


THE ECONOMIC IMPACTS OF THE MEMBER CARRIERS OF THE NATIONAL AIRLINES COUNCIL OF CANADA

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TABLE OF CONTENTS

LIST OF TABLES

EXECUTIVE SUMMARY

There are three key issues:

1. What do the members of the National Airlines Council of Canada (NACC) collectively contribute to the Canadian economy?
2. What are the costs of government policies on the airline industry in general, and the members of the NACC in particular?
3. What should the government do going forward to enhance the competitive position of Canada and Canadian-based airlines?

CONTRIBUTIONS

The four current members of the NACC (Air Canada, Air Transat, Jazz and WestJet) carried 53 million passengers and directly employed 42,800 people in 2011. Their total revenues exceeded $19 billion and their total expenditures in Canada were about $18 billion. Their estimated total economic output impact was $33.6 billion, and the total number of jobs created by the NACC members was at least 268,000.

These traditional economic impacts do not take into account important secondary impacts. The potential tourism-induced effects of the NACC members might have contributed an additional total economic output of $65 billion in 2011. In addition, the air transport sector plays an important role in facilitating trade, which is a key driver of the Canadian economy. In 2011, the total value of exports and imports shipped by air between Canada and the rest of the world was $110 billion.

In addition to the standard economic impacts, the airline industry generates significant externality or catalytic impacts. Positive externalities stem from the higher rates of productivity growth made possible by the air transport industry's contribution to the integration of markets and the time-savings for both passengers and freight. The range of estimates based on the methodology developed by Oxford Economic Forecasting generates catalytic impacts for the air transport sector in Canada of $10 to $34 billion in GDP in 2011.

Consequently, the aggregate economic impacts of the NACC members (traditional, secondary and catalytic) likely are five to seven times their traditional impacts, or somewhere in the range of $35 to $60 billion in GDP (2.0% to 3.4% of Canada's GDP), and these do not include potential tourism-induced effects.

Economic theory is quite clear that the optimal policy is to subsidize those industries that create positive externalities in order to encourage more investment and production by such industries. While I am not advocating that the federal government subsidizes any of the NACC members, even though there is a strong theoretical argument in favor of subsidies, the current policies that extract revenues from the air transport industry are wrong. They negatively impact this industry, but more importantly, they negatively impact the economy and aggregate productivity.

COSTS OF GOVERNMENT POLICIES

Since 2001, the federal government has collected directly and indirectly $8.6 billion from the air transport industry in Canada. The total costs of these policies for each passenger at the 14 major airports was $14.18 or approximately 5.7% of the average discounted domestic and international fare for the NACC members in 2011.

Each decision to impose or increase or expand the scope of a tax or fee is usually made independent of all other such decisions. Therefore, while each is viewed on its own as small and benign, the combined result is anything but benign. Indeed, a survey of 10 selected domestic flights for each of Air Canada and WestJet shows that the aggregate impact of a host of government policies accounts for 17% to 40% of the total fares, with the relative impacts being larger for the lowest fares.

NACC members might experience an increase of 2.7 million to 3.4 million passengers each year if ground rents, the Air Travellers' Security Charge (ATSC) and the excise tax on jet fuel are eliminated, and NAV CANADA is reimbursed for its annual costs for servicing the $1.5 billion debt it took on when it was privatized in 1996. Eliminating these taxes might lead to an additional economic output generated by the NACC members of between $1.4 and $4.1 billion. The potential economic benefits from eliminating the taxes are substantial, both for the NACC members and the Canadian economy as a whole.

FUTURE POLICIES

Productivity growth continues to hover, as it should, near the top of the federal government's economic policy agenda. Without higher and sustained rates of productivity growth, the government will have difficulty achieving its fiscal goals. The air transport industry, lead by the members of the NACC, is a key sector in spurring productivity growth.

Consequently, there are sound economic and policy reasons for ensuring that the air transport industry thrives in Canada and that Canadian carriers succeed in the North American and international markets. Changing the policy course from the current one where the air transport industry is viewed strictly from a fiscal position, to one where it is recognized as a key contributor to productivity growth requires cutting the costs faced by this industry.

The federal government has to choose the course of action that will ensure Canadians will be connected directly, conveniently and efficiently into global networks, thus enhancing their mobility, both for business and leisure, and their ability to transport goods to and receive goods from all parts of the world.

There are a multitude of taxes and fees imposed on the airline industry by various levels of government. Three charges that the federal government is solely responsible for are ground rents, the Air Travellers' Security Charge (ATSC), and the federal excise tax on jet fuel. The starting point for the development of a new direction in aviation policy would be the termination of the ground rents, the ATSC, and the excise tax on jet fuel. It is conceivable that, if the resulting catalytic impacts of increased demand for air transportation services are sufficiently large, the federal government might break even or make some money over the next 15 years by terminating these taxes. That is, these measures might be self-financing and hence not add to the federal government's debt by 2027.

The federal government should then take a look at the funding of infrastructure. Finally, the government should consider including in all “Open Skies” agreements countervail and dumping provisions similar to the ones in the NAFTA and the GATT. These provisions would level the playing field for Canadian airlines and airports by eliminating the competitive distortions in the market resulting from aggressive subsidization policies by foreign governments.

Without the continued success and growth of these airlines, no Canadian airport is likely to join the ranks of international gateways or regional hubs, with their significant economic benefits for Canada. Furthermore, productivity growth in Canada will be negatively impacted, creating a host of other problems for the government and the country.

1.0 INTRODUCTION

There are three key issues that I address in this report. They are:

1. **The economic impacts generated by the members of the National Airlines Council of Canada (NACC);**
2. **The costs of government policies on the airline industry in general, and the members of the NACC in particular; and**
3. **The objectives for government policy for the airline industry in Canada.**

There are four sectors that are critical for the economy to function – finance, telecommunications, energy and transportation. How one connects to the networks in each of these sectors is important, but particularly so for the air transport industry (and the truck and rail freight sectors as well). Local access is important in telecommunications, but does it really matter what the routings are? That is, does it matter how a phone call is routed from one person to another? Does it matter where oil is produced and how it gets to the consumer? Does it matter where one gets financial advice and where a "cyber-branch" is located for on-line banking?

It does indeed matter how Canadians can get from one location to another via air. Time is important for every traveller, and for all companies that ship or receive goods by air. Without the NACC members, Canadians would be able to get to any destination to which they might want to go. However, most likely they would have to make an extra stop, and possibly an extra change of planes to get there. This would impose a cost on every traveller, and make travel less attractive.
If Canadians travel less, Canada loses. So the nature of connectivity matters very much in the air transport industry.

It has been well documented that the air transport industry plays several critical roles in the economy. This industry:

- Expands markets for companies, enabling them to exploit economies of scale and learning curves;
- Facilitates the international division of labour thus allowing for the more productive use of labour and other factors of production, and encouraging increased levels of investment by labour in their human capital;
- Spurs competition within countries and across countries thus promoting innovation and higher levels of productivity growth;
- Magnifies the economic benefits from trade liberalization by reducing transportation costs and travel times and thus inducing new production technologies/arrangements, such as just-in-time manufacturing, on a global basis.

In other words, the air transport industry, of which the NACC members are key players in Canada,[1] is essential for economic progress. In an increasingly global community and marketplace, air transport makes possible the rapid movement of people and goods to markets around the world. The airline industry generates many valuable economic benefits.

Table 1 presents the total revenues, number of employees and passengers carried in 2011 by each of the NACC members. Collectively they carried almost 53 million passengers and directly employed almost 43,000

[1] Indeed, they comprise the Level 1 carriers in the Statistics Canada data for all Canadian air carriers.

people. Their total revenues exceeded $19 billion. It is clear, without even considering spin-off – induced and catalytic – impacts, that the NACC members play an important role in the Canadian economy.

TABLE 1: Employees and Passengers Carried by NACC Members, 2011

	Employees	*Passengers (millions)*	*Revenues ($ billions)*
Air Canada	**27,000**	**24.3**	**11.6**
Air Transat	**2,100**	**3.2**	***2.8**
Jazz	**5,000**	**9.1**	**1.7**
WestJet	**8,700**	**16.0**	**3.1**
Total	**42,800**	**52.6**	***19.2**

*Revenues for the Americas for Transat; only part of these revenues are attributable to the operations of Air Transat
Sources: Company 2011 Annual Reports, company websites and filed on Sedar.

Airlines in general are at the center of the air transport industry. They are the focal point in an important value chain – globally and nationally. In addition to the airlines, the value chain consists of:

- Manufacturers: airframes, engines, mechanical systems, computers, electronics, software;
- Aviation services: insurance, leasing/financing, telecommunications, aircraft maintenance, fuel suppliers, consultants, fixed base operators;
- Airports and services: terminal maintenance, airports, catering/in-flight services, air navigation services;
- Tourism: hotels, restaurants, car rentals, retail, conferences/conventions, financial services, travel agents; and
- Freight: forwarders, transport, warehousing, input to other industries.

In sections 2.0 and 3.0, I estimate the total economic impacts of the NACC members in particular, and the Canadian airline industry in general, for the Canadian economy.

Productivity growth continues to hover near the top of the federal government's economic policy agenda. Without higher and sustained rates of productivity growth, the government will have difficulty achieving its fiscal goals and maintaining its social programs. The air transport industry, lead by the members of the NACC, is a key sector in spurring productivity and economic growth as it generates significant externalities throughout the economy.

Consequently, there are sound economic and policy reasons for ensuring that the air transport industry thrives in Canada and that Canadian carriers succeed in the North American and international markets. Changing the policy course from the current one where this industry is viewed strictly from a fiscal position, to one where it is recognized as a key contributor to productivity and economic growth requires cutting the costs faced by this industry and ensuring that it competes on a level playing field against other domestic modes of competition such as VIA Rail and foreign airlines.

A dollar invested in this industry is likely to produce a larger net benefit than a dollar invested in most other sectors of or activities in the economy. Therefore the choice for the federal government will be one of

making decisions for the long-term health of the Canadian economy and benefit of all Canadians, or of making decisions motivated by short-term expediency and fiscal pressures. Hidden taxes may not be apparent to consumers, but they do have significant effects on their expenditures and standards of living.

For most of the past 15 years the federal government has treated this industry as a cash cow – **just the reverse of what is appropriate for an industry that generates large externalities throughout the economy.**

Economic theory is quite clear that the optimal policy is to subsidize those industries that create positive externalities in order to encourage more investment and production by such industries. Singapore, Dubai, Abu Dhabi and Qatar have recognized this principal and appear to be following this course of action.

While I do not advocate that the federal government subsidizes any of the NACC members, the current policies that extract excessive revenues from the air transport industry are, in my view, wrong. They negatively impact this industry, but more importantly, they negatively impact the economy and aggregate productivity.

The annual costs of the following federal government policies – the ATSC, excise tax on jet fuel and airport ground rent lease payments – totaled $933 million and $989 million in FY 2011 and 2012 respectively (see Table 2). To these amounts should be added the annual interest and principal payments by NAV CANADA on the $1.5 billion debt the company incurred when it was divested in 1996 and had to pay the federal government this amount.[2] The annual payments would be $120 million, assuming a 20-year bond at a 5% rate of interest. These payments increase the total costs of the federal government policies to $1,053 million and $1,109 million in FY 2011 and 2012 respectively.

TABLE 2: Federal Government Revenues, Air Transport Industry, FY 2009-2012 ($ millions)

	2012	*2011*	*2010*	*2009*
Ground Rents	274	244	258	275
Air Travellers Security Charge	631	600	374	386
Fuel Excise Tax	84	89	39	39
Total	989	933	671	700

Source: Public Accounts of Canada, 2009-10 and 2011-12

In comparison, Air Canada, Jazz and WestJet[3] collectively had total net profits of $370 million in 2010 and a net loss of $32 million in 2011. Obviously, the federal government has done much better in this industry than have the members of the NACC.

Using a weighted average of the ground rents for the fiscal years 2011 and 2012[4] to generate an estimate of the total ground rents paid in calendar year 2011 – $266 million – and applying this amount to the total

[2] Many governments have "commercialized" their air navigation service providers (ANSP) and have made them financially self-supporting. In other words, these governments have applied the user pay principle to their ANSPs. However, Canada has been one of only two countries (the U.K. is the other) to go beyond this stage and privatize their air navigation services providers. Unlike the privatization of NAV CANADA where the Canadian Government received $1.5 billion, it does not appear as if the UK Government netted much out of the partial privatization of NATS.

[3] It is not possible to extract from Transat's financial statements, the allocation of income for Air Transat.

number of passengers at the 14 airports which paid ground rents (71.4 million, see Table 3), results in a cost per passenger of $3.73.

TABLE 3: Passengers at Airports That Paid Ground Rents, 2011 (000s)

	Domestic	*Transborder*	*International*	*Total*
Victoria	1,177.6	251.7	27.5	1,456.8
Vancouver	8,640.7	4,043.4	3,710.9	16,395
Edmonton	4,711.7	1,085.7	359.4	6,156.8
Calgary	8,313.8	2,495.9	1,263.5	12,073.2
Saskatoon	995.6	159.3	59.8	1,214.7
Regina	888.9	151.7	66.8	1,107.4
Winnipeg	2,776.0	454.2	153.6	3,383.8
Thunder Bay	675.8	7.4	5.5	688.7
Toronto	13,017.2	8,741.3	10,520.0	32,278.5
Ottawa	3,205.3	723.3	430.4	4,359.1
Montreal	4,992.2	3,067.8	5,168.5	13,228.5
Quebec City	738.6	238.0	366.4	1,343.0
Halifax	2,759.4	398.7	324.3	3,482.4
St. John's	1,255.3	27.9	46.0	1,329.2
TOTAL	***27,074.0**	**21,846.3**	**22,502.6**	***71,423.0**

* Only half of the total number of domestic passengers is included in the total number in order to avoid double counting.
Source: Statistic Canada, "Air Carrier Traffic at Canadian Airports, 2011", Cat. 51-203-X

Using a weighted average of the ATSC collected in fiscal years 2011 and 2012 to generate an estimate of the total for the calendar year 2011 – $623 million – and applying this amount to the total number of passengers at Canadian airports in 2011, results in a cost per passenger of $7.86 (excluding GST). The fuel excise tax adds another $1.08 per passenger, and the annual NAV CANADA interest and principal payments for the $1.5 billion payout to the federal government adds a further $1.51 per passenger.

