost and price figures from the NTA study, and making the assumptions as previously noted, and taking the estimates of Canadian airline markets’ average price elasticity of demand from Oum and Gillen (1983), the above model yields the following symmetrical conduct parameters for the Canadian carriers:

\[
\begin{align*}
\text{if: } e &= 1.1 & \nu_i &= -0.32 \\
\text{e} &= 1.2 & \nu_i &= -0.25 \\
\text{e} &= 1.3 & \nu_i &= -0.19
\end{align*}
\]

These conduct parameters suggest that the Air Canada and Canadian Airlines International have tended toward Cournot duopoly behaviour: the conduct parameters are closest to 0.0 as opposed to 1 or -1, which would imply Bertrand and collusive oligopoly conduct, respectively. While this analysis has been crude at best, the reality of the Canadian industry is that it has been characterised by over-capacity in terms of available-seat-kilometres. This over-capacity suggests a form of quantity-based competition between the Canadian air carriers.

Returning to the matter of the effect on Canadian airline prices of entry by a U.S. competitor, we make the assumption that quantity-based competition would continue to prevail in Canadian airline markets, thus the conduct parameter of the participating carriers would be assumed to be 0. We further assume an equal distribution of traffic amongst the two Canadian carriers and the lone U.S. entrant carrier in this
hypothetical Canadian airline market. By rearranging the conjectural variations model (recalling that we have assumed a conduct parameter value of 0), we arrive at the following equation for the expected price \( p^* \) for this hypothetical Canadian market:

\[
p^* = - \frac{(e)(C_i)}{s_i - \epsilon}
\]

The figures for elasticity are from Oum and Gillen (1983). The cost \( C_i \) was the hypothesized cost for U.S. carriers arrived at through our own calculations. The expected elasticity-dependent prices for the hypothetical market would be:

For: \( e = 1.1, \) \( p^* = 13.33 \)
\( e = 1.2, \) \( p^* = 12.87 \)
\( e = 1.3, \) \( p^* = 12.50 \)

Note that these "prices" are in fact revenues, in terms of cents, per revenue-passenger-kilometres, or yields.

In comparison, the existing average Canadian market yield is 15.29 cents. The implication of our calculations is that the entry of cost-advantaged, U.S. firms into the hypothetical Canadian market would reduce prices by between 12.8 and 18.2 per cent, depending on the market's price elasticity of demand. These reductions are double to triple those predicted by our previous consideration, which, to reiterate, was based on Graham, Kaplan, and Sibley (1983) for the
experience in US airline markets.

We considered that an explanation for the difference in magnitude between the expected prices based on the two approaches considered may be that U.S. firms would have had relatively similar cost structures. In contrast, Canadian firms, and a U.S. firm operating cabotage services in Canada, had been hypothesized to have significantly different cost structures. As a check on the price results obtained from the estimation based on Graham, Kaplan, and Sibley (1983), we estimated the expected price for the hypothetical Canadian market under the assumption that all firms in that market had identical cost structures. We therefore estimated

\[ p^* = \frac{- (e)(C_i)}{s - e} \]

using as \( C_i \) the cost per available-seat-kilometre realised by Canadian firms, and retained the hypothesized division of traffic between the two Canadian firms, and the U.S. entrant. The elasticity-dependent expected yields, and percentage reductions were:

For:  
\[ e = 1.1, \quad p^* = 15.04, \quad \%p = -1.6 \]
\[ e = 1.2, \quad p^* = 14.52, \quad \%p = -5.0 \]
\[ e = 1.3, \quad p = 14.11, \quad \%p = -7.7 \]

Note that these results are closer in magnitude to those suggested by Graham, Kaplan, and Sibley (1983).
It may be inferred from this analysis that the extent of cost advantages enjoyed by U.S. entrants operating in Canadian domestic markets could be directly translated into the magnitude of fare reductions for Canadian domestic markets in which U.S. carriers elect to offer services. Since U.S. carriers would presumably retain at least some portion of cost advantage over Canadian carriers, it should be expected that the magnitude of the price reductions would be in the regions between 1.6 and 18.2 per cent, with the reductions in the vicinity of 5.0 to 6.0 per cent having good probability according to our ad hoc analysis. Variations can be expected from these figures to the extent that individual market characteristics in Canada differ, particularly in terms of the price elasticity of demand, to the extent of cost differentials between U.S. and Canadian carriers, and to the extent that the conduct of Canadian carriers would be affected by the prospect of entry by U.S. firms.

Regardless of whether U.S. entrants into Canadian domestic markets elect to behave as price takers or price cutters, the net effect of their participation would be to reduce average fares for the markets that they decide to enter. We have assumed that most U.S. domestic markets would be incontestable by Canadian air carriers. Those markets that are entered by Canadian carriers should realise minimal price effects, as the market share of the Canadian carriers can be expected
to be small.

It must be noted that, aside from the impact of direct U.S. carrier participation in Canadian domestic markets, that their ability to serve these markets through the use of mirror image routings would also influence intra-Canada fares. Due to the qualitative characteristics these services, it should be anticipated that mirror image options would be most attractive to discretionary travellers.

5.3.2 Expected Network Effects

Canadian Carrier Networks

We have argued that cabotage rights would present limited opportunities for Canadian air carriers to enter U.S. markets. The difficulties facing Canadian firms with regard to contesting most U.S. airline markets should confine them to providing cabotage services where the nature of such services is that they are consecutive cabotage extensions of transborder flights. In essence, Canadian carriers would take advantage of cabotage rights to fill empty seats on U.S. domestic flight stages for what are essentially transborder services. These would be associated with co-terminalisation hubs in the United States. This practice would allow Canadian participation in related U.S.
domestic markets by building on the traffic densities associated with Canadian transborder services. The Canadian carriers would thereby reap density economies for the transborder and cabotage services. Canadian carriers can be expected to establish co-terminalisation hubs at U.S. locations having proven attractiveness for Canadian travellers. U.S. cities that would be appealing co-terminal hub locations on this premise would include New York, Chicago, Tampa-St. Petersburg, San Francisco, and Houston. (These cities currently account for a large proportion of transborder travel.) However, U.S. airlines' control over facilities at airports in the vicinity of these centers may compromise the ability of Canadian firms to establish co-terminalisation hubs at these locations; New York and Chicago would be particularly difficult to access.

