

THE CASE FOR ELIMINATING THE GOVERNMENT OF ONTARIO TAX ON AVIATION FUEL ON TRANSBORDER AND INTERNATIONAL FLIGHTS



Prepared by Dr. Fred Lazar
Schulich School of Business

For the National Airlines Council of Canada and
International Air Transport Association

January 2011



NATIONAL AIRLINES COUNCIL OF CANADA
CONSEIL NATIONAL DES LIGNES AÉRIENNES DU CANADA



TABLE OF CONTENTS

LIST OF TABLES	.....	-3-
EXECUTIVE SUMMARY	.....	-4-
1. INTRODUCTION	.....	-6-
1.1 Objective	.....	-6-
1.2 Background	.....	-6-
1.3 YOW and YYZ	.....	-8-
1.4 Tourism	.....	-14-
1.5 Economic Benefits of the Air Transportation industry	.....	-17-
2. ECONOMIC AND REVENUE IMPACTS OF ELIMINATING THE FUEL TAX FOR TRANSBORDER AND INTERNATIONAL FLIGHTS	.....	-18-
2.1 Gross Revenue Losses	.....	-18-
2.2 Potential Economic Impacts	.....	-18-
2.3 Net Revenue Impacts	.....	-19-
3. CONCLUSIONS	.....	-19-
APPENDIX A: Methodology for Estimating the Economic Impacts	.....	-24-
APPENDIX B: Methodology for Estimating the Revenue Impacts for the Government of Ontario	.....	-32-

LIST OF TABLES

- 1: Aviation Fuel Taxes, Canada and Provinces (cents per liter)
 - 2: Enplaned/Deplaned Passengers, Selected Airports, 2008 and 2009 (000s)
 - 3: Cargo Loaded and Unloaded at Toronto Pearson Airport, 2009 (tonnes)
 - 4: Top 35 Airports by Number of Passengers, 2008 (millions)
 - 5: Top 35 Airports by Total Cargo, 2008 (000s of metric tons)
 - 6: Comparison of YYZ and YOW with Other Airports of Comparable Population, 2008
 - 7: Tourism GDP and Spending by Industry, Canada, 2004 (\$ Billions)
 - 8: Tourism GDP and Spending, Canada, 2004-2009 (\$ Billions)
 - 9: Trip Characteristics of US Residents Entering Canada and Staying One or More Nights, by Province Visited, 2008
 - 10: Trip Characteristics of Residents of Countries Other than the US Entering Canada and Staying One or More Nights, by Province Visited, 2008
 - 11: Visitors to Canada from Countries other than the US, 2006-09 (000s)
 - 12: Balance of Payments in the Travel Account Between Canada and Other Countries, 2004-2008 (\$ Billions)
-
- A.1: Fuel Capacity, Passengers, Aviation Fuel Tax and Fuel Tax per Passenger, Various Aircraft
 - A.2: Aviation Fuel Tax per Passenger, Transborder and International, YOW and YYZ
 - A.3: Average One-Way Fares, Transborder and International, YOW and YYZ
 - A.4: Reductions in Average Round-Trip Airfares, Transborder and International, Resulting from the Elimination of the Aviation Fuel Tax per Passenger, YOW and YYZ
 - A.5: Median Estimates of Own-Price Elasticities for Air Travel for Selected Groupings of Studies
 - A.6: Total Transborder and International Passengers, YYZ and YOW, 2008 and 2009 (000s)
 - A.7: Potential Increase in Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights
 - A.8: Potential Increase in Non-Canadian Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights
 - A.9: Ontario Multipliers, 2006
 - A.10: Potential Total Impacts, Ontario GDP and Economic Output, Resulting from Elimination of Ontario Fuel Tax on International Flights (\$ Millions)
-
- B.1: Ontario Government Tax Revenues as % of Ontario GDP, 2007-2009
 - B.2: Incremental GDP, Catalytic Effects of Eliminating the Aviation Fuel Tax on International Flights, Cases 1 and 2, 2011-2025 (\$ millions)
 - B.3: Incremental Ontario Government Revenues, Combined Traditional Economic Impacts and Catalytic Effects of Eliminating Aviation Fuel Tax on International Flights, Cases 1 and 2, 2011-2025 (\$ millions)
 - B.4: Net Revenue Position of Ontario Government, Cases 1 and 2, 2011-2025 (\$ millions)

EXECUTIVE SUMMARY

There are at least four good reasons why the Government of Ontario should eliminate the 2.7¢ per liter aviation fuel tax on transborder and international flights.

(1) The Government of Ontario is out of step with the federal government; several provincial governments; the US Government; and most US state governments. Indeed, Ontario is out of step with its own HST policy, where it does not impose a sales tax on air travel originating in Ontario and terminating either in the US or outside of Canada and the US.