Each decision to impose or increase or expand the scope of a tax or fee is usually made independent of all other such decisions. Consequently, while each is viewed on its own as small and benign, the combined result is anything but benign.

The total cost of these policies for each passenger at the 14 major airports (listed in Table 3) was approximately $14.18 in 2011. The average discounted domestic and international fare for the Canadian Level 1 carriers, which happen to correspond to the NACC members, in2011 was $247.22. The sum of these various taxes was about 5.7% of this fare. But the impact of these and other policies on fares is much greater, as I will demonstrate in section 4.0.

Turning to the objectives for government policy, a good starting point is Transport Canada's 1994 document: "Canada's International Air Policy". In that document, the government stated:

[4] Since this fiscal year ends on March 31, the weights used are 25% for fiscal 2011 to capture the period January1, 2011 to March 31, 2011, and 75% for fiscal 2012 to capture the rest of the 2011 calendar year.

> The particular role and challenge of government is to formulate a clear and coherent set of objectives, strategies and policies that meet the overall national interest. The following objectives for a Canadian international air policy are established as being in the broad national interest:
>
> - To provide better international air service for Canadians;
> - To support our international trade, business and tourism objectives;
> - To respond to the needs of airport and export communities;
> - To ensure consumers are protected and have all the necessary information to make the travel choices best suited to their needs;
> - To create a growth-oriented environment for the air industry.

These objectives are just as relevant today.

Transport Canada stated quite clearly in its October 2006 paper "A New International Air Transportation Policy: Consultation with Stakeholders":

> Air transportation is an essential tool to connect Canadians with one another and the world: it directly contributes to a dynamic economy moving people and goods, supports tourism and economic development, produces significant social value by connecting all parts of Canada, creates and maintains specialized, highly paid employment throughout Canada, and supports Canada's trade agenda.

And section 5 of the *Canada Transportation Act (1966)* states:

> transportation is recognized as a key to regional economic development and that commercial viability of transportation links is balanced with regional economic development objectives so that the potential economic strengths of each region
> may be realized.

Recognizing the importance and role of this industry is key for the government to review its current policies and make the changes necessary to ensure that Canadian airlines will have the opportunity to participate on a level playing field in the future growth of this industry worldwide in order to maximize the benefits for Canada. When Canadian airlines are encouraged to fly more often and to more places through an incentivized policy framework, every sector and region in the country will benefit.

In section 5.0, I will examine the potential benefits for Canada of changes in existing federal government policies on Canadian airlines. Section 6.0 will summarize my conclusions.

2.0 STANDARD ECONOMIC IMPACTS

2.1 Traditional Methodology

In 2011, the air transport industry generated $8.6 billion of Canada's GDP, or about 0.49%. NACC members produced much of this. As points of reference, worldwide, the global economic impact of aviation in 2008 was estimated to be about US$3.5 trillion or 7.5% of world GDP.[5] In 2007, the primary contribution of civil aviation expenditures in the U.S. was US$285 billion, approximately 2% of U.S. GDP. Overall, including secondary impacts, civil aviation accounted for US$786 billion of U.S. GDP, or 5.6%.[6]

The larger number of passengers in the U.S. might explain part of the difference between Canada and the U.S. in terms of the relative sizes of the air transport industry. In 2008, the number of passengers handled at U.S airports totaled around 1.4 billion. In Canada there were 108 million passengers.

This translates into a 13.0:1 ratio for the number of passengers compared to a 9.1:1 ratio for the populations of the U.S. and Canada. If the number of passengers at Canadian airports replicated the population ratio, there would have been 154 million passengers in Canada – 46 million or 42%, more. Extrapolating this to the53 million passengers carried by the NACC members in 2011, results in 22 million more passengers for these airlines.

It is clear that, Canada under-performs the U.S. in terms of commercial air travel, and this accounts for part of the large gap in the air transport industries' impacts on the respective economies. Part of this underperformance likely is attributable to the policies in Canada. Another part of the difference is likely accounted for by the relatively larger size of the aerospace manufacturing sector in the United States.

A substantial part of the difference, however, lies in the methodologies used to derive the aggregate economic impacts in the United States and the world. For example, according to a study by Oxford Economic Forecasting (OEF) in 2006,[7] airlines generated £6.5 billion in GDP in 2004 in the UK, or about 0.81% of GDP. These direct estimates are more in line with the Canadian data; however, they too underestimate the total economic impacts of the air transport industry.

Before I move on to discuss the standard methodology used to estimate the aggregate economic impacts of the air transport industry, let me first highlight that in 2010, air passenger fare exports[8] totaled $2.7 billion, and air passenger fare imports[9] totaled $7.1 billion. This imbalance of $4.5 billion[10] provides an opportunity for Canadian carriers, as long as they can offer competitive services at competitive prices.

The traditional approach, as described in many economic impact studies (see the Appendix), involves identifying and measuring each of the following: direct economic impacts, indirect economic impacts and the secondary or induced economic impacts. The $8.6 billion GDP estimate for the air transport sector in Canada is just part of the direct economic impact.

[5] Air Transport Action Group (2008) "The Economic and Social Benefits of Air Transport 2008".
[6] FAA, "The Economic Impact of Civil Aviation on the US Economy", December 2009.
[7] Oxford Economic Forecasting, "The Economic Contribution of the Aviation Industry in the UK", October 2006, p. 12.
[8] Airfare purchases by non-Canadians on Canadian airlines.
[9] Airfare purchases by Canadians on foreign airlines.
[10] This travel account deficit has increased from $2.8 billion in 2005.

The direct economic impact of airlines, especially of the NACC members, consists of their payroll, capital expenses, and non-payroll operating expenses. The indirect impacts consist of the expenditures of visitors who travel by air, at hotels, restaurants, entertainment venues, and on ground transportation, souvenirs, etc., and the expenditures of travel agents. According to the Tourism Industry Association of Canada, the tourism industry in Canada generated almost $79 billion of Canada's GDP in 2011, or about 4.5%.

In addition, it is reasonable to assume that the indirect impacts also consist of expenditures by all providers of services to the airlines – airports, aircraft maintenance, food and beverage suppliers, ground handlers, air navigation providers, financial institutions, IT suppliers, etc.

Including expenditures by airports and several of the others listed above among the indirect impacts raises an interesting question. Economic impact studies of airports usually include among the direct economic impacts the expenditures of airlines, air cargo carriers, air taxi/charter, aircraft services, airport management and operations, car rental agencies, air navigation providers, freight forwarders, FBOs, terminal tenants, etc. So where should these expenditures be included?

There is a symbiotic relationship between airports and airlines. Neither can survive without the other. Thus it becomes a chicken and egg dilemma. Which comes first; which is more important? There is no satisfactory answer to this question, although later in this report I will highlight the importance of a hub carrier for an airport. Nevertheless, it will be important to ensure that there is no double counting if one is to aggregate the total economic impacts of airlines and airports.

The secondary or induced economic impacts consist of the intermediate and induced effects associated with the primary expenditures (the direct and indirect impacts). The intermediate effects reflect the expenditures for labour, materials and services by the supporting industries and services to the firms directly and indirectly involved in the provision of air transport services. The induced effects reflect the expenditures created by the incomes of the labour force retained to meet the primary and secondary demands.

The consulting firm of Simat, Helliesen and Eichner has described the process creating the secondary economic impacts as follows:[11]

> the economic activity catalyzed by aviation does not end with the primary impact. Money spent in this first round is partially re-spent in subsequent rounds, so that a single additional dollar added to the economy has an ultimate impact that is much larger than a dollar. This additional impact resulting from the respending of new dollars is termed spin-off (or multiplier) impact. The size of the spin-off economic impact is described with a multiplier, the amount by which the impact of a single new dollar is magnified by respending of that dollar.

Many of the traditional studies have relied on surveys to estimate the direct and indirect impacts and on input-output model generated multipliers. It is possible to short circuit the process and apply multipliers directly to the direct economic impacts. For example, RP Erickson and Associates used this approach in their

[11] Simat, Helliesen & Eichner, Inc, Economic Development Research Group, Dufresne-Henry, Inc. and Yellow Wood Associates, "The economic impact of Vermont's public-use airports", April 2003, prepared for VTrans (Vermont Agency of Transportation), p. 19.

study of the economic impacts of the Calgary International Airport:[12]

> Multipliers are used to infer indirect and induced economic activity from a measure of direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tools available to identify the overall impact of a sectoral activity within an economy.

InterVistas used a similar approach in their study of the economic impacts of the Vancouver International Airport:[13]

> As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers. Multipliers are derived from economic/statistical/accounting models of the general economy.
>
> The use of multiplier analysis is limited by a number of factors, these are:
>
> - the accuracy of the structure and parameters of the underlying model;
> - the level of unemployment in the economy;
> - the assumption of constant returns to scale in production;
> - the assumption that the economy's structure is static over time; and
> - the assumption that there are no displacement effects.
>
> Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.
>
> In general, the use and reporting of multiplier impacts is discouraged. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

In this report I will be using an approach similar to the ones employed by RP Erickson and InterVistas in their studies.

[12] RP Erickson & Associates, "The 2004 Economic Impact of the Calgary International Airport", September 2005, p. 7.
[13] InterVistas, "The Vancouver International Airport Economic Impact", March 2006, p. 22, 23.

2.2 Multipliers

What multipliers should be used?

TABLE 4: Multipliers, Selected Canadian, U.S. and Australian Airports, Various Time Periods

Airport	*Year*	*Region*	*Output*	*GDP*
Vancouver#	2010	Canada		2.79
St. John's	2009	Canada		2.67
Halifax	2011	Nova Scotia	3.07	
Edmonton Airports	2008	Alberta	2.28	2.60
Edmonton	2008	Alberta	2.29	2.60
Ottawa	2011	Ottawa	2.02	2.13
Montreal Airports	2007	Montreal		1.74
Winnipeg	2008	Manitoba	1.96	2.19
Regina	2008	Saskatchewan		2.15
Toronto	2006	Southern Ontario	1.78	
Calgary	2004	Calgary		2.31
Thunder Bay	2011	Thunder Bay		2.61
All Canadian Airports	2001	Canada	1.84	
Houston Airports	2003	Houston	2.73	
Burbank	2006	Southern California	2.22	
Atlanta#	2009	Metro Atlanta	**1.79	
Detroit	2006	Michigan	1.89	
New York Airports	2004	New York/New Jersey	1.60	
New Orleans	2003	New Orleans	2.29	
Seattle	2007	Seattle	*2.72	
Fresno Yosemite	2004	Fresno	*3.04	
San Francisco	2008	San Francisco	*2.68	
Miami	2006	Miami	*2.96	
All US Civil Aviation	2007	US	2.76	2.74
Sydney, Australia	2007	New South Wales	2.05	2.06

* Personal income; ** Business revenues
Sources: See Appendix A

In Table 4, I have summarized the multiplier values used in a number of studies of the economic impacts of airports. For the Canadian airports, the economic output multipliers range between 1.78 and 3.07. For the U.S. airports, the corresponding multipliers range between 1.60 and 3.04. For the Sydney Airport, the output

multiplier is 2.05. While an economic output multiplier of about 2.0 might seem to be reasonable for estimating the total economic impacts of the NACC member airlines,[14] Statistics Canada has produced a set of national and provincial multipliers, based on 2006 data, for the air transport industry.

InterVistas used these same multipliers in their recent study, "The Elimination of Airport Rent: Return on Investment" (July 21, 2009), prepared for the Canadian Airports Council.

Table 5 summarizes the multipliers for Canada. These are the multiplier values that I will use in the following section.

TABLE 5: Air Transport Multipliers, Canada, 2006

Output	**1.845**
GDP	**0.814**

Source: Statistics Canada, "National and Provincial Multipliers", Cat. 15f0046xdb

The output multiplier seems to be at the low end of the output multiplier values reported in Table 4. Thus, the estimated economic impacts of the NACC members will be smaller than would have been the case if I had used an "average" of the multiplier values in Table 4.

2.3 The Traditional Economic Impacts of the NACC Members

The total expenditures in Canada by the NACC members provide the starting point for estimating the traditional economic impacts. The Capacity Purchase Agreement and pass-through payments by Air Canada to Jazz were excluded in order to avoid double counting these expenditures. The resulting total expenditures, or direct effects, of the NACC members were $18.2 billion in 2011.

Applying the output multiplier in Table 5 to capture the indirect and induced effects produces an estimated total economic output impact of $33.6 billion. The total GDP impact of the NACC members is estimated at $27.3 billion in 2011. The total GDP impact is approximately 1.6% of Canada's GDP in 2011, still well below U.S. estimates. The total number of jobs created by the NACC members, applying the GDP per employment level in 2011, yields 268,500 jobs. But these traditional economic impacts ignore important secondary and catalytic impacts.

With Air Canada and Air Transat headquartered in Montreal, WestJet in Calgary and Jazz in Halifax, and with their major hubs being Toronto, Vancouver, Montreal and Calgary, the economic impact footprints of the NACC members should be largest in the provinces of Quebec, Ontario, British Columbia, Alberta and Nova Scotia. Indeed, over 90% of the total economic impacts of the NACC members were generated in these five provinces.

[14] This estimate would be in line with, although somewhat larger than, the estimates used for measuring the economic impacts of the Alberta oil sands on the Canadian economy. In their study (G. R. Timilsina, J.P. Prince, D. Czamanski and N. LeBlanc, "Impacts of Crude Oil Production from Alberta Oil Sands on the Canadian Economy" Canadian Energy Research Institute, #150), Timilsina et al used output multipliers between 1.85 for in-situ production to 1.96 for mining.

2.4 Unaccounted for Secondary or Indirect Effects

The economic impacts estimated for the NACC members do not include the importance of these airlines for both tourism and trade. In many studies of the economic impacts of airports and civil aviation in general, expenditures of travellers by air accounted for most of the indirect impacts, and a substantial share of the total impacts. I have not attempted in this report to estimate the spin-off effects of the NACC members on tourism and the Canadian economy, even though I noted in section 2.1 that the tourism industry in Canada generated almost $79 billion of Canada's GDP in 2011.