The Canadian carriers would benefit from the use of change of gage operations associated with the co-terminalisation hubs. They could employ smaller aircraft to operate between the co-terminal hubs and subsequent U.S. destinations. This could be accomplished through the use of the Canadian carriers' own aircraft, or through contractual arrangements with local U.S. carriers. The latter schema would be particularly advantageous in that the Canadian carriers would benefit from the local carriers' marketing activities.
United States Carriers

U.S. carriers can be expected to enter major markets in Canada. The lone entry barrier to U.S. participation in Canadian domestic markets is the traffic consolidating advantages of Canadian air carriers via their feeder-carrier networks. However, there are several intra-Canada markets that have sufficient traffic volumes to allow U.S. entry without derogation due to lack of feeder traffic. In particular, the Toronto-Montreal and Toronto-Vancouver markets should be attractive to U.S. firms.

Other intra-Canada markets can be expected to receive service by U.S. carriers, but through the use of routings involving hub connections in the United States. This method would allow U.S. carriers to serve many Canadian city-pairs with both relatively low fares and relatively high flight frequencies. The attractiveness of one-stop services by U.S. carriers is enhanced by the general provision of intra-Canada services by Canadian carriers through the use of connecting flights--often through Toronto. The drawback is the potential extra flying time associated with routing through the United States, and the need for passengers to clear Canadian customs on arrival at the destination airport. These complications should limit the appeal of such routings, with their primary attractiveness being to discretionary travellers; business travellers could be enticed by frequent flier programs and
schedule advantages. Only U.S. carriers having hub operations at airports in close proximity to the Canada-United States border should be expected to be able to contest such markets. American Airlines, Northwest Airlines, and United Airlines should be able to engage in such services due to the locations of their northern hubs.

5.4 Anticipated Performance Under a Cabotage Regime

5.4.1 Division of Traffic Between Carriers

General Division of Traffic

Gillen, Hansen, and Ramos (1990) estimated the division of traffic between Canadian and U.S. carriers that would occur in the event of the adoption of bilateral, and both forms of unilateral, cabotage rights. They calculated that, if bilateral cabotage was permitted, the share of total North American traffic carried by Canadian companies would be reduced from 4.68 per cent to 3.34 per cent.\textsuperscript{140} If cabotage was permitted for Canadian carriers only, the Canadian carriers’ share of total North American traffic would increase to 5.08 per cent.\textsuperscript{141}
Division of Traffic For a Hypothetical Canadian Market

Using the conjectural variations model, we can estimate the traffic shares that may be realised by carriers in a hypothetical Canadian market. Rearranging the model, as described above, so that the expected carrier share is the objective variable, and assuming that the conduct parameter is common across carriers, having the value 0, we have the following equation:

\[ s_1 = e \left( \frac{p - C_i}{p} \right) \]

We estimated the U.S. entrant's market share for two cases:

1. Where the U.S. entrant would have cost advantages (as described in the foregoing subsection, based on capital and wage cost advantages over Canadian carriers);

2. Where the U.S. entrant would have the same cost structure as its Canadian counterparts.

The expected price used in these calculations is that suggested by our calculation based on Graham, Kaplan, and Sibley; it is 94 per cent of the current average yield in Canada.
Case 1.: (wherein $C_{us} = $0.0933 per ASK)

<table>
<thead>
<tr>
<th>Case</th>
<th>Traffic Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>38.6%</td>
</tr>
<tr>
<td>1.2</td>
<td>42.1%</td>
</tr>
<tr>
<td>1.3</td>
<td>45.6%</td>
</tr>
</tbody>
</table>

Case 2.: (wherein $C_{us} = $0.1053 per ASK)

<table>
<thead>
<tr>
<th>Case</th>
<th>Traffic Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>29.4%</td>
</tr>
<tr>
<td>1.2</td>
<td>32.1%</td>
</tr>
<tr>
<td>1.3</td>
<td>34.7%</td>
</tr>
</tbody>
</table>

Our calculations (in Case 2) suggest that Canadian carriers would realise total traffic shares of between 3.30 and 3.06 per cent. The magnitude of the traffic share varying with the market elasticity of demand. In comparison, Gillen, Hansen, and Ramos (1990) suggested that bilateral cabotage rights would reduce the Canadian carriers’ traffic share (in terms of enplanements) by 28.8 per cent: from 4.68 per cent, to 3.34 per cent of total, intra-North America air traffic.1\(^42\)

We have omitted a consideration of the traffic share changes with respect to intra-United States markets. As stated previously, we believe that Canadian carriers’ cabotage operations in the United States would divert only a marginal amount of traffic away from U.S. carriers. On this premise, we made no calculation of the effect of such services on Canadian carriers’ share of overall, North American traffic.
5.4.2 Implications of Cabotage for Market Efficiency

The allowance of U.S. entry into domestic airline markets in Canada could improve the long term efficiency of the provision of air transport services in those markets which U.S. firms participate. However, the efficiency gains would be realised largely on the basis of lower cost structures of U.S. airlines that have been enabled by overall network effects (i.e. returns to hub-and-spoke networks) and due to differential input costs between the two countries created in large part by regulatory (particularly taxation) policies. Canadian carriers could supply lower cost services within Canada if Canadian regulatory policy was similar to that in the United States.

Windle (1991) has shown that the area of advantage for U.S. carriers is in total factor productivity, whereas overall unit costs actually favour Canadian carriers. Caves, Christensen, Tretheway and Windle (1987) determined that U.S. carriers have been able to realise superior productive efficiency, relative to carriers of other countries, due to operating characteristics and technical efficiencies. In particular, operating efficiencies in the form of traffic densities, firm size, and capital utilisation were determined to have been important sources of advantage for U.S. carriers in comparison to airlines of other countries. Their conclusions suggest that U.S.
carriers should be able to offer more efficient intra-Canada services to the extent that such services can be integrated into their overall networks.

From the findings of Caves, Christensen, Tretheway, and Windle (1987) it should also be recognised that entry by U.S. firms may have an adverse effect on efficiency. Caves et al. have identified the impact of the interactive effects of points-served and output, a measure of scale economies, as making a contribution to reductions in variable costs. With the entry of U.S. firms into Canadian domestic markets, and the expectation that Canadian carriers would lose significant market shares to these airlines, the dilution of traffic in intra-Canada markets would translate into dis-economies for Canadian carriers' network operations. In other words, U.S. entry into plum intra-Canada routes may detract from Canadian carriers' overall traffic densities so as to make the maintenance of their overall networks, at their present scale, unviable. Therefore, while U.S. entry may lead to beneficial effects in the specific markets in which they participate, the overall effect for Canadian markets may well be negative.