Ontario remains one of the few jurisdictions in Canada to levy the fuel tax on international flights.

When Alberta's aviation fuel tax was eliminated on transborder and international passenger and cargo flights on March 1, 2004, then Revenue Minister Greg Melchin emphasized:

"A competitive tax environment is vital to Alberta's economy and eliminating the Alberta aviation fuel tax on international air traffic at Alberta's two international airports will allow them to compete on a more level playing field with similar jurisdictions, including Seattle and Vancouver."

When then Premier Gordon Campbell announced on September 20 that British Columbia would introduce legislation to eliminate the aviation fuel tax on transborder and international commercial flights by April 1, 2012, he pointed out:

"This change would help YVR and B.C. markets as the preferred gateway to North America and the world, bringing tourists and added economic activity to our province from around the globe."

(2) Removing the tax on transborder and international flights could generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario could provide important stimulus to the tourism industries in the province and to the overall economy. The removal of this tax might lead to additional economic output of between \$59 and \$74 million, 19,000 to 29,000 more tourists per year, and an additional 690 to 1,015 jobs in the province, at an initial investment of about \$33,500 to \$50,400 per job – or approximately 35% to 55% less than the usual expenditure costs per job. Over time the economic benefits could be significantly larger as the catalytic effects begin to materialize.

(3) While the removal of the province's fuel tax on transborder and international flights might be viewed as only a small step in helping Pearson Airport continue to develop into an international gateway airport; nevertheless, this would play a role, and with a change in federal government policies, Pearson's chances of becoming a Tier 1 hub would greatly improve.

Despite Toronto Pearson's critical position in the passenger and cargo segments of the aviation industry in Canada, there is no assurance that this airport will end up as an international gateway airport – a Tier 1 hub in the global system.

As the airline industry continues to evolve, we will probably move towards a global network consisting of 10 to 15 gateway airports (Tier 1 hubs), 25 or so regional hub airports (Tier 2 hubs), a number of local hub airports (Tier 3) and hundreds of stub airports (the end-points of spokes from one or more of the other hub airports). 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.

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

(4) The removal of the aviation fuel tax could lead to a modest increase in the productivity growth rates in the province and enhance the competitiveness of Ontario-based manufacturing and service companies – the catalytic effects. Even a modest increase in the rate of productivity growth might be sufficient to generate future tax revenues that would greatly diminish the foregone aviation fuel tax revenues for the Government of Ontario.

1. INTRODUCTION

1.1 Objective

The primary objective of this report is to spell out the case for the Government of Ontario to rescind its aviation fuel tax on all transborder and international flights departing from Ontario airports.

There are four arguments that comprise the case:

- 1) The Government of Ontario is out of step with the federal government; several provincial governments, notably Alberta, Quebec and now British Columbia; the US Government; and most US state governments. Ontario remains one of the few jurisdictions in Canada and the United States to levy the fuel tax on international flights. Moreover, the Ontario Government does not impose a sales tax, as part of the HST, on transborder and international flights.
- 2) Removing the tax on international flights can generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario can provide important stimulus to the tourism industries in the province and to the overall economy.
- 3) Airports and airlines play important economic and social roles, and their continued growth can contribute to productivity growth. The removal of the fuel tax on international flights can improve Pearson Airport's chances of becoming an international gateway airport.
- 4) The removal of the aviation fuel tax could generate catalytic effects that would boost the economic impacts and significantly reduce the net revenue losses for the provincial government.

1.2 Background

The *Gasoline Tax Act* is the basis for the tax on aviation fuel in Ontario. The rate has remained at 2.7¢ per liter since 1992. This tax has generated between \$55 and \$70 million annually in revenues for the province.¹ The Government of Ontario collected approximately \$56 million and \$53 million in aviation fuel tax revenues from airline operations at the Ottawa Macdonald-Cartier (YOW) and Toronto Pearson (YYZ) airports in 2008 and 2009 respectively. Transborder and international flights at these two airports generated about \$36 million and \$35 million in tax revenues for Ontario in 2008 and 2009 respectively.

This revenue is credited to the Consolidated Revenue Fund. The monies collected are not re-invested in the provincial airport system in the same way that a portion of the vehicle fuel tax is reinvested in the road system.

Table 1 summarizes the current structure of aviation fuel taxes across Canada. If British Columbia follows through with its proposal to eliminate its aviation fuel tax on international flights, Ontario will be one of only five provinces that continues to charge this tax on transborder flights and one of four to charge this tax on international flights. While Manitoba imposes its tax on transborder and international passenger flights, it has removed the tax on transborder and international cargo flights.

¹ The total revenues for the province were \$56 million in Fiscal Year (FY) 2001; \$58 million in FY 2004 and \$67 million in FY 2008.