TABLE 6: Tourism Demand in Canada, 2011

Expenditures	*$ Millions*	*% of Total*
Domestic		
Passenger air transport	13,859	21.8
Total	63,454	
Exports		
Passenger air transport	2,822	18.3
Total	15,392	
Total Tourism		
Passenger air transport	16,681	21.2
Total	**78,846**	

Source: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Table EC20

Table 6 summarizes total tourism demand and expenditures in Canada in 2011. The demand originates from both Canadians (domestic demand) and non-Canadians (exports). Total tourism expenditures totaled $79 billion, of which $63 billion came from Canadians, and $15 billion from exports, or non-Canadians traveling throughout Canada. Total expenditures on passenger air transport were $17 billion, or 22% of the total tourism expenditures. Not all of the $17 billion spent on air transport can be attributed to the four NACC members, although I suspect that a large share of these expenditures can be.

TABLE 7: International Travellers by Plane and Total All Modes, 2011

Travel	*000s*	*Air as % of Total*
Canadians to US (overnight)		
Air	12,366	58.8
Total	21,031	
Canadians to other countries		
Air	9,094	99.8
Total	9,108	
US Residents to Canada (overnight)		
Air	6,651	57.8
Total	11,506	
Non US Residents to Canada		
Air	3,802	84.1
Total	**4,523**	

Source: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Table EC22

Table 7 further highlights the importance of air travel for tourism. Of the 21 million overnight trips taken by Canadians to the U.S. in 2011, 12.4 million, or 59%, were taken by air. Air travel was almost the sole means of travel by Canadians to countries other than the United States.

Of the 9.1 million Canadians traveling by air to countries other than the U.S., 19% (1.8 million) travelled through the U.S. to their final destination. In 2006, only 14.3% (961,000) of Canadians traveling by air to countries other than the U.S. travelled through the U.S. Since 2006, the number of Canadians traveling via the U.S. has increased by 83% (800,000 in total). Many of these likely fly via the U.S. because of lower taxes and fees at U.S. airports, especially those near the Canada-U.S. border. High taxes and fees in Canada do seem to contribute to an increase leakage of Canadians traveling by air, both transborder and internationally. And these data do not include Canadians who travel internationally and connect via airports and other airlines in Europe, Asia and the Middle East. These Canadian travellers also are part of the "cross-border" leakage that negatively impacts Canadian airlines, airports and government revenues.

InterVistas, in their report for the Canadian Airports Council,[15] attributed the entire significant positive impacts of a scenario where the federal government eliminated its ground rents for airports to the direct, indirect and induced expenditures of the 590,000 additional travellers generated. InterVistas estimated that this number of additional travellers would result from the elimination of the rents and the pass-through of two-thirds of the benefits to travellers in the form of lower prices.

According to InterVistas, these travellers would spend directly an additional $304 million, and this would lead to a total economic impact of $720 million in expenditures and $350 million in GDP. InterVistas used the same 2006 multipliers provided by Statistics Canada as I have used in this report.

A simple application of InterVistas estimates of $304 million in direct spending by 590,000 travellers to the 53 million passengers carried by the NACC members in 2011, produces an aggregate direct spend by these travellers of $27 billion. This in turn would generate a total economic output impact, using InterVistas' estimates, of $65 billion, and a total GDP impact of $31 billion.

In addition, the air transport sector plays an important role in facilitating trade, and trade is a key driver of the Canadian economy. Canada's openness to international trade (the share of GDP that can be attributed to trade) has increased over most of the past five decades. In 1961, Canada's trade (exports plus imports) relative to GDP stood at 36%. By the year 2011, this ratio stood at 62%.

Ciccantelli and Bunker have highlighted the key roles played by the air transport industry in augmenting the volume of trade and integrating economies around the world:[16]

> The construction of global air travel, air freight, and telecommunications networks also have had profound impacts on the flows of goods, capital, people and information in the world economy. The pace of capital accumulation has increased dramatically, transnational corporations can coordinate far-flung subsidiaries and subcontractors, and global products are part of everyday life throughout the world. These networks have helped reshape and reproportion location, distance, and position in the world system in a variety of ways, because capital and information flow instantaneously around the globe and highly valued commodities and skilled labour are moved thousands of miles in a matter of hours, rather than weeks or months.

[15] InterVistas, "The Elimination of Airport Rent: Return on Investment", July 21, 2009.
[16] P. Ciccantelli and S. Bunker (eds), Space and Transport in the World System, Greenwood Pres, London, p. 2.

TABLE 8: Value of Exports/Imports Shipped by Air ($ billions), and Air Share Percent (%), 2011

	Value	*Share*
U.S.		
Exports	12.4	3.7
Imports	15.3	6.9
Total	27.6	5.0
Other International		
Exports	34.9	29.8
Imports	47.4	21.1
Total	82.4	24.1
Total World		
Exports	47.3	10.6
Imports	62.7	14.1
Total	**110.0**	**12.3**

Source: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Tables EC6, EC7 and EC12.

In Table 8 we can see the importance of air transport for Canada's external trade. In 2011, the total value of exports and imports shipped by air between Canada and the U.S. was $28 billion or 5% of the total value of trade between these two countries.

Air transport was even more important in trade between Canada and the rest of the world. The total value of exports and imports shipped by air between Canada and the rest of the world, excluding the U.S., was $82 billion or 24.1% of the total value of trade.

The air mode shares of exports in 2011 to various regions of the world outside of North America were as follows:

- Asia – 15%
- Western Europe – 53%
- Middle East – 18%
- Eastern Europe – 36%
- Africa – 22%.

The air mode shares of imports to various regions of the world outside of North America were:

- Western Europe – 28%
- Latin America – 24%
- Eastern Europe – 14%
- Middle East – 17%.

TABLE 9: Canada's Air Merchandise Trade, Top 15 by Total Air Trade, 2011 ($ millions)

U.S.	27,643
U.K.	17,963
China	10,378
Germany	4,705
Mexico	3,784
France	3,525
Switzerland	3,267
Peru	3,243
Japan	2,233
Hong Kong	2,116
Argentina	1,947
South Korea	1,865
Italy	1,780
Taiwan	1,518
Belgium	1,429

Source: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Table A24.

Table 9 lists Canada's top 15 markets in terms of the total value of exports and imports shipped by air. The U.S. and the UK dominate the list, but China is third with total shipments of $10 billion in 2011 There are four other Asian countries among the top 15 – Japan, South Korea, Taiwan and Hong Kong. India ranked 17th in 2011, and three other Asian countries – Malaysia, Singapore and Thailand also were among the top 20.

Trade in turn spurs innovation and productivity growth. Baldwin and Gu found that export-market participation and increasing export intensity have positive effects on productivity in Canadian manufacturing. According to their empirical results, "Exporters have higher labour productivity and TFP [total factor productivity] than nonexporters within the same 4-digit industry. The difference widened in the 1990s."[17]

Baldwin and Pustay reported the following in their study of the impacts of the 1995 Transborder Air Services Accord:[18]

> Trade barriers between the two countries have been significantly reduced due to the 1965 Auto Pact, the 1988 Free Trade Agreement and the 1994 North American Free Trade Agreement. The reduction in trade barriers between the two countries intensified trade between them, and transborder trade and investment became a more important component of both countries' economies. Many firms integrated their US and Canadian operations […]
>
> Post-1966 shifts in North American economic activity left many booming cities with inadequate or nonexistent transborder service. Accordingly, many transportation, economic development and government officials expressed concern that the inability of the two countries to renegotiate transborder ASA would slow the growth of commercial ties between the two neighbors, misdirect transborder trade and locational decisions, and fail to meet the evolving needs of the increasingly integrated North American economy…

[17] John Baldwin and Wulong Gu, "Participation in export markets and productivity performance in Canadian manufacturing", Statistics Canada Research Paper, Cat. 11F0027MIE, No. 011, p. 2, 9.
[18] Gordon Baldwin and Michael Pustay, "Trade and transportation: The impact of the 1995 Transborder Air Services Accord", Statistics Canada cat. 51F0007-XIE, p. 4-6

> The correlation between province-state passenger flows and merchandise trade was 0.469 in 1968. The correlation declined to 0.105 in 1994, but then rebounded to 0.658 in 1998. These changes in correlation between air passenger traffic and merchandise trade are consistent with our expectations. Because of the "frozen in time" nature of transborder air services, we expected that the correlation would atrophy in 1994 compared to 1966.
>
> Once US and Canadian carriers were free to enter any transborder market, we expected that the correlation would be stronger in 1998 compared to 1994… We also determined that the failure to renegotiate a transborder air services accord over a thirty-year period caused this correlation to atrophy. Presumably this failure damaged the ability of parties in both countries to develop additional beneficial economic linkages."

The economic impacts of Canadian airlines in general and the four members of the NACC in particular are underestimated by the traditional economic impact methodologies. Thus, the estimates I derived and reported in section 2.3 for the NACC members must be viewed as a starting point, and not the end point. Their impacts on the Canadian and provincial economies are significantly larger than what I have estimated.

3.0 EXTERNALITIES

3.1 Catalytic Impacts

In addition to the standard economic impacts, the airline industry generates significant externalities or catalytic impacts.

York Aviation and ACI, Europe, in their study of the economic impacts of airports in Europe,[19] added catalytic impacts to the standard direct, indirect and induced impacts. They defined catalytic impacts as follows:[20]

> employment and income generated in the economy of the study area by the wider role of the airport in improving the productivity of business and in attracting economic activities, such as inward investment and inbound tourism.

They emphasized that access to markets and external and international transport links are regarded as "absolutely essential" to businesses making location decisions. The catalytic effect of an airport operates primarily through enhancing business efficiency and productivity by providing easy access to suppliers and customers, particularly over medium to long distances. Global accessibility is a key factor for business location and success in all regions of Europe.

Todd Ritchie in their study of the economic impacts of Sydney Airport in Australia also included catalytic impacts and defined them similarly to York Aviation and ACI Europe.[21]

Positive externalities, as the catalytic impacts are more commonly known in economics, stem from the higher rates of productivity growth made possible by the air transport industry's contribution to the integration of markets and the time savings for both passengers and freight.

Berechman has argued:[22]

[19] York Aviation and ACI, Europe, "The social and economic impacts of airports in Europe", January 2004.
[20] Ibid, p.5.
[21] Todd Ritchie, "Final Report, The Economic Impact of Growth at Sydney Airport", January 2008.

> Transportation improvements can potentially incite positive externalities that may exist in various markets and consequently improve productivity, enhance output, reduce production costs and promote more efficient use of resources. The combined effects of these impacts are regarded as economic growth, which can be measured
> by annual changes in employment, in output and productivity. These allocative externalities are typically represented by economies of scale, size, scope, agglomeration, density and network.

The Eddington Transport Study in the UK expanded upon the arguments presented by Berechman:[23]

> Transport can have an impact on economic output (GDP) through two channels:
>
> (i) Firstly, transport can affect GDP through the number of inputs that are used, for example transport may increase employment either by allowing greater access to labour or stimulating the creation of new firms, which can increase the number of goods and services produced and lead to an increase in GDP.
>
> (ii) Secondly, transport can improve the efficiency with which firms use inputs, in other words transport can have an impact on productivity. For instance, a well functioning transport network can raise productivity by reducing journey times. Transport investment can impact on the drivers of productivity by encouraging private investment through raising its profitability; facilitating labour mobility and thereby increasing the returns to investment in skills; and enabling effective competition even when economic activity is geographically dispersed. Identifying the impact of transport on productivity is important because improving productivity is a key determinant of long-term growth and living standards.

It should be clear that the economic and social impacts of the air transport industry, and the NACC members, greatly exceed the direct, indirect and induced effects.

The air transport industry generates for all countries, and in particular for Canada, given our geography and location, important economic benefits. Air transport is essential for economic progress. In an increasingly global community and marketplace, air transport makes possible the rapid movement of people and goods to markets around the world.

The bottom line is that the mobility of people and goods is critical for economic growth and development at national and regional levels; and air transportation networks are important for the competitiveness of the economy in general. When airlines are encouraged to fly more often and to more places through an incentivized policy framework, every sector and region in the country will benefit.

3.2 Estimating Externality/Catalytic Impacts

There have been an increasing number of studies that have attempted to measure the externality/ catalytic impacts of air transport. Oxford Economic Forecasting (OEF) has undertaken several of the key studies. In their 1999 study, OEF estimated that a 10% increase in transport services would increase total factor productivity by 1.3% in the long run.[24] Their 2005 study for Eurocontrol[25] found that a 10% increase in the

[22] OECD, European Conference of Ministers of Transport, Transport and Economic Development, Round Table 119, Report by J. Berechman, p. 115, 116.
[23] R. Eddington, "The Eddington Transport Study – Main Report: Transport's Role in Sustaining the UK's Productivity and Competitiveness," Department for Transportation, Government of UK, 2006, p. 32
[24] Oxford Economic Forecasting, "The Contribution of the Aviation Industry to the UK Economy", 1999.

output of air services would increase productivity and potential output by 0.56% in the long run. They concluded their results implied that the rapid growth in air transport usage during the preceding decade boosted long-run, total factor productivity by 2.0% across the 24 EU countries covered by their study.

Their 2006 study for IATA arrived at similar conclusions.[26]Their analysis in this study considered not only air transport usage but also the contribution of aviation to the connectivity of companies. This was done by constructing a measure of "connectivity" for major airports across the EU based on the number of flights from a given airport weighted by the importance of each of the destinations served. The results indicated that a 10% increase in connectivity (relative to GDP) increased both long-run productivity and GDP by 0.9%. In their 2006 study, which updated the 1999 study, OEF estimated that a 10% increase in business usage (business passengers relative to GDP) of air services raised total factor productivity, and hence GDP in the UK by 0.6% in the long run.[27]

InterVistas, in their study for IATA, also found a positive link between connectivity and productivity. Their model showed that connectivity has a statistically significant relationship with labour productivity levels – a 10% rise in connectivity relative to a country's GDP could boost labour productivity levels by 0.07%.[28] Applying these results to an investment of $1.8 billion at Vancouver airport, they estimated would result in a 5.4% increase in connectivity for Canada as a whole, and could increase Canada's long-term productivity by 0.04%.