The expected nature and magnitude of Canadian carrier participation in United States domestic markets should produce limited efficiency benefits in these markets.
The allocative efficiency in Canadian airline markets may be improved by the introduction of cabotage rights. With U.S. entry, it should be expected that U.S. carriers would seek to expand their computer reservations systems presence in Canada. By implication, the conditions imposed on the Gemini CRS by the Canadian Competition Tribunal regarding the operation of that system reflected the belief of the Tribunal that a virtual CRS monopoly in Canada would have adverse effects on allocative efficiency. \(^{148}\) With an increased presence of U.S. airlines’ CRSs, it should be expected that greater competition in the marketing of airline services would result. An increased presence of alternative CRS systems is already on the way, due to the ruling of the Competition Tribunal with respect to the exit of Canadian Airlines International from the Gemini CRS. This ruling allows Canadian Airlines International to join the CRS system of American Airlines (AMR Corporation).

The eventual structure of CRS services in Canada can be expected to be a duopoly: Sabre (American Airlines and Canadian Airline International) and Covia (Air Canada and United Airlines) should be the principal providers of CRS services. The participation of Covia in Gemini should give the Covia system an initial advantage in market presence within Canada. However, Covia’s advantage may well be short-lived: with the exit of Canadian Airlines International from Gemini, several Canadian travel agency executives surveyed indicated that they
viewed the Sabre system as having consumer-related advantages, implying that agents would benefit from adopting the Sabre system. While adoption of a cabotage regime is not a necessary condition to increase competition between these two CRS systems, it can be expected to increase the potential extent of CRS competition in Canada as other US carriers may elect to participate in intra-Canada airline markets, concomitantly introducing their CRS systems to Canada.

5.5 Summary and Conclusions

In summary, the anticipated effects of the adoption of cabotage rights in Canada-United States air transport services are as follows:

1. Where airlines of either Canada or the United States are able to introduce viable cabotage services, consumers would benefit from the increase in market competition through expected decreases in fares. We have calculated that, for a hypothetical Canadian market, fare decreases would be in the neighbourhood of 6 per cent; decreases in United States markets can be expected to be of lesser magnitude due to the existing presence of a greater average number of competitors.

2. Cabotage rights may increase the extent of potential, if not
actual, competition between CRS suppliers in Canada. The present CRS dominance of Gemini can be expected to be broken regardless of whether U.S. carrier cabotage in Canada is permitted.

3. The form of cabotage operations expected of Canadian carriers serving United States markets is that associated with co-terminalisation hub operations in the United States. We anticipate that only through associating cabotage operations with transborder services will Canadian carriers be able to realise the traffic densities necessary to compete in U.S. markets.

4. U.S. carriers can be expected to introduce cabotage services in Canada on routes having relatively high traffic densities. We anticipate that routes linking Toronto with Montreal and Vancouver would be particularly appealing to U.S. entrants.

5. Access problems with respect to airports at most large cities in the United States will prevent Canadian carriers from creating meaningful (if not comprehensive) networks in the United States. Therefore, Canadian cabotage operations can be expected to concentrate on regions of the United States that are presently destinations of a high number of transborder
travellers, to take advantage of scope economies related to transborder services.

6. U.S. carriers should have little difficulty in accessing facilities at airports in Canada.

7. Bilateral cabotage rights are expected to reduce the Canadian carriers' share of total traffic by roughly 29 per cent of their current level. This loss of traffic share, particularly in intra-Canada markets, could compromise the overall viability of the Canadian carriers; their operations may have to be scaled-back from their present form.

8. Unilateral cabotage rights for Canadian carriers are expected to increase their share of overall North American traffic by roughly 8.5 per cent.

In conclusion, there are potential benefits from the adoption of a cabotage rights regime for Canada-United States air transportation. Consumers, particularly in Canada, would receive benefits in the form of reduced air fares due to increased competition. Unilateral cabotage rights for Canadian carriers would allow these carriers to attract a greater (and more equitable) share of transborder travellers. Bilateral cabotage rights would further enhance the competitive
position of the already advantaged U.S. carriers. Therefore, any adoption of cabotage rights as a part of a new Canada-United States air transportation agreement should be restricted to unilateral cabotage rights for Canadian air carriers, assuming that the preservation of viable, Canadian airline companies remains a policy objective.

Our analysis suggests that, while changes in regulatory policies within Canada with respect to the taxation of factor inputs used by air carriers should move the cost of producing such services closer to the lower cost structures of U.S. carriers. The real problem in providing efficient air transportation in Canada is rooted in the nature of demand in Canada--particularly in relation to traffic densities and the linear direction of air travel in Canada. Permitting U.S. carrier cabotage in Canada would provide these lower cost producers the opportunity to offer some Canadians lower fares, yet this would come at the detriment to Canadian air carriers, who, on balance, would receive less benefits in a bilateral cabotage environment. Canadian consumers who were not patrons of airline services in markets entered by U.S. carriers could well be disadvantaged as Canadian carriers can be expected to reduce the overall scale of their operations following the erosion of their important traffic bases by U.S. entrants.

Therefore, only unilateral cabotage, permitting Canadian carriers to operate in the United States, should be considered as a legitimate
policy option. Even if such rights are secured, Canadian carriers may find the establishment of such operations difficult if not impossible in the United States due to the air transport infrastructure access problems in the U.S. These barriers are substantial, and therefore it may be the case that any form of cabotage rights will prove unworkable.
6. Strategies Utilising Phase-Ins of Liberal Regimes

6.1 Motivation for Alternative Forms of Introducing New
Canada-United States Air Transport Agreements

Canada and the United States have experienced difficulty in reaching agreement on a new bilateral air services regime. This difficulty has been rooted in the desire of both nations to ensure that they do not enter into a relationship that will have unacceptable negative consequences for their respective airline industries. At the same time, they have recognised that the current regime is inherently inefficient, with the burden of inefficiency being borne by consumers in both countries.

It is evident that consumer welfare would be enhanced by the introduction of a more liberal regime of transborder air services. However, it is also evident that the current options being proposed could have negative ramifications for both countries’ air transport industries. These adversities should prove particularly severe for Canadian carriers; they are confronted by significant structural advantages possessed by U.S. airline firms.