In an earlier study, Baum and Korte estimated that the transportation sector, as a whole, accounted for 65% of the total contribution of productivity growth to the total growth of the German economy, and 49% of the total growth of the economy between 1950 and 1990. The air transport sub-sector accounted for 2% of the total contribution of productivity growth to the total growth of the German economy, and 1% of the total growth of the economy between 1950 and 1990.[29]

If I simply extrapolate to Canada the estimates of Baum and Korte for Germany, taking into account that the air transport industry has been approximately 2.5 times as large a sector in Canada as it has been in Germany (relative to the total transportation sector) during the past 50 years, the air transport industry in Canada might have contributed 2.5% of the total growth of GDP during the past 50 years, or approximately $42 billion in 2011.

Using the range of estimates of OEF (0.56% to 2.0%) produces catalytic impacts of the air transport sector in Canada of $10 to $34 billion in GDP in 2011. It is clear that externality/catalytic impacts of airlines in Canada, and specifically the four members of the NACC, likely have exceeded their traditional direct, indirect and induced impacts. Consequently, the aggregate economic impacts of the NACC members (traditional, secondary and catalytic) likely are five to seven times their traditional impacts, or somewhere in the range of $35 to $60 billion in GDP (2.0% to 3.4% of Canada's GDP). While even more significant, they are still lower than the estimates for the U.S. or the world, suggesting that there is more scope for Canadian airlines to grow and contribute further to the Canadian and provincial economies.

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[25] Oxford Economic Forecasting, "The Economic Catalytic Effects of Air Transport in Europe", prepared for Eurocontrol, 2005.
[26] Oxford Economic Forecasting, "Airline network benefits: measuring the additional benefits generated by airline networks for economic development", prepared for IATA, January 2006.
[27] Oxford Economic Forecasting, "The Economic Contribution of the Aviation Industry in the UK", October 2006.
[28] International Air Transport Association, Economics Briefing No 08, "Aviation Economic Benefits," 2007.
[29] OECD, European Conference of Ministers of Transport, Transport and Economic Development, Round Table 119, Report by H. Baum and J. Korte.

4.0 THE COST OF GOVERNMENT POLICIES

4.1 Airline Industry as a Cash Cow

There are three major taxes that have been imposed directly or indirectly on airlines and their passengers:

- Airport ground lease payments;
- Air Travellers Security Charge; and
- Federal and provincial government excise taxes on jet fuel.

As I pointed out in section 1.0 above:

- The federal government collected $989 million from these three taxes in FY 2012 alone;
- The total costs of these taxes for each passenger at the 14 major airports was approximately $13.85 in 2011; and
- The average discounted domestic and international fare for the Canadian Level 1 carriers in 2011 was $247.22. The sum of these various taxes was about 5.1% of this fare.

I also pointed out that the annual interest and principal payments of about $120 million by NAV CANADA should be included. As a result, the federal government benefited by $1,109 million in 2011, and the impact on fares was $14.18 or 5.7%.

The impacts are largest, in relative terms, on short-haul flights. Hence, these flights in Canada face a disproportionate burden. This creates two related problems. It increases air travel costs for business travellers in short-haul markets. This leads to some substitution of travel by private automobile, which requires more time and thus creates a time/cost burden. It also leads to some of this travel not occurring altogether. In either case, it disadvantages companies located and/or doing business in these markets.

But the failure of policy does not end here. The federal government has turned the air transport industry into a cash cow (see Table 10) – just the reverse of what is appropriate for an industry that generates large externalities throughout the economy. Economic theory is quite clear that the optimal policy is to subsidize those industries that create positive externalities in order to encourage more investment and production by such industries. Taxation and extracting excessive revenues from the air transport industry are the wrong policies.

As can be seen in Table 10, during the past 11 years, the federal government has extracted from the air transport industry $2.9 billion in ground rents, $4.3 billion in ATSC and has saved $1.3 billion in interest and principal payments. In total, the federal government has generated $8.6 billion in direct and indirect revenues from the air transport sector during the past decade. And this amount does not include approximately $550 million in excise taxes on jet fuel.

TABLE 10: Selected Federal Government Revenues, Air, FY 2001 to 2012 ($ millions)

	Ground rents	*ATSC*	*NAV CANADA*	*Total*
2002	248	0	120	368
2003	300	421	120	841
2004	214	410	120	744
2005	242	383	120	745
2006	288	353	120	761
2007	303	357	120	780
2008	295	386	120	801
2009	275	386	120	781
2010	258	374	120	752
2011	244	600	120	964
2012	274	631	120	1,025
TOTAL	**2,941**	**4,301**	**1,320**	**8,562**

Sources: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Table G4 and calculation by author.

Furthermore, this table does not show how the federal government spared itself the expense of buying out the private developers of Terminal 3 at Pearson Airport. This expense fell upon the Greater Toronto Airports Authority (GTAA), and required the GTAA to borrow an additional $850 million. In turn, the interest and principal payments (approximately $68 million annually for 20 years) fell onto the customers of the airport.

By comparison, VIA Rail, a competitor to airlines operating domestic routes in Canada, primarily the NACC members, continues to receive large annual subsidies (see Table 12). During the past decade, VIA Rail has received almost $3.4 billion in subsidies. The subsidies have ranged between $41 per passenger and $127 per passenger, and averaged $76 per passenger since 2001. In 2007, VIA was able to recover only 51% of its total costs. In 2008, VIA recovered almost 52% of its total costs, and in 2009 only 47% of its total costs. No airline could survive with this cost recovery ratio. Although airlines carry 17 to 18 times more passengers than VIA, they produce a fiscal windfall for the government, unlike their domestic competitor VIA.

TABLE 11: Subsidies to VIA Rail, FY 2001-2012

	Subsidies ($ millions)	*Passengers (000s)*	*Subsidy per pax ($)*
2001	232	3,795	61
2002	310	3,865	80
2003	256	3,981	64
2004	264	3,789	70
2005	191	3,887	49
2006	169	4,097	41
2007	169	4,091	41
2008	230	4,183	55
2009	269	4,605	58
2010	287	4,229	68
2011	527	4,153	127
2012	494	4,200[e]	118
TOTAL	**3,398**	**44,784**	**76**

Sources: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Tables G3 and RA30.

Despite the ongoing subsidies, the number of passengers carried by VIA has increased by about 11% between 2001 and 2012. On the other hand, the total number of passengers handled at Canadian airports has increased by over 30% during this same time period.

The federal government's policies create numerous distortions in the air transport industry, and by curtailing this industry's growth and scale, these policies dampen Canada's productivity performance.

4.2 Ground Rents

Table 12 summarizes the magnitude and relative impacts of the ground rents paid by the eight largest airports in Canada. These eight airports paid $266 million in ground rents in 2011. These equaled 10% of their total revenues, or 34% of the total revenues from Airport Improvement Fees (AIFs). Further, assuming that the ground rents were passed on entirely to the airlines, and the airlines in turn passed on the additional costs to their passengers, then the ground rents averaged $2.80 per passenger – ranging between $1.44 per passenger at the Halifax Stanfield Airport to $3.92 per passenger at Toronto Pearson Airport.[30]

[30] These costs per passenger are lower than those reported above because the passenger counts for these airports in Table 13 double count the domestic passengers.

TABLE 12: Ground Rents, Eight Major Airports, Canada, 2011

	Ground Rents ($ millions)	*% of Total Revenues*	*% of AIFs*	*Per Passenger*
YVR	$34.8	9.4	38.7	$2.05
YYC	27.2	9.4	25.2	2.12
YEG	11.3	7.8	20.9	1.80
YWG	5.5	6.7	18.6	1.62
YYZ	131.0	11.5	43.6	3.92
YOW	7.3	7.1	19.5	1.59
YUL	43.4	10.2	30.6	3.18
YHZ	5.2	6.7	19.4	1.44
TOTAL	**265.7**	**10.1**	**33.7**	**2.80**

Sources: 2011 Annual Reports of Airport Authorities

In May 2005, then Minister of Transport, Jean Lapierre, announced a new ground rent formula for Canadian airports to replace the prior formula based on passenger throughput. The new rent formula is calculated using gross revenues and is graduated by the level of revenue. With the new rent formula, most large airports will pay a marginal rate of 8, 10 or 12% of total revenues, with Toronto, Vancouver and Montreal in the 12% bracket.

The formula creates the following problem for airports. Specifically, if the rent is calculated as a percent of revenues, then the price of every aeronautical service an airport provides must be marked up by at least the amount of rent charged which, in turn, increases the airport's break-even point and raises the amount of revenue that must be generated. For example, if an airport authority needs to net $100 from a given fee, and it is in the 12% bracket, it must set the fee at $113.65. So the 12% ground rate levy results in a mark-up of 13.6%.[31]

Note: While the Canadian Government extracted $266 million in ground rents in 2011 from the eight largest airport authorities, nine of the largest airports in the U.S. received US$423 million in capital contributions, grants ad transfers from the federal and state governments. During the past three years, the Canadian Government has received $776 million in ground rents, while these nine airports in the U.S. have received almost US$1.4 billion from government.

[31] The mark-up is 1/(1-x), where x is the rate for the ground rent.

TABLE 13: Capital Contributions, Grants and Transfers, Selected Hub Airports, United States, 2009-2011 (US$ millions)

	2011	*2010*	*2009*	*Total*
DEN	$34.7	30.2	38.6	103.5
ATL	49.4	19.3	80.0	148.7
Houston airports	44.1	51.5	70.9	166.5
Los Angeles airports	75.2	81.0	90.1	246.3
SLC	63.2	57.8	53.7	174.7
ORD	59.7	57.6	50.3	167.6
Miami-Dade airports	58.7	83.6	64.8	207.1
SFO	14.5	24.0	44.2	82.7
DFW	23.6	29.9	42.1	95.6
TOTAL	**423.1**	**434.9**	**534.7**	**1,392.7**

Sources: 2011 Annual Reports of Airports

4.3 Security Tax

In the December 2001 Budget, the federal government announced new initiatives to enhance security that would cost $7.7 billion over five years. With the exception of air security, all the other initiatives were funded from general revenues. Air security was the only program to be funded by an earmarked tax or "user fee".

The 2001 Budget announced the creation of the Canadian Air Transport Security Authority (CATSA) that would be responsible for the provision of aviation security services in Canada and would be fully funded by the ATSC. The tax went into effect on April 1, 2002. Although this tax is added directly to the base fares charged by airlines in Canada, part of the tax is likely absorbed by the airlines since they would have to forego some increase in their base fares or further discount their fares to mitigate the negative impact on demand for their services.

On February 26, 2011, Transport Minister John Baird announced that as of April 1, 2011 the ATSC would increase by:

- $2.58 for one-way domestic tickets;
- $4.37 for one-way transborder tickets; and
- $8.91 for one-way international flights.

The increases range from 27% to 53% of the existing security taxes.

The current ATSC rates are $7.48 for domestic (one-way), $14.96 for domestic (round-trip), $12.71 for trans-border, and $25.91 for other international flights

The extra revenues to be generated by these increased tax rates, or user fees to use the parlance of Minister Baird, were to go into security upgrades at all Canadian airports – including paying for new

scanning machines, more staff, and upgrading current ageing security infrastructure like luggage scanners, all of which will cost approximately $1.5 billion over the next five years. However these higher rates further increased the cost of air travel by about $1.50 per passenger.

Table 14 summarizes the security taxes imposed on passengers on international flights at a number of airports around the world – the airports are all potential competitors to Toronto, Vancouver and Montreal as international hubs.

TABLE 14: Summary of Government Taxes Imposed on Passengers on International Flights for Security per Passenger, 2011

Country	Airport	C$
Canada[1]	YYZ, YVR, YUL	25.91
EUROPE		
Austria	VIE	5.83-8.95
Belgium	BRU	8.42-34.08
France	CDG	5.42-9.73
Germany	FRA	8.49
	MUC	6.74
Ireland	DUB	0-5.06
Italy	FCO	5.01
Netherlands	AMS	9.22-16.47
Russia	DME	6.45
	SVO	6.91
Spain	MAD	3.39
Switzerland	ZRH	25.67-44.47
Turkey	IST	
UK	LHR	4.15
ASIA		
China	PVG	
Hong Kong	HKG	
India	DEL	
Japan	NRT	6.66
South Korea	ICN	
Malaysia	KUL	8.50
Singapore	SIN	2.38-6.34
Thailand	BKK	
Australia	SYD	3.17
MIDDLE EAST		
Qatar	DOH	4.41
UAE	DXB, AUH	1.39
LATIN AMERICA		
Brazil		

Chile		
Mexico	**MEX**	5.12-14.34

It appears that security taxes in Canada exceed those imposed in most other countries. Only Switzerland seems to have higher tax rates, but the Swiss tax includes a noise surcharge as well. Many countries have security taxes of less than $10 per passenger, and several do not seem to have any taxes to cover the costs of security. It is conceivable that for several of these countries, especially among the latter group with no apparent security taxes, the "taxpayer" covers the costs of providing security.

From an economic point of view, user fees are intended to produce more efficient outcomes. By placing the cost burden on the beneficiaries of a particular program, the behavior of the users will be affected in such a way as to reduce demand and hence the costs of and resources allocated to providing the program/service. In the absence of full user-pay, there would be implicit subsidization that might lead to economic distortions and inefficiencies.

However, in the case of the security tax imposed on the airline industry and its customers, the structure of the tax (per flight unrelated to the fare) creates its own distortions. The effects are most pronounced at lower fares, thus having the largest negative impacts on the most rapidly growing segment of the industry – the low fare, limited frills segment. As well, the tax has a disproportionate impact in short-haul markets, thus jeopardizing the viability of small regional airports and imposing a disproportionate tax burden on short-haul, transborder business travel.

Air security is "national security" and full user-pay for security for the airline industry creates a significant distortion. A safer and more secure airline industry does benefit airlines and their customers. However this has a greater positive impact on the economy by lessening risks and uncertainty, which in turn have positive consequences for investment and consumer spending.

Carol B. Hallett argued in a speech to the Wings Club (December 18, 2002):

> The idea that travellers and shippers should pay "user fees" to have themselves protected from terrorism is outrageous! We don't charge a security fee to protect our citizens from terrorists when they ride a subway. We don't charge a security fee to visit a museum. The attacks on the United States on 9/11 were just that: attacks on the United States and all that it stands for. Defending against such foreign aggression is – without question – the responsibility of our government.