It may be possible to introduce a liberalised regime in such a way as to provide the expected benefits to consumers, while at the same time
minimising the adverse effects on the Canadian carriers. Properly conceived, such a scheme would achieve the objectives of increasing efficiency while satisfying the equity criterion. The phased introduction of an open border regime has been suggested as a suitable such method.\textsuperscript{150,151}

6.2 A Phased Introduction of an Open Border Regime Between Canada and the United States

6.2.1 Basis of the Phase-In Approach

The purpose of phasing-in a liberalised regime is to give protection to Canadian air carriers during the short term. This protection is considered essential as the U.S. airlines enjoy distinct advantages over their Canadian counterparts. If a liberal regime was introduced on a single event basis, the advantages enjoyed by the U.S. carriers could be expected to allow them to dominate most, if not all, new transborder routes. Therefore, the advantages of U.S. carriers would be counter-balanced by advance access for Canadian carriers under the phase-in strategy. This would meet the objective of equity of opportunity that is one of the requirements of a new Canada-United States air services agreement.
6.2.2 Application of the Phase-In Strategy to the Introduction of an Open Border Regime

The phase-in approach would be applied to the creation of an open border regime; any form of cabotage regime poses too many access problems to be seriously considered at this time. These access problems are the result of the nature of the means of capacity allocation at airports in the United States. As discussed in Chapter III, Section 3.3, the issues related to the accessibility of U.S. airports appear to be far from solution at this time. Furthermore, the extensive, existing hub networks of the U.S. carriers should continue to pose a significant entry barrier to Canadian firms wishing to introduce cabotage operations in United States markets. In combination, these factors make the adoption of a cabotage regime, even with the safeguard of a phase-in approach, untenable for the foreseeable future.

In contrast, an open border regime appears to be feasible. It has been argued, in Chapter IV, Section 4.3, that an open border regime may present opportunities for traffic growth for the Canadian carriers. In particular, Canadian carriers can be expected to benefit from being able to offer more services to destinations in the southern United
States, to which Canadian travellers are attracted for reasons of both business (for example, San Diego) and pleasure (for example, New Orleans). The alliances of the Canadian carriers with U.S. airlines should also prove to be advantageous for the Canadian firms with an open border regime.

6.2.3 The Phased Approach and Canada-United States Carrier Alliances

The contention in Chapter V, Section 4.3 was that allied carriers should be expected to be the dominant service providers in many markets under an open border regime. It was noted therein that the immediate introduction of an open border regime could lessen the value of Canada-United States carrier alliances. The phased approach should actually enhance their continuance, as the allied carriers could be first to introduce new, transborder services, giving them advance market presence.

It should be recognised that the phased introduction of an open border regime cannot guarantee that the ultimate distribution of benefits will favour Canadian carriers allied with U.S. airlines. While the phase-in period can be expected to be associated with the introduction of new transborder services by Canadian allied-carriers,
in the long term these operations may be supplanted by U.S. allied-carriers. While there is probably no liberal policy that can guarantee that Canadian carriers will capture and sustain a greater market presence, the allowance of greater equity exchange between Canadian and U.S. airlines might help to cement alliances. With stronger alliances, the position of the Canadian firms may be more secure with regard to overall North American operations. In particular, this would give Canadian firms secure access to U.S. airports; this would give U.S. carriers secure access to Canadian feeder networks and a more advantageous position with Canadian policy-makers.

6.2.4 The Duration of the Phase-In Period

A most important dimension of the phase-in concept is the determination of the duration of the phase-in period. This time frame could vary from zero time (immediate introduction), to indefinite (sustained advantage for Canadian carriers). The duration of the phase-in period should effectively be that over which Canadian carriers could be realistically expected to establish services in newly-accessible, transborder markets. There are several determining factors affecting this time horizon.

At the very least, the phase-in period must be sufficient for the
Canadian carriers to acquire the necessary flight equipment to conduct the new transborder operations. As the Canadian carriers have relatively small fleets, it will probably be necessary for them to acquire additional aircraft in order to operate new transborder services. As noted in Chapter III, Section 1.1, additional aircraft can be obtained via purchase or leasing. As it may not always be possible to acquire lease-aircraft due to fluctuations in their availability, the phase-in period should probably be based on the assumption that the requisite aircraft would have to be purchased. It has been noted that as much as two years may elapse between the date an airliner is ordered, and the date of its delivery.

In order to operate these aircraft, the carriers will have to have flight crews trained on the aircraft types. The greatest concern regarding crew training is with the pilots. They may require extensive training. As a guide, it should be noted that some airlines take pilot recruits, with absolutely no flying experience or credentials, and put them through an intensive training program from which they graduate with first officer qualification. Such programs are of 18 to 24 months duration.152 Using this as a reference figure, the Canadian carriers, with access to a pool of relatively experienced pilots, should be able to fulfill all of their crew requirements in 18 months or less.

Other considerations are relevant to the determination of the
duration of the phase-in period. The accessibility of airport facilities should influence the time it takes carriers to establish these new services. It was noted in Chapter III, Section 3.3, that access to gates and slot times is problematic at some United States airports. The acceptability of the phase-in agreement may have to hinge on provisions ensuring that such access is possible. (The alliances between Canadian and U.S. carriers should help to minimise the difficulties posed by capacity problems at U.S. airports.) Access provisions must be included in the new bilateral agreement to make the phased approach viable. The access provisions could be engineered to fit within the time frame dictated by the flight equipment acquisition considerations.

Finally, the disadvantages faced by non-allied, U.S. carriers must be factored into the timing of the introduction of the generally open border. With the size advantages of these carriers (eg. Delta, Northwest), provision should be made to allow the Canadian carriers to have the first opportunity at entering new markets. With two years being anticipated for aircraft acquisition considerations, this time frame should be maintained as the exclusive period for the Canadian carriers. Therefore, at the end of two years, the non-allied U.S. carriers should be permitted free entry into transborder markets.

The ultimate duration of the phase-in period should be based on the
time frame necessary to acquire aircraft by purchase. As such, it should be based on the maximum of the two years that can be necessary for aircraft acquisition, and include some time for the inception of marketing activities, and the establishment of market presence. Given a one year period for the establishment of market presence, a three year period should suffice to accommodate all of these requirements. Therefore, we advocate a three year period for the phase-in, after which time a general open border environment would be instituted.

6.2.5 Structural Implications of the Phased-In, Open Border Regime

The phased introduction being proposed above should affect the structure of transborder airline markets in two primary ways. First, it should result in the creation of direct services between currently indirectly-linked city-pairs. Instead of having to travel by circuitous routings, transborder travellers in many Canada-United States airline markets would be able to enjoy direct services. Second, it will result in an increase in the number of potential, if not actual, competitors in existing transborder airline markets. These effects are qualitatively identical to the plain open border option. The differential will be with regard to the quantitative level of competition.
The limitation of entry during the phase-in period will establish, as an upper bound, the number of Canadian carriers that are able to offer transborder services. As a crude estimate of this number, the average number of carriers per route in Canada could suffice, at approximately 1.7. Alternatively, it could be assumed that both Canadian major carriers would contest most transborder markets, bringing the average number of competitors in new city-pairs to 2.0. Finally, the availability of new opportunities, restricted to Canadian carriers, could encourage airlines such as Air Transat or Canada 3000 to opt to provide scheduled services in selected transborder markets. This might be particularly appealing for those markets where the traffic base is Canadian vacationers. This scenario would bring the average number of potential competitors to greater than 2.0.