IATA also believes that governments have direct responsibility for aviation security and its funding. Since the security threat against airlines is a manifestation of a threat against the State, the provision and cost of aviation security should be borne by the State from general revenues and not from taxes and user fees.

The economic underpinnings for the security tax are weak. The entire economy benefits from enhanced security, whether for the airline industry or for any other sector. The effects of the current tax are distortionary and inefficient: placing Canadian business at a modest cost disadvantage, jeopardizing the survival of smaller airports and undermining the economic vitality of the surrounding regions, and creating particular problems for the short-haul and low-fare markets.

4.4 Jet Fuel Excise Tax

The federal excise tax is set at $0.04 per liter for domestic travel only. The tax was introduced originally to finance airport infrastructure. When the airports were divested, the tax was

maintained to help eliminate the budget deficit. Hence, for much of the period since the mid-1990s, the original policy objective for this tax has disappeared. Yet, the tax persists!

4.5 Consequences of the Taxes

What might be the economic impacts of the federal government eliminating the ground rents, ATSC and excise tax on jet fuel, and reimbursing NAV CANADA for its annual payments to service the $1.5 billion debt it assumed in 1996, ignoring the impacts on the federal government's budget?

There has been increasing discussion of cross-border leakages – Canadians traveling to U.S. border airports such as Buffalo, Burlington and Bellingham – to take advantage of much lower fares. The Conference Board of Canada recently published a study prepared by Vijay Gill addressing the issue of cross-border leakages. Gill concluded:[32]

- Each year, roughly five million Canadians cross the United States border on land in order to fly from U.S. airports.
- Our research finds that there is indeed a large gap when comparing these cross-border air fares with their Canadian equivalents.
- When adding fees and taxes that apply to the base fare, we find that Canadian fees and taxes contribute to roughly 40 per cent of the total air fare difference in the markets that we examined. However, U.S. fees and taxes also play a significant role."

Eliminating the various taxes should reverse some of the leakages and place Canadian airlines and airports in better positions to compete with foreign airlines and airports to attract international travelers. Eliminating the taxes also should stimulate domestic travel and generate additional economic activity.

During 2011 the average discounted fare for Canadian Level 1 carriers – the members of the NACC – was $247.22. The total costs of these policies for each passenger at Canadian airports was approximately $14.18 in 2011, or about 5.7% of this average fare.[33]

The negative impact of these policies and taxes on the demand for air travel can be approximated by the product of the 5.7% increase in average fares, assuming that the full value of the taxes have been passed on directly to passengers in the form of higher fares, and the price elasticity of demand for air travel.[34]

The Department of Finance conducted a review and analysis of 254 demand elasticity estimates from 21 studies.[35] Table 15 provides a summary of the results. The median elasticity estimates are reported for each grouping of studies.

[32] Vijay Gill, "Driven Away: Why More Canadians are Choosing Cross Border Airports", Conference Board of Canada, September 2012, p. i and ii.

[33] This does not include the GST and provincial sales taxes that are added on top of the federal government taxes. I have ignored the effects of these taxes because they do no apply to all trips – domestic, transborder and international, and not all provinces applied a sales tax to air travel (e.g. Ontario prior to July 1, 2010).

[34] The price elasticity of demand for air travel (ε) is defined as the percentage change in the quantity demanded ($\%\Delta Pax$) resulting from a small percentage change in the price of air travel ($\%\Delta P$): $\varepsilon = \%\Delta Pax/\%\Delta P$. Thus, the percentage change in the number of passengers ($\%\Delta Pax$) equals the product of ε and ($\%\Delta P$).

[35] Canada, Department of Finance, "Air Travel Demand Elasticities: Concepts, Issues and Measurement" (www.fin.gc.ca/consultresp//Airtravel/airtravStdy_1e.html.)

TABLE 15: Median Estimates of Own-Price Elasticities for Air Travel for Selected Groupings of Studies

	Number of estimates	Elasticity (ε)
All studies	254	-1.12
All short/medium haul studies	109	-1.15
All long-haul domestic studies	36	-1.15
All short-haul leisure travel studies	19	-1.52
All cross-section studies	85	-1.33
All time series studies	136	-0.85
All studies less than 5 years' old	30	-0.85
Studies that account for inter-modal effects	109	-1.11

I will use the median estimate (-1.112) for the studies that accounted for inter-modal effects, since this was one of the sets of studies and estimates preferred by the Department of Finance. I also will use the domestic and transborder price elasticity estimated by InterVistas (-0.88).[36]

Combining these price elasticities with the impact of the taxes on air fares, and applying them to both the total number of passengers carried by the NACC members in 2011, and the total number of passengers at the 14 airports that paid ground rents in 2011 produces the estimates reported in Table 16.

TABLE 16: Potential Impacts on the Total Number of Passengers of the Cumulative Effects of Ground Rents, the ATSC, the Excise Tax on Jet Fuel and NAV CANADA's Annual Debt Payments (000s)

		Price Elasticity
	-1.112	-0.88
NACC Members	3,374	2,670
14 Airports	4,554	3,604

Source: Calculated by author

NACC members might experience an increase in the number of their passengers of 2.7 to 3.4 million (5.1% to 6.4%). The number of passengers handled at the 14 airports might increase by 3.6 to 4.6 million. (As noted in footnote 37, these estimates have not taken into account the GST and provincial sales taxes.)

There are two ways to proceed. The first involves translating these numbers into employment, output and GDP. The second involves utilizing the methodology employed by InterVistas in their study for the Canadian Airports Council.

I start with the first methodology. The economic impact study prepared by InterVistas for the Vancouver International Airport Authority[37] estimated that every "extra" million passengers through YVR generate approximately 1,240 additional person years of employment.York Aviation and ACI Europe estimated, in their 2004 study of airports in Europe, that there are 950 on-site jobs created per million passengers.[38] Using this range of estimates for jobs created, I derive the potential employment impacts of eliminating the three taxes (Table 17).

[36] InterVistas, "Estimating Air Travel Demand Elasticities", prepared for IATA, 2007.
[37] InterVistas, "The Vancouver International Airport Economic Impact", March 2006.
[38] York Aviation and ACI, Europe, "The social and economic impacts of airports in Europe", January 2004, p. 9

TABLE 17: Potential Impacts on the Direct Number of Jobs of the Cumulative Effects of Ground Rents, the ATSC, the Excise Tax on Jet Fuel and NAV CANADA's Annual Debt Payments

	Jobs per Million		*Price Elasticity*
		-1.112	-0.88
NACC Members	1,240	4,184	3,311
	950	3,205	2,536
14 Airports	1,240	5,647	4,469
	950	4,326	3,423

Source: Calculated by author

Hence, eliminating the taxes might lead to an additional 2,536 to 4,184direct jobs as the result of the increased number of passengers that might be carried by NACC members. Based on the impacts for the 14 airports, the number of additional jobs created might range between 3,423 and 5,647.

According to the National Accounts data for Canada, GDP per employed person averaged $101,800 in 2011. Using this value generates the potential direct impacts on GDP (Table 18).

TABLE 18: Potential Direct GDP Impacts of the Cumulative Effects of Ground Rents, the ATSC, the Excise Tax on Jet Fuel and NAV CANADA's Annual Debt Payments ($ millions)

	Jobs per Million		*Price Elasticity*
		-1.112	-0.88
NACC Members	1,240	$426	$337
	950	326	258
14 Airports	1,240	575	455
	950	440	349

Source: Calculated by author

TABLE 19: Potential Total Impacts (GDP and Economic Output) of the Cumulative Effects of Ground Rents, the ATSC, the Excise Tax on Jet Fuel and NAV CANADA's Annual Debt Payments ($ millions)

	Case	*GDP*	*Economic Output*
NACC Members	A	$786	$1,781
	B	602	1,364
14 Airports	A	1,061	2,403
	B	813	1,841

Source: Calculated by author

Applying the Canadian multipliers in Table 4 to the combinations 1,240 jobs per million passengers and price elasticity of -1.112 (case A in Table 19), and 950 jobs per million passengers and price elasticity of -0.88 (case B in Table 19) yields the estimates for total GDP, and economic output impacts (Table 19).

Eliminating the taxes might lead to an additional economic output generated by the NACC members of between $1.4 and $1.8 billion. This in turn might translate into additional GDP of between $602 and $786 million.

If instead I use the InterVistas methodology, whereby 590,000 additional passengers might generate in total an additional $350 million in GDP and $720 million in economic output, I derive the estimates in Table 21 using the estimates in Table 17.

TABLE 20: Potential Total Impacts (GDP and Economic Output) of the Cumulative Effects of Ground Rents, the ATSC, the Excise Tax on Jet Fuel and NAV CANADA's Annual Debt Payments, Based on InterVistas Methodology ($ millions)

	Price Elasticity	*GDP*	*Economic Output*
NACC Members	-1.112	$2,000	$4,115
	-0.88	1,583	3,257
14 Airports	-1.112	2,700	5,554
	-0.88	2,137	4,395

Source: Calculated by author

In this case, eliminating the taxes might lead to much larger impacts: additional economic output generated by the NACC members of between $3.3 billion and $4.1 billion; and additional GDP of between $1.6 billion and $2.0 billion.

Regardless of the methodology used, the potential economic benefits from eliminating the taxes are substantial, both for the NACC members and the Canadian economy as a whole.

4.6 More Than Taxes

The federal government's policies go well beyond these various taxes and payments from NAV CANADA and the GTAA. The infrastructure policies of the government, initiated in the early 1990s, lead to the creation of airport authorities and NAV CANADA as quasi, not-for-profit organizations. None are subject to any form of monopoly regulation, although each has a high degree of monopoly power. Thus, the NACC members have added on top of their base fares the Airport Improvement Fees charged by the airport authorities (Table 21 list the AIFs) and NAV CANADA surcharges which vary with distance.

TABLE 21: Airport Improvement Fees, Airports that Pay Ground Rents, 2011

Victoria	$10
Vancouver	20[1, 2]
Edmonton	20
Calgary	25[3]
Saskatoon	15[4]
Regina	20[4]
Winnipeg	20
Thunder Bay	0
Toronto	25[5]
Ottawa	20
Montreal	25
Quebec City	25[6]
Halifax	20
St. John's	20

1. $5 for flights within British Columbia.
2. Effective May 1, 2012
3. $25 effective March 1, 2011 and scheduled to increase to $30 in 2013.
4. $5 for flights within Saskatchewan.
5. $4 for connecting passengers.
6. Scheduled to increase to $27 in 2013

Sources: Transport Canada, "Transportation in Canada, 2011, An Overview – Addendum", Table A5 and 2011 Annual Reports of Airport Authorities.

The airlines also have added insurance surcharges. These surcharges were necessitated by the sharp jump in insurance rates following the events of 9/11 and the subsequent higher risks facing airlines. Thus, the airlines and their customers pay twice for security – once through the ATSC, and a second time through higher insurance rates and the associated surcharge.

Then there are the GST, provincial sales taxes and the HST, which further increase the base fares for passengers. The GST/HST is not charged on international flights, but the GST is imposed on both domestic and transborder flights, and the provincial sales taxes are imposed on domestic flights and the AIF portion of transborder flights. I fail to see the rationale behind imposing any sales tax on domestic and transborder travel, when the federal government has decided that it is good policy not to charge this tax on international flights. Nevertheless, the tax exists.

The Government of Ontario transitioned to the HST on July 1, 2010. Under its previous provincial sales tax rules, Ontario did not charge its 8% sales tax on air travel. Under the HST, all travellers buying tickets in Ontario for domestic trips must now pay an additional 8% in tax.

In order to gauge the effects of the various taxes and fees added by airlines operating in Canada, I selected 10 domestic routes each for Air Canada and WestJet. I proceeded to book, as of December 2, 2012, round-trip flights for outbound travel on February 4, 2013 and return travel on February 8, 2013 for each route. In the case of Air Canada, I selected the lowest Tango Plus fare available. For WestJet, I selected the lowest fare available. I also selected non-stop flight when they were available.

Table 22 presents the results for Air Canada. Table 23 presents the results for WestJet. The taxes and fees include: Airport Improvement Fees, NAV CANADA surcharges, HST/GST, QST, and the ATSC.

TABLE 22: Impact of Taxes and Fees on Lowest, Round-Trip, Tango Plus Fares, Selected Air Canada Routes, Booked on December 2, 2012 for Outbound Travel on February 4, 2013 and Return Travel on February 8, 2013

	Base Fare	*Taxes & Fees*	*Total Fare*	*% of Base*	*% of Total*
Calgary-Edmonton	$224	$97.56	$321.56	44%	30%
Regina-Halifax	714	151.45	856.45	21	18
Winnipeg-Vancouver	631	131.91	762.91	21	17
St. John's-Montreal	690	202.34	892.34	29	23
Toronto-Montreal	324	149.11	473.11	46	32
Thunder Bay-Saskatoon	494	139.74	633.74	28	22
Ottawa-Saskatoon	714	202.24	916.24	28	22
Halifax-Vancouver	794	241.68	1035.68	30	23
Toronto-Ottawa	304	126.81	430.81	42	29
Toronto-Edmonton	711	208.23	919.23	29	23

Source: Calculated by author

Table 23: Impact of Taxes and Fees on Lowest, Round-Trip Fares, Selected WestJet Routes, Booked on December 2, 2012 for Outbound Travel on February 4, 2013 and Return Travel on February 8, 2013

	Base Fare	*Taxes & Fees*	*Total Fare*	*% of Base*	*% of Total*
Calgary-Vancouver	$304	$110.31	$414.31	36%	27%
Quebec City-Toronto	434	172.86	606.86	40	28
Ft. McMurray-Winnipeg	444	121.16	565.16	27	21
Moncton-Toronto	184	124.77	308.77	68	40
Toronto-Victoria	446	158.73	604.73	36	26
Montreal-Regina	484	189.11	673.11	39	28
Kelowna-Winnipeg	384	133.44	517.44	35	26
Ottawa-Edmonton	444	172.39	616.39	39	28
Grande Prairie-Vancouver	424	111.06	535.06	26	21
Regina-Halifax	584	135.91	719.91	23	19

Source: Calculated by author

For Air Canada, the cumulative effect of the taxes and fees ranges between 17% and 32% of the total fares of domestic flights. The impacts tend to be largest for the lowest fares, and they tend to be largest in the provinces that have a sales tax on air travel.

For WestJet, the cumulative effect ranges between 19% and 40% for domestic flights.

Thus, while the cumulative effects of ground rents, the ATSC, the excise tax on fuel and the debt payments of NAV CANADA might appear to be relatively small at 5.7% of the average discount fare in Canada, the cumulative effects of all government policies affecting the airline industry in Canada are substantially greater. Passengers and the airlines have paid dearly, and so too has the Canadian economy as the size of this industry has been negatively impacted by these policies.

5.0 OBJECTIVES FOR GOVERNMENT POLICY

5.1 Importance of Connectivity

As noted above, Transport Canada stated clearly the role of the air transport industry in its October 2006 paper. Aviation is the real worldwide web and the liberalization of aviation must continue if Canada is to benefit. However Canada will not reap the potential benefits if Canadian airlines have to continue competing on a playing field tilted heavily against them. Without the right policies, Canada risks losing the economic and social benefits of an increasingly integrated global market place.

In my opinion, there are four sectors that are critical for the economy: finance, telecommunications, energy and transportation. How one connects to the networks in each of these sectors is important, but particularly so for the air transport industry (and the truck and rail freight sectors as well). It does matter how I can get from one location to another via air. Time is important for me and for every other traveller, and for all companies that ship or receive goods by air.

Weidemann and Associates et al, have stated:[39]

> Air travel and aviation make up the activity that quickly connects people and goods. Air transportation derives its value from time savings. In the current technology-driven economy, the value of time has increased… time savings in business and personal life has a value that can be measured in the market place by the prices that are paid for the convenience and speed… air travel acts as a time machine, compressing hours to minutes and increasing the efficiencies of business people, raising the overall productivity in the conduct of commerce.

In a classic study examining the economic benefits of airline mergers, Professors Carlton, Landes and Posner (now Judges Landes and Posner) estimated that travellers were willing to pay between US$13.10 and US$17.75 (in 1977 dollars) more for a flight with an on-line connection than one with an interline connection.[40] Extrapolating these results to a domestic carrier with a large domestic and global network implies substantial benefits for travellers using the services of this airline – benefits that are not captured in the air fares paid or in the standard economic impact studies.

Morrison and Winston stated in their classic study of the economic benefits of deregulation of the U.S. airline industry:[41]

> the value of time between departures reflects travellers' value of the inconvenience involved in schedule delay, manifested in their valuation of waiting time both at their home (or hotel) or business and in the terminal… The estimated high value placed on time between departures by business travellers reflects the high disutility to them of adjusting departure times to the schedule and capacity constraints of the air carriers… The high value placed on time between departures by business travellers that is captured in our demand model suggests that significant benefits to these travellers can be generated by increases in the frequency of service…our qualitative conclusion regarding the welfare effects on travellers of deregulation is robust, with a reliable conservative quantitative estimate of annual benefits approaching $6 billion. In addition, for all assumptions but

[39] R.A. Weidemann & Associates, "Economic impact assessment of Delaware airports and aviation", prepared for DelDot, Office of Aeronautics, June 2001, p. 3.1, 3.2.
[40] Dennis Carlton, William Landes and Richard Posner, "Benefits and costs of airline mergers: A case study", Bell Journal of Economics, v. 11 (Spring 1980), p. 73.
[41] Steven Morrison and Clifford Winston, "The economic effects of airline deregulation," Brookings (1986), p. 18, 35.

> the most liberal one regarding discount fare travel, the largest contribution to the welfare change comes from changes in departure frequency.

Travellers prefer non-stop and direct, on-line connections to interline connections. Domestic carriers with expansive networks generate significant time savings for travellers. Accessibility and connectivity are critical for externalities to be maximized. Airline links are important components of a city's aspirations to world city status. This is particularly important for cities such as Toronto, Vancouver, Calgary and Montreal. Direct links tend to be maximized by a domestic carrier making an airport its hub.

5.2 Hub Carriers and Airports

Most economic impact studies of the air transport industry have focused on airports as the driving force. Should the impacts be attributed primarily to the existence of the airports, for without them the airlines could not provide any services? Or should the impacts be attributed entirely to the airlines, for without them there would be no need for airports? What comes first: the airlines or the airports? They are both integral parts of the air transport industry and they have always had a symbiotic relationship.

ICAO has defined the top tier of airports as "intercontinental or primary hubs". These are airports with at least one network carrier offering connecting opportunities worldwide. These airports offer numerous long-haul destinations, which are not necessarily all operated by the hub carrier. Examples according to ICAO include Paris Charles de Gaulle (CDG), Dallas Forth Worth (DFW), Singapore Changi (SIN), Chatrapati Shivaji International Airport in Bombay (BOM), Abu Dhabi International (AUH) and Sao Paulo-Guarulhos International (GRU).

Such airports also have been labeled as "international gateways" or Tier 1 hubs. International gateway airports generate more value for their respective regional and national economies than national hubs, regional hubs, or stub airports (the end-points of spokes from hubs).

John Bowen has observed:[42]

> Hub cities have important economic development advantages for certain types of economic activity. These advantages reflect two key distinctions that hub cities share: (1) the concentration of large passenger and cargo flows and (2) the high degree of connectivity with other points in domestic and international airline networks. The way in which these advantages intersect with economic development has been described as "circular and cumulative" to the extent that additional air services facilitate development which in turn stimulates demand for further air services. This virtuous cycle tends to reinforce and perpetuate the privileged position that hub cities enjoy.

According to ICAO, "secondary hubs" comprise the next rung of airports. These are airports with at least one network carrier offering connecting opportunities. Such airports offer several intercontinental routes and/or numerous medium-haul routes. Examples include Lisbon, YUL, Nairobi Jomo Kenyatta International, Tokyo Haneda, and Luis Munoz Marin International Airport in Puerto Rico. Secondary hubs also have been labeled as "national hubs" or Tier 2 airports. They offer limited inter-regional or inter-continental connections.

The third tier on ICAO's typology of airports consists of "regional platform" airports. These are airports that are not hubs, and thus traffic is mainly point-to-point. The airport's traffic is focused on short to medium-

[42] John Bowen, "Airline hubs in Southeast Asia: national economic development and nodal accessibility", Journal of Transport Geography, v. 8 (2000), p. 28, 37.

haul routes. Examples include New York's La Guardia, Oslo, Shenzhen Baoan International Airport, Jeddah and Lima Airport. These airports alternatively have been called regional or Tier 3 hubs (providing intra-regional connections) or stub airports (end-points of networks originating at a hub airport, primarily the Tier 2 and 3 airports).

ICAO claims that each year some airports shift categories. In 2010, for example, three airports lost their intercontinental hub status: Bahrain and Mexico City moved into the secondary hub category, and Cincinnati was downgraded to Regional airport. Conversely, Dusseldorf, Istanbul Ataturk and Houston were promoted from secondary hub to primary hub, and Ho Chi Minh, Accra, Dakar, Casablanca, Abidjan moved from regional platform into the secondary hub category.

TABLE 24: Top 40 Airports by Number of Passengers, 2011 (millions)

Airport	*City*	*Rank*	*Passengers*	*Hub carrier(s)*	*Pax/Pop*
ATL	Atlanta	1	92.4	Delta	17.3
PEK	Beijing	2	78.7	Air China, China Southern, Hainan	4.7
LHR	London	3	69.4	BA (IAG)	10.5
ORD	Chicago	4	66.7	United, American	8.8
HND	Tokyo	5	62.6	Japan Airlines, ANA	2.6
LAX	Los Angeles	6	61.9	United, American	5.4
CDG	Paris	7	61.0	Air France	8.3
DFW	Dallas	8	57.8	American	10.5
FRA	Frankfurt	9	56.4	Lufthansa	28.8
HKG	Hong Kong	10	53.3	Cathay Pacific	7.5
DEN	Denver	11	52.8	United	16.0
CGK	Jakarta	12	51.2	Garuda	2.0
DXB	Dubai	13	51.0	Emirates	29.3
AMS	Amsterdam	14	49.8	KLM	25.3
MAD	Madrid	15	49.6	Iberia (IAG)	7.4
BKK	Bangkok	16	47.9	Thai Air	3.4
JFK	New York	17	47.7	America, Delta, Jet Blue	5.0
SIN	Singapore	18	46.5	Singapore	7.1
CAN	Guangzhou	19	45.0	China Southern	1.7
PVG	Shanghai	20	41.4	Air China, China Eastern, Shanghai Airlines	2.9
SFO	San Francisco	21	40.9	United	7.1
PHX	Phoenix	22	40.6	US Air	9.9
LAS	Las Vegas	23	40.6	Southwest	19.5
IAH	Houston	24	40.1	United	8.5
CLT	Charlotte	25	39.0	US Air	17.5
MIA	Miami	26	38.3	American	11.7
MUC	Munich	27	37.8	Lufthansa	18.2
KUL	Kuala Lumpur	28	37.7	Malaysia	5.8
FCO	Rome	29	37.7	Alitalia	12.4
IST	Istanbul	30	37.4	Turkish	3.8
SYD	Sydney	31	36.0	Qantas	7.6
MCO	Orlando	32	35.4		12.2
ICN	South Korea	33	35.2	Korean, Asiana	2.1
DEL	Delhi	34	35.0	Air India, Jet Airways	1.5
BCN	Barcelona	35	34.4	Iberia (IAG)	7.5
EWR	New York	36	33.7	United	5.0
LGW	London	37	33.7	BA (IAG)	10.5
YYZ	Toronto	38	33.4	Air Canada	5.7
MSP	Minneapolis	39	33.1	Delta	11.2
SHA	Shanghai	40	33.1	China Eastern, Shanghai Airlines	2.9

Sources: Airport Council International North America, www.citypopulation.de, and airline annual reports.

International gateway airports, with very few exceptions, have developed because major carriers use them as the principal hubs for their networks. Tables 25 sets out the largest 40 airports in the world based on number of passengers and Table 26 sets out the largest 40 airports based on tons of cargo in 2011.

TABLE 25: Top 40 Airports by Total Cargo, 2011 (000s of metric tons)

Airport	*City*	*Rank*	*Cargo*	*Hub carrier(s)*
HKG	Hong Kong	1	3,977	Cathay Pacific, UPS
MEM	Memphis	2	3,916	FedEx
PVG	Shanghai	3	3,085	Shanghai Airlines, Air China, FedEX, DHL, China Eastern
ANC	Anchorage	4	2,543	FedEx, Polar Air
ICN	Incheon	5	2,539	Korean Airlines, Asiana, Polar Air
CDG	Paris	6	2,300	Air France
DXB	Dubai	7	2,270	Emirates
FRA	Frankfurt	8	2,215	Lufthansa
SDF	Louisville	9	2,188	UPS
NRT	Tokyo	10	1,945	Japan Airlines, Nippon Cargo
SIN	Singapore	11	1,899	Singapore Airlines
MIA	Miami	12	1,842	American, FedEx, LAN, UPS
LAX	Los Angeles	13	1,682	America, United
PEK	Beijing	14	1,640	Air China, China Southern
TPE	Taipei	15	1,627	Eva Airlines, China Airlines
LHR	London	16	1,569	BA
AMS	Amsterdam	17	1,550	Air France/KLM
JFK	New York	18	1,349	America, Delta, Evergreen
BKK	Bangkok	19	1,322	Thai Air
ORD	Chicago	20	1,312	American, United
CAN	Guangzhou	21	1,180	China Southern, FedEx
IND	Indianapolis	22	972	FedEx
HND	Tokyo	23	873	Japan Airlines, Nippon Cargo
SZX	Shenzhen	24	828	Shenzhen Airlines, UPS
EWR	Newark	25	813	United, FedEx
DOH	Qatar	26	808	Qatar
LEJ	Leipzig	27	744	DHL
KIX	Osaka	28	743	Japan Airlines
CGN	Cologne	29	726	FedEx, UPS
KUL	Kuala Lumpur	30	694	Malaysia Airlines
BOM	Mumbai	31	681	Air India, Jet Airways
LGG	Liege	32	674	TNT, El Al Cargo
ATL	Atlanta	33	663	Delta
LUX	Luxembourg	34	657	Cargolux
DFW	Dallas	35	654	American
BOG	Bogota	36	617	LAN, Avianca
DEL	Delhi	37	593	Air India, Jet Airways
CGK	Jakarta	38	582	Garuda
IST	Istanbul	39	514	Turkish
GRU	Sao Paulo	40	497	TAM

YYZ	Toronto	41	493	Air Canada

Sources: Airport Council International.

Three observations stand out. With one exception on the passenger side, each of the largest airports serves as a hub for at least one major airline. Hub carriers are important. Toronto barely makes the top 40 for passengers and is not among the top 40 in terms of cargo.

Toronto competes directly with the following airports as hubs near the Canada-U.S. border – Chicago, New York JFK and Newark, Detroit and Minneapolis. There appears to be considerable scope for Canadian air carriers and Pearson Airport to become more important players in the global market. There is also the very significant risk that both could become marginal players in the future.

Toronto also competes with several airports outside of North America to connect continents and regions within continents. Among the competing airports are Amsterdam, London, Frankfurt, Munich, Paris, Madrid and Istanbul in Europe; Doha, Abu Dhabi and Dubai in the Middle East; and Tokyo, Hong Kong, Shanghai, Singapore, Bangkok and Kuala Lumpur in Asia.

Montreal, with a population base comparable to Seattle, Minneapolis, Phoenix, Denver, Tampa and Rome, does not even come close to making the top 40 for either passenger or cargo traffic. Neither does Vancouver, although its population base is much smaller than most of the cities on this list.

The third observation is that several of the top passenger airports are not among the top 40 cargo airports: e.g., Houston, Sydney, Barcelona, Gatwick, Madrid, San Francisco, Munich, Phoenix, Denver, Minneapolis, Rome, Orlando, Charlotte, Las Vegas. Toronto at least comes close to being the top 40 in both.

Table 26 compares the six largest Canadian airports with airports in cities of comparable population. The comparisons are based on total number of passengers per population (pax/pop).[43]

[43] For cities with multiple airports, the total number of passengers is the sum of the passengers at each of the airports serving that city.