Once the phase-in period has expired, U.S. firms would be able to widely contest transborder markets. As noted in the discussion of the structural implications of extending the specified rights regime, the current average number of competitors in U.S. markets is 2.8. It could be expected then that the post-phase-in number of competitors would be in the vicinity of this number for most transborder routes.

The foregoing comments on market structure are founded on system-wide averages. It must be recognised that the most attractive new
transborder markets will be those for which there is a good deal of origin-destination traffic (for example, Ottawa-Washington DC), or where the service connects a large Canadian centre to an important U.S. hub airport (for example, Dallas-Vancouver). For city-pairs in the latter category, it should be expected that, even during the phase-in period, the number of competitors would be limited by expectations of the establishment of services by the hubbing airline. This should be expected to keep the number of competitors to the vicinity of 1.0.

6.2.6 Expected Conduct With a Phased-In, Open Border Regime

During the phase-in period, it should be anticipated that pricing behaviour will reflect the type of ultimate market structure expected. For those markets wherein multiple firms are anticipated to participate, both Canadian carriers can be expected to introduce services, and competitive prices should prevail. During the phase-in, these fares should be similar to those for intra-Canada services, reflecting the restricted number of potential competitors available to these markets. At the conclusion of the phase-in, fares can be expected to decrease to reflect the increase in the number of potential/actual competitors in the marketplace. They should be lower on average than both intra-Canada and existing transborder fares, reflecting the higher level of competition in these markets.
For those markets that are anticipated to ultimately become dominated by a U.S. carrier hubbing at the U.S. end-point airport, or by an alliance of carriers whose U.S. partner is the hub operator, fares can be expected to be relatively high during the phase-in period. With the onset of open competition, fare premia should be retained, as has been the case for U.S. domestic services involving dominated hubs. The fare premia can be expected to be applied only to travel for which the U.S. hub airport is an origin or destination. For connecting services, average fares can be expected to be somewhat lower, reflecting inter-route competition. This has been the observed pricing behaviour in U.S. domestic markets involving flights through hubs.

In terms of non-price conduct, it can be anticipated that during the phase-in period, alterations to airline networks will be the most prevalent activity. Many new cross-border city-pairs will be connected. The major Canadian carriers will introduce new services linking Canada’s major cities to the hub airports of their U.S. alliance partners. They can be expected to establish new direct services between U.S. and Canadian centres having sufficient origin-destination traffic, yet which do not enjoy direct air links under the current regime. It is also possible that Canadian carriers could provide services between Canadian centres and the hub airports of non-allied, U.S. carriers, where direct such services are not currently
permitted. Over the short-term, this presents the possibility of cream skimming markets that ultimately would be expected to be dominated by non-allied, U.S. carriers. The prospect of this type of behaviour should militate against the unanimous acceptance by the United States industry of the phase-in strategy.

The expectation that the hub-dominating U.S. firms would inaugurate competitive services at the conclusion of the phase-in period may discourage Canadian carriers from starting such services. At that time, the hub-dominating firm would be able to commence its own, new transborder services. The advantages of connecting the Canadian centre in question to the airline’s overall network should serve to yield the hubbing carrier eventual dominance in the relevant transborder market. In many cases, the density and scope economies associated with the hubbing operation may wrest enough transborder traffic away from the Canadian firm that it would have to exit from the transborder service. It should also be remembered that the introduction of any new services will be costly for the Canadian carriers. The need to maximise the net present value of returns for all new routes could well, of its own accord, dissuade Canadian carriers from taking advantage of phase-in period entry barriers in this manner.

6.2.7 Expected Performance Under a Phased-In, Open Border Regime
The forms of performance benefits, in terms of increased efficiencies, that are anticipated for a plain open border regime, should be realised through the phase-in strategy. Allocative efficiency would be enhanced. The increase in the average number of competitors in transborder markets should reduce average fares in these markets; economic rents due to route monopoly power would be reduced. The value of travel time savings that would occur because of more direct routings between transborder city-pairs would increase consumer welfare. Travellers would waste less time in making flight connections that are now required because of circuitous transborder routings.

During the phase-in period, there may be some accumulation of economic rents for Canadian carriers introducing new direct services. These rents would arise due to the absence of direct competition. The inter-route competition should be characterised by having higher average fares due to longer flight distances. Direct services offered by Canadian firms may be provided at lower average fares made possible by direct, lesser distance routings. However, the determining factor with regard to market performance in this regard will be the density of traffic permitted by the market. Without sufficient densities, the Canadian-supplied, direct services may not be operationally feasible. Moreover, their appeal to consumers may be limited, as connecting services offered by U.S. competitors may remain more attractive due to
reduced schedule delay time associated with greater flight frequencies through hubbing.

6.2.8 The Phased-In Open Border Regime and Equity

One of the major objectives that must be met by a new bilateral regime is the provision of equity of opportunity for carriers of both Canada and the United States. The phased-in open border strategy has been advocated largely because it addresses the imbalance of opportunities that are posed by other forms of bilateral liberalisation. It would allow the Canadian carriers advance rights so as to be competitive with U.S. carriers having superior abilities to reap economies of density and scope. However, the pursuit of the phase-in approach would pose problems for non-allied, United States carriers.

Those U.S. carriers allied with Canadian carriers would share in the short term benefits captured by the Canadian firms. For non-allied, U.S. airlines, the phase-in period represents then a period of competitive disadvantage versus their allied compatriots. In order to address this disparity, it may be desirable to allow non-allied, U.S. airlines to be able to contest transborder markets at a date prior to that on which free entry is permitted.
6.2.9 Summary and Conclusions

The phase-in strategy of introducing an open border regime has been proposed as a means of capturing the efficiency gains associated with an open border strategy, while at the same time meeting the equity objectives of a new bilateral air services agreement. The policy would allow Canadian carriers to freely access transborder markets in advance of the same rights being applicable to U.S. carriers. After a specified phase-in period, airlines of both countries would be free to introduce transborder services.

The duration of the phase-in period could be determined on several different bases. The most appropriate such basis would be the expected time frame over which Canadian carriers could realistically acquire the necessary aircraft, flight crews, and airport facilities to conduct such services. Some time should also be allotted for the development of market presence. We believe that a 3 year period would be appropriate.

The phase-in approach is intended to provide an equitable means of transborder service liberalisation. Recognising that it may confer benefits to those U.S. carriers having alliances with Canadian carriers
at the expense of non-allied U.S. airlines, it may be necessary to permit these non-allied carriers general entry rights in advance of allied U.S. airlines.

7.1 Summary of Analyses of the Proposed Models

7.1.1 The Specified Rights Option

The specified rights option would extend the current bilateral format to additional transborder routes. This is the most conservative option of the three under consideration. Its strength is that it maintains the equity of the division of benefits between Canada and the United States. The drawback to the specified rights option is that it does nothing to enhance the efficiency of the air transport systems of both countries, or of the services offered that connect Canadian and US communities. Adoption of this solution will prolong the premium prices that consumers currently endure for transborder travel.
7.1.2 The Open Border Option

The open border option would allow any Canadian or U.S. air carrier to offer service on any cross-border city-pair. While theoretically such a regime should provide equitable opportunity for airlines of either nationality to establish themselves in transborder markets, there are other factors that will undermine the bi-national contestability of such markets.

Canadian air carriers will find themselves at a competitive disadvantage with the introduction of a plain, open border policy because of the unfavourable tax regime in Canada which raises their cost per ASM relative to U.S. firms. There is the difficulty posed by the control over U.S. airport capacity that is held by U.S. carriers. Finally, there is the issue of beyond the gateway traffic, and the economies of scope that are available to American carriers. These scope economies can be capitalised on by U.S. lines, through their hub networks. Canadian carriers will find themselves at a competitive disadvantage as the result of only being able to provide origin/destination traffic for transborder services. In contrast, U.S. firms will have effective access to Canada's most important internal airline markets. This will be accomplished through mirror image services. Such services will be provided through the extension of spoke routes to Canadian centers from existing U.S. hubs. U.S.
Carriers should be able to capture a greater share of transborder traffic, and furthermore a significant share of intra-Canada traffic under an open border regime.

Canadian consumers would benefit from the introduction of an open border agreement. They would be able to fly to the United States less expensively, and would have more choices for intra-Canada travel because of the alternative of travelling through U.S. hubs. American consumers would be largely unaffected by the open border regime. Canadian carriers would experience an erosion of their traffic base, without being able to necessarily benefit from the open border due to U.S. airline control over airport facilities. U.S. carriers can be expected to benefit from the policy since it will allow them to capture a greater share of overall North American air traffic.

7.1.3 Cabotage

As with the open border option, cabotage presents the opportunity for enhanced consumer benefit in air transportation. Cabotage would permit carriers of either country to operate on any domestic or transborder route. The aim of the policy is to maximise the potential number of competitors in all North American markets. Average real fares can be expected to be reduced with the introduction of cabotage on many
transborder and intra-Canada routes, with fares in intra-United States services being largely unaffected.

Cabotage would have adverse consequences for the Canadian airline industry. Although the Canadian carriers can be expected to maintain their alliances with U.S. carriers, thus strengthening their long-term viability, they are likely to be forced out of many transborder and intra-Canada markets by non-aligned U.S. competition. This will have negative effects on Canadians who are interested in participating in the airline industry.

7.1.4 Phased-In Liberalisation Strategies

In order to capture the benefits of transborder liberalisation, the possibility of phasing-in of such regimes was considered. The desirability of phasing-in a cabotage regime was quickly recognised to be minimal; phasing-in of cabotage was therefore discarded as a policy option. In contrast, the phasing-in of an open border regime should be an advantageous solution.

The phased-in, open border would provide the efficiency gains expected for the general open border strategy. Unlike the general strategy, however, it would safeguard the well-being of the Canadian
carriers until they have a chance to establish themselves in new transborder markets. To fully meet the equity requirements of a new policy, the phase-in approach would have to accommodate United States airlines that are non-allied with Canadian carriers. Allowing these firms unfettered access in advance of the remainder of the U.S. industry would probably be an acceptable equity provision.
Footnotes to Chapter Five

1. Dresner and Tretheway, p.8
2. Dresner and Tretheway, p.8,9
3. Dresner and Tretheway, p.16
4. Dresner and Tretheway, p.16
5. Dresner and Tretheway, p.16
6. Dresner and Tretheway, p.14n
7. Windle, p.44n
8. Gillen et al.[1985], p.97
10. G.A.O. [1990], p.22
11. G.A.O. [1990], p.31
14. G.A.O. [1990], p.33
15. G.A.O. [1990], p.43
16. G.A.O. [1990], p.43
17. G.A.O. [1990], pp.59,60
18. G.A.O. [1990], p.62
20. G.A.O. [1990], p.63
22. G.A.O. [1990], p.64
23. G.A.O. [1990], p.65
24. The non-linear nature of the reward structure made it advantageous for an agent to book as many passengers with a single carrier as was possible.
25. G.A.O. [1990], p.67
27. Transport [1991c], p.35
28. Oum [1990], pp.6,7
29. Transport [1991c], pp.38,117
31. Transport [1991c], p.53
32. House of Commons, p.10
33. Transport [1991c], p.58
34. Transport [1991c], p.64
35. Transport [1991c], p.63
36. Transport [1991c], p.63
37. Transport [1991c], p.63
38. N.T.A. (II), p.184
39. Directions, p.252
40. Transport [1991c], p.96
41. House of Commons, p.14
42. Directions, p.746
43. N.T.A. (I), p.124
Footnotes to Chapter Five (Cont.)

44. Graham, Kaplan, and Sibley, p.129
45. Transport [1991b], p.104
46. Carlton et al., p.73
47. For example, the proximity of the respective carriers' gates at
    the airport of transfer will affect the time savings expected over
    multiple carrier services.
48. Transport [1991b], p.74
49. Gillen, Stanbury, and Tretheway, p.19
50. Patterson and Tretheway, p.5
51. N.T.A. (I), p.121
52. Transport [1991b], p.73
53. This is the intent of Bill 926, House of Representatives, 1993.
    This proposal is commonly known as "The Clinger Bill," after its
    author, Representative William F. Clinger, Jr., of Pennsylvania.
54. Hadrovic, p.209
55. Transport [1991b], p.33
56. Transport [1991b], p.35
57. Hadrovic, p.211
58. G.A.O. [1990], pp.66,67
59. Transport [1991b], p.33
60. Transport [1991b], p.35
61. Borenstein, pp.357,358
62. Dresner and Tretheway, p.18
63. Morrison and Winston [1987], p.61
64. Oum, p.24
65. Oum, p.23
66. Oum, p.23
67. Once again, this is due to the similarity of flight equipment, and
    terminal-related technologies worldwide.
68. Windle, pp.36,38
69. Transport [1991a], pp.73,74
70. Directions, p.1161
71. Oum, pp.19,22
72. Directions, pp.1157,1160,1161
73. Jordan, p.322
74. Oum, Stanbury, and Tretheway, p.13
75. Dresner and Tretheway, p.16
76. None of the studies we reviewed reported a breakdown of Canada-
    United States transborder traffic by consumption group--ie. by
    utilisation of fare discounts.
77. Oum, p.23
78. Dresner and Tretheway, p.16
79. Dresner and Tretheway, p.19
Footnotes to Chapter Five (Cont.)