Table 26: Comparison of Six Major Canadian Airports with Other Airports of Comparable Population, 2011

City	*Population*	*Hub Carrier*	*Pax/Pop*
TORONTO	5,850	Air Canada	5.7
Atlanta	5,350	Delta	17.3
Dallas	6,250	American	10.5
Houston	5,850	United	8.5
Miami	5,750	American	11.7
Madrid	6,700	Iberia	7.4
Sydney	4,725	Qantas	7.6
Singapore	6,600	Singapore	7.1
Hong Kong	7,100	Cathay Pacific	7.5
Kuala Lumpur	6,550	Malaysia	5.8
Milan	5,050	Alitalia	7.3
VANCOUVER	2,425	Air Canada	7.3
Frankfurt	1,960	Lufthansa	28.8
Denver	3,300	United	16.0
Munich	2,075	Lufthansa	18.2
Pittsburgh	2.050		4.0
Amsterdam	1,970	Air France/KLM	25.3
Charlotte	2,225	US Air	17.5
Vienna	2.050	Austrian	10.3
Salt Lake City	2,200	Delta	9.3
St. Louis	2,350		5.3
MONTREAL	3,975	Air Canada	3.4
Phoenix	4,200	US Air	9.9
Rome	3,425	Alitalia	12.4
Seattle	3,900	Alaska	8.3
Melbourne	4,250	Qantas	6.6
Jeddah	3,825	Saudi	5.5
Tampa	3,925		6.2
Kuwait	3.850	Kuwait	2.2
CALGARY	1,290	Air Canada, WestJet	9.9
OTTAWA	1,300		3.6
EDMONTON	1,230		5.1
Dubai	1,740	Emirates	29.3
Zurich	1,210	Swiss	20.1
Copenhagen	1,460		15.5
Dublin	1,280	Ryanair, Aer Lingus	14.6
Doha	1,690	Qatar	10.8
Auckland	1,410	Air New Zealand	9.9
Abu Dhabi	1,650	Etihad	7.5
Buffalo	1.320		3.9

Sources: Airport Council International.

In almost all cases, the Canadian airports fare worse than their comparator airports. For example, Toronto has fewer passengers per population than all of its comparators. Toronto lags significantly behind Atlanta, Dallas and Miami, even though geographically it is better located to connect both Europe and Asia to North and South America.

Vancouver outperforms only Pittsburgh and St. Louis, and no longer do either of these cities serve as the hub for a major carrier. Vancouver trails badly behind Frankfurt, Munich and Denver.

Montreal is outperformed by all of its comparator airports, except Kuwait and Kuwait Airlines has been overtaken by the three Gulf carriers. Melbourne, which is a secondary hub for Qantas, handles almost twice as many passengers per capita as does Montreal.

Ottawa and Edmonton lag behind all of their comparator airports, except interestingly, Buffalo. Calgary lags behind all of them except Abu Dhabi (and this is likely to change in the near future) and Buffalo. Calgary outperforms Ottawa and Edmonton in part because it serves as a hub for both Air Canada and WestJet.

Thus, there appears to be ample scope for the NACC members to expand their presence domestically and globally, and for Canadian airports to increase their scale of operations.

5.3 Recommendations

The principal objectives of government policy for the air transport industry should be:

- Connectivity;
- Employment, income, and trade; and
- Productivity.

All three are related.

A much more enlightened set of government policies is needed if the members of the NACC are to continue to compete in the global markets and capture the opportunities available. Without the continued success and growth of these airlines, no Canadian airport is likely to join the ranks of international gateways or regional hubs, with their significant economic benefits for Canada.

A large population base is important but not decisive in determining whether an airport becomes a Tier 1, intercontinental hub – international gateway. Geographic location, infrastructure capacity, infrastructure services costs, and the success of the hub carrier are the key variables.

As the airline industry continues to evolve, we likely will move towards a global network consisting of 12 to 20 intercontinental (Tier 1) hub airports, 20 to 30 regional platform (Tier 2) hub airports, and hundreds of Tier 3 and stub airports. The Tier 1 airports will dominate the global system and the dominant airline(s) at these airports will offer non-stop and one-stop service to most of the world.

The Tier 1 airports are most likely to be located in North America, Europe, Asia, and the Middle East. They are less likely, because of geography, to be located in Latin America, Africa and Oceania. At this time, my best guess is that the regional locations of the Tier 1 airports might be as follows:

- 3 to 6 in North America;
- 3 to 4 in Europe;
- 3 to 6 in Asia;
- 1 to 2 in the Middle East; and perhaps
- 1 each in Latin America and in Africa.

Toronto Pearson and Vancouver International are compared to other key Star Alliance hubs around the world in Table 27. Neither ranks high on the list in terms of either the total number of passengers or passengers per capita. For the Star Alliance, some of the most likely candidates to become Tier 1 hubs are: Bangkok, Beijing, Chicago, Frankfurt, Los Angeles, Munich, New York, Singapore, Shanghai, Tokyo, Washington, and even Toronto and Vancouver. But which ones?

There is scope for these two airports to become much larger and more prominent hubs in the global networks. There is also the risk that they could end up as Tier 2 hubs instead despite their attractive geographic locations.

In 2000, St. Louis, Cincinnati and Pittsburgh were thriving hub airports. All three have lost their hub airlines since that time and all three have experienced very sharp declines in their passenger traffic. St. Louis, Cincinnati and Pittsburgh have seen the number of passengers using these airports decline by 59%, 69% and 58% respectively since 2000. Toronto, Vancouver, Calgary and Montreal are not likely to have the same fate. But unless the federal government changes its policies, the members of NACC and these Canadian airports might not thrive in the future.

TABLE 27: Comparison of YYZ, YVR and Other Major Star Alliance Hubs, 2011

City	Passengers (millions)	Pax/Pop
Toronto	**33.4**	**5.7**
Vancouver	**17.2**	**7.3**
Chicago	66.7	8.8
Los Angeles	61.9	5.4
Frankfurt	56.4	28.8
Denver	52.8	16.0
Bangkok	47.9	3.4
Houston	40.1	8.5
Phoenix	40.6	9.9
Singapore	46.5	7.1
San Francisco	40.9	7.1
Charlotte	39.0	17.5
Munich	37.8	18.2
Seoul	35.2	2.1
Washington	23.1	8.0
Zurich	24.3	20.1
Vienna	21.1	10.3
Brussels	18.8	9.6

Sources: See Table 26.

Air France pointed out, in their fiscal year 2010 Annual Report, the economic advantages derived from "density economies" and "frequency advantage":

"Large traffic flows are fed by small traffic flows, leading to the operation of bigger aircraft, which are more cost-efficient. The gap between the cost per seat between the A330 and the A380…is almost 30%! The hub system makes it possible, for each flight, to combine connecting traffic and point-to-point traffic. As a result, traffic flows are bigger, allowing Air France to increase the number of flights to any given destination. As soon as a carrier offers a number of flights that is greater than half of all flights offered by all the airlines flying to this destination, it becomes more attractive than its competitors, thus improving load factor and market share."

The consequence is that if an airline and airport do not achieve the density economies and the hub carrier is unable to gain a frequency advantage, both begin to fall behind and both risk becoming marginalized over time.

Etihad/Abu Dhabi, Emirates/Dubai, and Qatar/Doha are all positioning themselves to become one of the pre-eminent gateway hubs. They are all buying large numbers of new aircraft, especially the wide-body, long-haul types (A380s, A350s, B777s, and B787s), and each of the United Arab Emirates (UAE) is investing tens of billions of dollars to greatly expand their airports.

On the other hand, several large cities, despite serving as hubs for an airline, are not likely to become more than Tier 3 hubs (see Table 29). They lack the geographic location and/or their hub airlines are not expanding.

TABLE 28: Select Cities Likely to Remain as Tier 3 Hubs, 2011

City	Population (000s)	Pax/Pop
Santiago	6,250	1.9
Buenos Aires	14,400	1.1
Rio di Janeiro	12,800	1.2
Kuwait	3,850	2.2
Riyadh	5,950	2.6
Johannesburg	8,050	2.4

Sources: See Table 26.

The gateway airports will dominate the system and the dominant airline(s) at these airports will offer non-stop and one-stop service to most of the world. A number of studies have shown how gateway airports will give their cities an enormous advantage in competing for talent and money in the global economy. So it comes as no surprise that the UAE is investing heavily in the air transport industry, and China will not be far behind. Where will Canada end up?

A classic study of the economic effects of deregulation in the U.S. found that most of the economic benefits came from the time savings for travellers as a result of the restructuring of the networks by the airlines to offer more frequencies and more non-stop and one-stop flights through their hubs.

It will matter to Canadians whether they connect through Toronto or Vancouver or Calgary; or they have to make an additional stop and change planes and airlines in order to travel through Atlanta, Los Angeles, Chicago, London, Dubai, Shanghai or elsewhere.

The federal government has to choose between two courses of action. Either it can develop a policy that will provide the framework for Canadian carriers to thrive globally, the Blue Sky policy being an integral part of this framework. This will ensure that Canadians will be connected directly, conveniently and efficiently into global networks; enhancing their mobility, both for business and leisure, and their ability to transport goods to and receive goods from all parts of the world. This environment also will make Canadian airports more viable by generating more traffic for them. This also will help spur productivity growth in Canada, a very important outcome since Canada continues to lag many other countries in this area.

Or the federal government can continue to treat airlines and airports as cash cows and favour other modes of transportation. Ignoring the importance of the air transport industry for the Canadian economy will diminish the likelihood that Canadian airlines will be major players in the evolving global industry and that any Canadian airport will be among the gateway and regional hub airports. This will risk that Canada continues to fare poorly in productivity growth.

Oxford Economic Forecasting concluded, in their study of Etihad Airways that its rapid expansion is supporting and driving tourism, business and investment and is helping to create thousands of jobs in Abu Dhabi. The federal government can choose to create the policies necessary for the members of the NACC to compete with the Etihads of this world, or it can allow Etihad and others to take over in connecting Canada to the rest of the world.

In my view, the choice is obvious.

5.4 Revenue Implications for the Federal Government

As noted in section 1.0 (Table 2), the federal government collected $989 million in FY 2012 from the ATSC, excise tax on jet fuel and airport ground rent lease payments. In addition, the government has been saving approximately $120 million each year as a result of the $1.5 billion payment received from NAV CANADA in 1996. In section 4.5, I estimated that eliminating these various taxes might lead to an increase in GDP of between $602 and $2,700 million (Tables 20 and 21). The members of the NACC and the airline industry as a whole in Canada do generate significant economic benefits.

However, can the federal government afford to sacrifice the revenues it receives from airport lease payments, the ATSC, and the fuel tax, especially at a time when its budget deficit for the 2012 fiscal year was $26 billion, and the deficit is projected in the $26 billion range for the 2013 fiscal year? Can it afford to reimburse NAV CANADA for the annual interest and principal payments of $120 million?

If I only consider the incremental traditional economic impacts from eliminating the taxes and reimbursing NAV CANADA, as is the case in section 4.5, the federal government would experience a net reduction in its revenues. GDP would not increase sufficiently to generate additional tax revenues for the federal government to fully offset the lost revenues needed to provide the stimulus to the airline industry.

InterVistas estimated that the elimination of ground rents alone ($280 million in foregone revenues for the federal government) would increase GDP by $350 million because of the resulting increase in the number of air travellers, and this increase in GDP and employment would produce

$50 million in tax revenues for the federal government.[44] The tax revenues were 14.3% of the incremental GDP, and they were broken down as follows:

- GST: $24 million;
- Personal Income Tax (PIT): $10 million;
- Corporate Income Tax (CIT): $5 million;
- Employment Insurance (EI) – employee and employer payments: $3 million; and
- CPP – employee and employer payments: $8 million.

Even though InterVistas derived their tax revenue estimates using only the direct GDP impacts and not the total impacts, a more comprehensive analysis using the total incremental traditional impacts would not have generated sufficient new tax revenues to offset the $280 million per year in foregone ground rent revenues.

However is it possible that if the catalytic effects are considered, eliminating the taxes could spur the airline industry to generate GDP growth large enough to produce additional tax revenues to offset the initial revenue losses for the federal government?

To explore this question, let's start with a summary of the revenue estimates in a number of the economic impact studies for airports across Canada (see Table 29). The primary sources of new revenues were the PIT and GST. The CIT, EI and CPP also contributed additional revenues for the federal government. Airport rents also were included in the estimates for Ottawa, Montreal Airports and Vancouver.

Table 29: GDP Economic Impacts and Additional Federal Government Revenues, Selected Airport Economic Impact Studies, Canada

	GDP ($ millions)	Federal Government Revenues ($ millions)	Revenues as % of GDP
Calgary - 2004	4,880	479	9.8
Edmonton Airports - 2006	778	97	10.6
St. John's - 2008	364	44	12.0
Ottawa - 2008	750	142	18.9
Montreal Airports - 2007	4,400	357	8.1
Regina - 2008	472	92	19.4
Vancouver - 2006	3,100	504	16.3

The incremental revenues for the federal government ranged between 8% and 19% of the total GDP impacts. How do these estimates compare with the actual, aggregate GDP share of the PIT, CIT, GST and EI?

Table 30 summarizes the GDP shares of these four taxes as well as the GDP shares of total federal government revenues for the fiscal years 2006 to 2012. Total federal government revenues from these four taxes averaged around 13.3% of GDP between 2006 and 2008 before dropping sharply in 2009, largely the result of the recession's impact.

[44] InterVistas, "The Elimination of Airport Rent: Return on Investment", Final Report prepared for Canadian Airports Council, July 21, 2009.

Table 30: Federal Government Tax Revenues as % of GDP, FYs 2005-2012

	2012	*2011*	*2010*	*2009*	*2008*	*2007*	*2006*
PIT	6.8	6.8	6.8	7.3	7.4	7.6	7.5
CIT	1.8	1.8	2.0	1.8	2.7	2.6	2.3
GST	1.6	1.7	1.8	1.8	1.9	2.2	2.1
EI	1.1	1.1	1.1	1.1	1.1	1.2	1.2
Total	11.3	11.5	11.7	12.0	13.1	13.6	13.1

Source: Department of Finance

In 2008, the personal income tax (PIT), corporate income tax (CIT), GST and employment insurance premiums (EI) revenues totaled 13.1% of GDP; in 2009, they totaled 12.0%; and 11.7% in 2010. The downward trend has continued in 2011 and 2012. Thus, it appears that the lower range estimates in Table 30 are more in line with the actual experiences of the federal government.