80. Dresner and Tretheway (1990) used a random selection of international air routes in their analysis. The characteristics of their data set may make their conclusions less applicable to the Canada-United States situation. They used routes of 4,000 km (2,500 mi) or more: most Canada-US routes are shorter than this. Most international markets are such that there are few, if any, attractive alternative routings: most Canada-US markets can be served by a variety of different routings, which may include the use of alternative modes to cross the border, and flying exclusively on domestic services in the United States.

81. Borenstein, p.357
82. Borenstein, p.358
83. Dresner and Tretheway, p.16
84. Adrandi et al. [1989], p.225
85. Graham et al., p.129
86. Graham et al., p.135
87. Morrison and Winston [1987], p.61
88. Morrison and Winston [1987], p.61
89. Directions, p.1151
90. Based on a random sample of the top 1000 markets in the United States in 1988. See Appendix I. for details.
91. Windle, p.45
92. Dresner and Windle, p.282
93. Gillen et al. [1990], p.22
94. Transport [1991c], p.76
95. Transport [1991c], p.76
96. Transport [1991c], p.28
97. House of Commons, p.14
98. Transport [1991c], p.31
99. Gillen, Oum, and Tretheway, pp.131, 133
100. Gillen, Stanbury, and Tretheway, p.20
101. Gillen, Stanbury, and Tretheway, p.20
102. N.T.A. (I), p.77
103. Gillen et al.[1990], p.23
104. Wilbanks, pp.218,219
106. Korenic, pp.64,71,84,85
107. Oum, pp.46,48,49
108. Oum, pp.46,52,53
109. Gillen et al. [1990], pp.15,16
110. Oum, p.46n
111. Morrison and Winston [1990], p.391
112. Oum, p.45
113. Oum, pp.52,53
114. Oum, p.53
Footnotes to Chapter Five (Cont.)

115. Morrison and Winston [1990], p.392
116. Morrison and Winston [1987], p.61
117. Morrison and Winston [1990], p.383
118. Graham, Kaplan, and Sibley, p.137
119. Borenstein [1989], p.362
120. G.A.O. [1990], pp.31,43
121. Morrison and Winston [1987], p.59
122. Morrison and Winston [1990], p.392
123. Morrison and Winston [1990], p.392
124. Bailey and Williams, pp.182,189
125. G.A.O. [1990], p.69
126. Morrison and Winston [1987], p.59
127. Windle, p.45
128. N.T.A. (I), p.77
129. Graham et al., p.135
130. Waterson, pp.18,19
131. Waterson, p.18
132. Waterson, p.25
133. Brander and Zhang [1990], p.569
134. Waterson, p.23
135. Brander and Zhang [1990], p.577,578
136. N.T.A. (I), p.77
137. Treheway [1991], p.7
138. Erickson, p.35
139. Transport [1991c], p.83
140. Gillen, Hansen, and Ramos, p.23
141. Gillen, Hansen, and Ramos, p.23
142. These calculations are based on transborder market share data from The Ministerial Task Force on International Air Policy Report, Volume III (1991), p.37, and on total market share data from Gillen, Hansen, and Ramos (1990), p.23. Case 2 is compared with Gillen et al. because in both approaches it was presumed that U.S. carriers would face identical costs to Canadian firms for intra-Canada operations.
143. Directions, pp.1660-1664
144. Windle, pp.37,39
145. Caves et al., pp.304,305
146. Caves et al., p.310
147. Gillen et al. [1985], p.118
148. Directions, p.736
149. Erickson, p.36
150. House of Commons, p.12
151. Transport [1991c], p.98
152. Petrie, p.26
CHAPTER SIX.

SUMMARY AND CONCLUSIONS

1. The Need for a New Structure for Canada-United States Air Transport Services

There is general recognition in Canada and the United States that the current bilateral agreement regarding air transport services between the two countries is inadequate. There are artificial limitations on the way in which airlines of both countries may offer travel between the countries to the consumer. Current transborder services feature a lack of direct routings between important destinations, and some degree of monopoly pricing. A more liberal regime, based on market discipline, would result in an increase in consumer welfare.

Canada and the United States have attempted to negotiate a new bilateral agreement. They have been unsuccessful in so-doing because of differences in each nation's evaluation of the distribution of the costs and benefits that would result from the adoption of the three general solutions that have been proposed. While it has been acknowledged that a more liberal structure for these services would be beneficial to consumers in Canada and the United States alike, the concerns of industry participants in both countries have complicated
the negotiations. The concerns of the industry are legitimate and must be satisfactorily addressed if a good solution is to be achieved.

2. The Three Solutions Under Consideration

2.1 The Specified Rights Option

The first format for a new bilateral that is being considered is that of an extension of the status quo. This can be termed the specified rights option. Under this plan, a new bilateral would be negotiated that would be similar in nature to the existing agreement, but which would specify new transborder routes that could be flown. Each country would then allocate these new routes to their carriers. Multiple designation of carriers would be a possibility; this would serve to increase the level of competition in transborder markets.

The drawbacks to the specified rights option are that it does not allow the airlines to construct route networks that take advantage of the economies of scope that have been demonstrated to exist in air transportation. It would also not address the disparity of benefits that exists between US and Canadian carriers. Lack of improvements in efficiency should relegate this strategy to being that of one of last resort.
2.3 The Cabotage Option

Another general form that has been suggested for a new bilateral regime is that of cabotage. A cabotage agreement would allow carriers from either country to provide both transborder flights, and domestic services in the other country. Proponents argue that cabotage would increase the level of competition in all North American markets, thereby benefitting Canadian and US consumers. The airlines would be able to truly optimise their route layouts, and would be able to take advantage of currently under-utilised airport facilities in the process.

Going against the cabotage option are the same arguments lodged against the open border policy. The cabotage regime also has special problems all its own. There is the concern in both Canada and the United States over the precedent that the granting of cabotage rights, one to the other, would establish for both countries' relationships with third parties. The United States is particularly concerned that they could be forced to grant similar privileges to third countries where US interests would stand little to gain in the way of reciprocal rights. There have been legal opinions expressed, however, that Canada and the United States would be bound only to permit other parties to engage in negotiations toward creation of a cabotage agreement.
The greatest problem regarding cabotage is that the equity objectives of a new agreement would probably not be achieved by its adoption. The difficulty is that the superior network-related economies of scope and density associated with the operations of U.S. carriers could be externalized to transborder and Canadian domestic markets to the decided detriment of Canadian carriers.

Concerns over extension of cabotage rights to third parties coupled with Canadian anxieties over the survival of a Canadian airline industry make cabotage an unacceptable option.

2.3 The Open Border Option

Canada and the United States could institute an open border regime for airline services. Under this policy, the carriers of either country could offer services on any cross-border city-pair that they wished. The aim of the open border solution is to enhance competition in transborder markets. With a more competitive structure, there should be a rationalisation of routes, and an increase in efficiency that will lead to lower prices for consumers.

The open border strategy has been criticised as posing a threat to the continued viability of the Canadian carriers. Critics claim that
these airlines cannot compete on such terms with their US counterparts because of the advantages the latter have with respect to costs, geography, and demographics.

2.4 Recommended Policy: The Phased-In, Open Border Regime

While the foregoing options meet either the efficiency or the equity objective severally, the phased-in, open border option would accommodate both policy objectives jointly. The efficiency gains expected from the open border strategy would be realised. The phased-in nature of the regime would allow the Canadian carriers advance ability to establish market presence in new transborder operations. This should serve to level the terms of competition between them and their U.S. counterparts. Provisions would be made to address the disparity between Canadian-allied, U.S. airlines, who would participate in the first-mover advantages of the Canadian carriers, and non-allied, U.S. carriers.

As part of the agreement, it would be necessary to ensure that Canadian carriers have access to significant U.S. airports. Access provisions regarding gates and slots will be vital prerequisites to the successful introduction of new services by Canadian firms. These conditions must be attached to the agreement.
The duration of the phase-in period should be three years. This time frame should allow the Canadian carriers to assemble the necessary flight and ground equipment, and personnel to be able to conduct such services.

3. Conclusions

This study has explored the desirability of adopting the alternative schemes for a new Canada-United States air services bilateral agreement. It has analysed the three general alternative strategies using the structure-conduct-performance paradigm as the method of analysis. On the basis of two important performance criteria, efficiency and equity, we have concluded that a modified version of the open border strategy should be pursued in the new regime.

Evaluation of the Structure- Conduct- Performance Paradigm as Applied to Airline Markets

The use of the structure-conduct-performance model in this analysis was invaluable. The model allows for hypothetical situations to be evaluated from a well-founded set of assumptions. The assumptions used in this analysis were that airline markets of similar structure would
produce the same conduct and therefore similar performance. In particular, it was assumed that the existing bilateral agreement has produced some degree of economic rents for carriers. Proposed deregulation of the transborder sector should increase decrease the concentration of airline markets. This should give rise to performance results similar to those realised in domestic markets in both Canada and the United States after those markets were deregulated.

The model also suggests that entry barriers may be significant determinant of market performance. In application to airline economics, it has been shown that, where a carrier dominates a market because of control over access to airport facilities and or computer reservations systems, market contestability may be blockaded. Thus, the plain institution of deregulation may not provide a path to the enhancement of consumer welfare.

The application of the structure-conduct-performance method of analysis to airline markets demonstrates that the model is best utilised in its more complex form: that causality should be expected to flow in both directions. In particular, the conduct of air carriers has been shown to have had a definite impact on the structure of airline markets. This has been most evident where dominant-carrier control over operations at a hub airport has deterred entry by competitors that, ceteris paribus, should be competitive in such
markets.

The foregoing observation illustrates a potential short-coming of the structure-conduct-performance paradigm: it may be susceptible to problems regarding the identifiability of causality. If causality cannot be identified, the applicability of the paradigm as a means of forecasting market performance would be undermined.

Another potential problem arises with regard to the scope of the structure that should be considered. If too broad a number of structural factors is included in the model, the applicability of the paradigm becomes questionable; there should be a manageable number of explanatory factors to make the model useful. If too great a number of elements of structure are included, the likelihood of observing patterns of causality can be expected to be reduced. The net result is that the qualitative and quantitative variety of situations changes the deterministic, structure-performance relationship to one of novelty. This is the essence of the case study approach, which is an alternative method of analysis.

Policy Recommendation

This study has considered the prominent, available alternative
strategies for a new Canada-United States air transport agreement. The assessment of these alternative has shown that the desirable option is the phased-in, open border approach. It entails giving Canadian carriers immediate access to any transborder route they desire to operate. After this period, which we estimated should be three years, all transborder city-pairs could be freely entered by airlines of either country.

This study has concluded that adoption of this policy would benefit Canadian and American consumers alike. These benefits would be the result of several factors:

1. Efficiency would be enhanced in that there would be travel time savings due to more direct routings for transborder travel;

2. Allocative efficiency would be improved as there would be greater potential, if not actual, competition on transborder air routes. This can be expected to lead to reductions in average fare levels;

3. Productive efficiency would be promoted as market discipline would extend into the transborder sector;
4. Equity objectives would be realised as the policy addresses the disparity that exists between Canadian and U.S. airlines with respect to their differential abilities to capitalise on economies of scope and density.

Further research would be valuable. What is needed is a rigorous treatment of the solution to the matter of the length of the appropriate periods for the phase-in of the regime. Also, the point in time at which the non-allied, U.S. airlines should be given complete freedom to enter transborder markets should be so determined.
BIBLIOGRAPHY


APPENDIX I.

"Calculation of Average Number of Competitors Per Route in United States Airline Markets, 1988"

Purpose

The purpose of these calculations is to determine the average number of airlines operating per route in United States domestic airline markets.

Data

The data used in this calculation were obtained from the United States Department of Transportation, "Secretary's Task Force Report on Competition in the U.S. Domestic Airline Industry, Volume II," Appendix "S." To be included in the "Report's" data set, an airline had to have had at least a ten per cent market share. The data were for the top 1000 markets (in terms of traffic volumes) for 1988.

Method

A random sample of 30 markets was drawn from the available data. It should be noted that, because of the influence of density economies, we may expect that there would be a greater average number of competitors in larger airline markets. Therefore, the methodology employed may upwardly bias the calculated average for all United States markets.

Results

Histogram of Average Competitors per Route  N = 30

<table>
<thead>
<tr>
<th>Midpoint</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
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</table>

Average Competitors Per Route

<table>
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<tr>
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<th>MEAN</th>
<th>STDEV</th>
<th>SE MEAN</th>
<th>95.0 PERCENT C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>2.800</td>
<td>0.925</td>
<td>0.169</td>
<td>(2.455, 3.145)</td>
</tr>
</tbody>
</table>

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