I will use only the PIT, CIT, GST and EI revenues in the following analysis. I assume the following GDP ratios for each of these taxes:

- PIT: 7.0%
- CIT: 2.0%
- GST: 1.8%
- EI: 1.1%
- Total of these four: 11.9%.

The rates for the PIT and CIT are lower than I used in the September 2011 version of this report reflecting the continued downward trend in these tax ratios in FY 2011 and 2012.

I consider three cases. The first (case 1) involves the 14 airports case B in Table 19 (increase of GDP of $813 million) combined with the OEF catalytic effect of a long-run increase in productivity of 0.56%. The second (case 2) involves the 14 airports case A (increase in GDP of $1,061 million) combined with the OEF catalytic effect of 1.3%. The third (case 3) involves the InterVistas Methodology employed in the 14 airports, low GDP estimate (increase in GDP of $2,137 million) in Table 21 combined with their catalytic effect of an increase in productivity of 0.07%.

In all three cases I assume that the federal government will forego $989 million in revenues each year (see Table 2 and accompanying discussion in section 1). In addition, I assume that the federal government will also lose the GST revenues collected on the airfares that incorporate these various taxes. For simplicity, I assume that the lost GST revenues average 4% of the foregone revenues, or $40 million annually. Thus, the aggregate revenue losses for the federal government are assumed to be $1.029 billion.

It is important to note that these foregone revenues are assumed to remain constant in real (2013 dollars) terms. I do not allow for the possibility that ground rents and the Air Travellers Security Charge might change at a rate different from the prevailing rates of inflation. I also do not terminate the $120 million annual amount covering the potential NAV CANADA annual interest and principal payments in 2016. Furthermore, I do not allow for any possible changes in the impacts on the total number of passengers and hence on the productivity assumptions of potential changes in both the foregone revenues and average fares. So the following analysis is not intended to provide estimates of the actual net revenue position of the federal government during the next 15 years. Instead, the objective is to demonstrate that the annual

revenue losses of the federal government should decline over time because even modest improvements in annual productivity growth rates can generate substantial GDP and tax revenue gains over time. In other words, the federal government might make an important investment in productivity growth by foregoing the revenues generated by ground rents, the ATSC and the fuel tax, and the net revenue losses (investment) as a consequence, might be quite small.

Applying the 11.9% rate for the four taxes listed above to the incremental traditional GDP impacts (resulting from the elimination of ground rents, the ATSC, the fuel tax and the NAV CANADA interest and principal payments) estimated for the three cases, yields the following new revenue estimates:

- Case 1: $97 million
- Case 2: $126 million
- Case 3: $254 million.

It is clear that the traditional economic impacts alone fall far short of generating sufficient new revenues to compensate the federal government for their foregone revenues. The annual shortfalls are estimated as follows:

- Case 1: $937 million
- Case 2: $903 million
- Case 3: $775 million.

Are these investments by the federal government warranted by the potential catalytic effects – the incremental increases in productivity?

In case 1, the estimated potential increase in the number of passengers in Canada was 4.9% of the total numbers in 2011. Case 1 uses the OEF estimate of a long-run increase in productivity of 0.56% for a 10% increase in connectivity. Thus, I assumed that the potential catalytic effects would produce an increase of productivity of 0.27% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.018%.

Similarly, in case 2, the estimated potential increase in the number of passengers in Canada was 6.2% of the total numbers in 2011. Case 2 uses the OEF estimate of a long-run increase in productivity of 1.3% for a 10% increase in connectivity. Thus, I assumed that the potential catalytic effects would produce an increase of productivity of 0.80% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.053%.

Finally, in case 3, the estimated potential increase in the number of passengers in Canada was 4.9% of the total numbers in 2011. Case 3 uses the InterVistas estimate of an annual increase in productivity of 0.07% for a 10% increase in connectivity. Thus, I assumed that the potential catalytic effects would produce an annual increase of productivity of 0.034%.

In order to estimate the incremental revenue effects for the federal government, it is first necessary to estimate the incremental GDP generated by the catalytic effects. To do this I first projected real GDP for the time period 2013 to 2027 assuming a constant growth rate of 2.5% per year. I then estimated real GDP for each of three cases using annual growth rates equal to 2.5% plus the incremental productivity growth rates – in total, 2.518% for case 1; 2.553% for case 2; and 2.534% case 3.

The following analysis is in real terms; that is, in 2013 prices, since I have excluded the impacts of inflation throughout. Thus, the incremental GDP and tax revenues are all expressed in terms of 2013 dollars or prices.

Over time, the catalytic effects may be quite dramatic and greatly overwhelm the traditional economic impacts. For example, by 2027 the catalytic effects might generate an additional $6.9 billion (2013 dollars) in GDP in case 1. This compares with the estimated incremental traditional impact of only $813 million. The catalytic effects are even larger in cases 2 and 3.

The catalytic effects underlying the additional growth in GDP assume that the incremental number of passengers and the commensurate increase in the supply of air transportation services might produce increases in productivity of between 0.27% and 0.80% by 2027. These rather small increases in productivity translate into incremental GDP of between $6.9 billion and $20.2 billion (2013 dollars) in 2027.

Using the estimates of the catalytic impacts on GDP, I then applied the 11.9% rate to produce estimates of the catalytic-induced incremental revenues for the federal government. These estimates are combined with those derived from the incremental traditional impact revenues (as reported above for each of the three cases) and are presented in Table 31.

Table 31: Incremental Federal Government Revenues, Combined Traditional Economic Impacts and Catalytic Effects of Eliminating Ground Rents, ATSC, Fuel Tax and NAV CANADA Interest and Principal Payments, Cases 1, 2 and 3, 2013-2027 (2013$ millions)

	Case 1	*Case 2*	*Case 3*
2013	135	239	327
2014	176	358	403
2015	218	483	483
2016	263	614	566
2017	310	751	654
2018	359	895	746
2019	410	1,045	843
2020	464	1,203	944
2021	520	1,368	1,049
2022	608	1,541	1,160
2023	640	1,722	1,276
2024	705	1,911	1,397
2025	772	2,109	1,523
2026	842	2,315	1,655
2027	915	2,531	1,793

Source: Calculated by author.

In case 1, the total new revenues for the federal government are less than the foregone revenues throughout the 2013 to 2027 period.

In case 2, the catalytic effects are significantly larger. Thus, the new revenues begin to exceed the foregone revenues of the federal government in 2019, with the gap growing steadily every year thereafter. By 2027, the federal government might be ahead by almost $1.5 billion in revenues.

Case 3 is an intermediate case. The new revenues begin to exceed the foregone revenues in 2021. By 2027, the federal government might be ahead by $764 million.

It does appear as if the investment from the foregone annual revenues might pay for itself, at least in cases 2 and 3. Table 32 summarizes the estimated net position for the federal government in each of these cases for the period 2013 to 2027.

Table 32: Net Revenue Position of Federal Government, Cases 1, 2 and 3, 2013-2027 (2013$ millions)

	Case 1	*Case 2*	*Case 3*
2013	-893	-789	-702
2014	-853	-671	-626
2015	-810	-546	-546
2016	-766	-415	-462
2017	-719	-278	-374
2018	-670	-134	-282
2019	-619	17	-186
2020	-565	175	-85
2021	-509	340	21
2022	-420	513	132
2023	-388	694	247
2024	-324	883	368
2025	-257	1,080	494
2026	-187	1,287	626
2027	-113	1,502	764

Source: Calculated by author.

The present values (in 2013 dollars) of these net positions are as follows:[45]

- Case 1: -$7.7 billion
- Case 2: +$3.1 billion
- Case 3: -$0.8 billion.

The federal government does take a large hit in case 1. Is it worth the investment in this case? While I believe that it is, given the longer-term benefits for the economy, the federal government might have a difficult time supporting this investment. In cases 2 and 3, there is little, if any doubt, that the investment would be a good policy initiative. The decisions should be more straightforward when the impacts on trade and tourism are considered.

[45] The real interest rate (0.33%) was on December 3, 2012. Instead, I used the same real interest rate (0.84%) as I used in the September 2011 version since the current real interest rate is historically low and not likely sustainable over the next few years.

6.0 CONCLUSIONS

The members of the NACC generate substantial economic benefits. The economic impacts estimated for the NACC members do not include the importance of these airlines for both tourism and trade. Nor do they include the catalytic impacts, which can be substantial. Thus, the estimates I reported for the NACC members must be viewed as a starting point, and not the end product. Their impacts on the Canadian and provincial economies are significantly larger than what I have estimated. Indeed, the aggregate economic impacts of the NACC members likely are five to seven times their traditional impacts.

Daniel Yergin et al have commented:[46]

> Globalization is making it abundantly clear that the airline industry needs to be viewed from a broad international, even global perspective. Regulators, the airline industry, and the publics they serve – all will increasingly be required to think about competition, scale, quality of service, and industry consolidation not only from the traditional viewpoint of their national markets but also from a new global standpoint, in the context of network competition.

Canada will not reap the potential benefits if Canadian airlines have to continue competing on a playing field tilted heavily against them. Without the right policies, Canada risks losing the economic and social benefits of an increasingly integrated global market place.

A much more enlightened set of government policies is needed if the members of the NACC are to be able to continue to compete in the global markets and capture the opportunities available. Without the continued success and growth of these airlines, no Canadian airport is likely to join the ranks of international gateways or regional hubs, with their significant economic benefits for Canada. Furthermore, productivity growth in Canada will be negatively impacted, creating a host of other problems for the government and the country.

The airline industry in Canada has demonstrated its ability to be productive. For example, between 1988 and 2008, the Level 1 carriers in Canada improved their fuel efficiency (defined as total tonne-kilometers per liter of fuel) 44% (1.8% per year). Between 1988 and 2008, these airlines' labour productivity (total tonne-kilometers per employee) increased 134% (4.3% per year). During the past 10 years (1998-2008), labour productivity growth in this industry accelerated to 5.4% per year. These productivity improvements have exceeded those for the Canadian economy as a whole. Yet, the government continues to treat this industry as a cash cow.

The system-wide yields of the Level 1 carriers have declined 21% in real terms during the past 20 years. Domestic yields declined 28% in real terms; and international yields declined 16% during the past 20 years. Transborder yields remained unchanged in real terms over this period.[47] The price performance of the industry has been superior to most other sectors of the economy during the past 20 years, and even the past 10 years despite the government subjecting this industry to more taxes and additional costs.

There is something wrong with the picture presented in Table 33. During the six-year period (2006 to 2011), the federal government has received $4.4 billion in ground rents and ATSC. The 14 airport authorities

[46] Daniel Yergin, Richard Vietor, Peter Evans, "Fettered Flight: Globalization and the Airline Industry", November 2000, p. 61.
[47] During the past 10 years, transborder yields have declined in real terms by 22%.

earned an aggregate total net income of $1.0 billion. NACC members scraped out an aggregate net profit of $362 million.

TABLE 33: Federal Government Revenues (Ground Rents and ATSC), Net Income of Airport Authorities that Paid Rents, Net Income of the NACC Members

	2006	2007	2008	2009	2010	2011	Total
Government[1]	660	681	661	632	844	905	4,383
14 Airport Authorities	145	166	181	162	193	197	1,044
NACC Airlines[2]	41	672	-856	167	370	-32	362

1. Fiscal years 2007 to 2012.
2. Does not include results for Air Transat. (Excluding Air Transat), 2006-2011 ($ millions)

The government's revenues remained rather steady between 2006 and 2009 and then increased sharply in 2010. The airport authorities collectively have been able to increase their aggregate net income each year but 2009. NACC airlines have seen their profits bounce around dramatically from year to year. Hence, not only have the NACC members done the worst of the group, their profitability also has been the most volatile.

The cash cow bleeds profusely during economic downturns and skyrocketing fuel prices. Even in ideal circumstances (2007 for example), the federal government still seemed to come out ahead of the NACC members.

I pointed out in section 4.1 that since 2001, the federal government has extracted at least $8.6 billion out of the air transport industry – this does not include the excise tax on jet fuel and the GST. During this same time, the federal government has poured almost $3.4 billion into VIA, a passenger rail system that carries only 15% of the total number of domestic passengers carried by the airlines in Canada.

The total costs of the most blatant policies for each passenger at the 14 major airports was approximately $14.18 in 2011, or about 5.7% of the average discounted domestic and international fare for the NACC members in 2011. Eliminating ground rents, the ATSC and the excise tax on jet fuel, and reimbursing NAV CANADA for the interest and principal payments it must make on the $1.5 billion debt it incurred when it was created might lead to an increase in the number of passengers handled at the 14 airports that paid ground rents by 3.6 to 4.6 million. This in turn might increase GDP in Canada by $813 million to $2.7 billion, with thousands of new jobs being created.

The starting point for the new policy direction is the termination of the ground rents, the ATSC, and the excise tax on jet fuel. As I pointed out in section 5.4, this policy might pay for itself. With sufficiently large catalytic impacts, the federal government might break even or even make money over the next 15 years. Then the federal government should take a look at its other taxes (the GST/HST), and the funding of infrastructure.

Finally, the government should consider including in all "Open Skies" agreements countervail and dumping provisions similar to the ones in the NAFTA and the GATT. These provisions would level the playing field for Canadian airlines and airports by eliminating the competitive distortions in the market resulting from aggressive subsidization policies by foreign governments.

APPENDIX: LIST OF ECONOMIC IMPACT STUDIES

DRI-WEFA, "The National Economic Impact of Civil Aviation", July 2002

"The Economic Impact of Canadian Airports 2002", produced for Airports Council International, North America

Dr. Steven G. Craig and The Campbell-Hill Aviation Group, "Economic Impact Study Houston Airport System2003", December 2004

RP Erickson & Associates, "The 2004 Economic Impact of the Calgary International Airport", September 2005

The Port Authority of New York and New Jersey, "The Economic Impact of the Aviation Industry on the New York-New Jersey Metropolitan Area", October 2005

InterVistas, "Vancouver International Airport Economic Impact", March 2006

InterVistas, "Edmonton Airports Economic Impact Study", June 2006

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