The US Government does not impose its aviation fuel tax of 1.3¢ per liter on international flights, and neither do most US states.²

TABLE 1: Aviation Fuel Taxes, Canada and Provinces (cents per liter)

	Domestic	International
Canada	4.0	0
Ontario	2.7	2.7
Newfoundland	0.7	0.0*
PEI	0.7	0.7
Nova Scotia	2.5	2.5
New Brunswick	2.5	0
Quebec	3.0	0
Manitoba	3.2	3.2**
Saskatchewan	1.5	0
Alberta	1.5	0
British Columbia	2.0	0**

*: Transborder flights are subject to the tax; international flights are exempt.

** : 1.5 cents per liter for domestic cargo flights, 0 cents per liter for transborder and international cargo flights

***: Proposal to eliminate fuel tax for all international flights

Sources: Federal Government and provincial government Public Accounts.

When Alberta’s aviation fuel tax was eliminated on transborder and international passenger and cargo flights, effective March 1, 2004, then Revenue Minister Greg Melchin emphasized:

“A competitive tax environment is vital to Alberta’s economy and eliminating the Alberta aviation fuel tax on international air traffic at Alberta’s two international airports will allow them to compete on a more level playing field with similar jurisdictions, including Seattle and Vancouver.”

Mark Norris, then Minister of Economic Development, added:

“Alberta’s international airports are key factors of economic and community development in the province and international air service contributes to the growth of the local and provincial economies...Eliminating the international component of the Alberta aviation fuel tax makes Alberta a more accessible and economical destination for visitors. In addition to benefiting the tourism industry, it also backs our airports’ efforts to attract more passenger and cargo services, makes our province an even more attractive location for business and supports the expansion of Alberta’s value-added industries.”

² North Carolina and Michigan are among the very few states which do impose an aviation fuel tax on international commercial flights. The following states that all have important hub airports, many of which compete directly with Pearson for international connecting traffic do not have an aviation fuel tax on international flights: Illinois, New York, Georgia, Washington DC and California.

At the recent Routes International 2010 Conference in Vancouver (September 19-21), then Premier Gordon Campbell announced that the British Columbia Government would introduce legislation to eliminate the aviation fuel tax on transborder and international commercial flights by April 1, 2012, a move that would cut costs collectively for the airlines by \$20 million a year. According to Campbell:

“This change would help YVR and B.C. markets as the preferred gateway to North America and the world, bringing tourists and added economic activity to our province from around the globe.”

In support of this initiative, Vancouver International Airport (YVR) will offer a five-year incentive program that will allow air carriers to add capacity to YVR without incurring additional landing and terminal fees. Larry Berg, the YVR CEO, stated:

“It’s expected that the incentive program will add the equivalent of eight to 10 new international daily flights, or approximately 1.1 million additional airline seats, over the next five years...Every new international long-haul flight into YVR generates between \$5 million and \$8 million in wages annually and contributes between \$8 million and \$15 million to B.C.’s GDP.”

1.3 YOW and YYZ

Table 2 shows the importance of Toronto Pearson Airport in both Ontario and Canada. YYZ and YOW accounted for about 84% of the total number of passengers at Ontario airports in 2008 and 2009, 97% of all transborder passengers, and 99+% of all international passengers at all Ontario airports. YYZ alone accounted for about 39% of all transborder passengers and 45% of all international passengers at all airports in Canada in 2008 and 2009.³

³ The Statistics Canada data differ from those reported by the major airports across the country. For example, in 2009, Pearson Airport reported 30.4 million passengers in total (5.1% more than Statistics Canada); Ottawa reported 4.2million passengers (3.5% more than Statistics Canada); Vancouver 16.2 million (4.4% more than Statistics Canada); Montreal 12.2 million (4.4% more than Statistics Canada); Edmonton 6.1 million (5.2% more than Statistics Canada); and Calgary 12.2 million (8.2% more than Statistics Canada). Part of the differences can be explained by the fact that the airports include non-revenue passengers such as air crews and those flying of point rewards in their totals, while Statistics Canada only counts revenue passengers. The differences do not change the principal conclusions derived from this table; namely, the importance of Pearson and Ottawa in Ontario, and the importance of Pearson in the national system of airports.

TABLE 2: Enplaned/Deplaned Passengers, Selected Airports, 2008 and 2009 (000s)

	Domestic	Transborder	Int'l	Total
Pearson				
2008	13,572	8,393	8,566	30,531
2009	12,390	7,788	8,760	28,938
Ottawa				
2008	3,135	705	317	4,157
2009	3,030	680	379	4,090
YYZ+YOW as % of Ontario				
2008	84.4%	97.5%	99.1%	91.1%
2009	83.1%	96.5%	99.4%	90.5%
YYZ as % of Canada				
2008	19.9%	38.9%	44.6%	28.0%
2009	18.1%	38.6%	45.2%	28.1%
Hamilton				
2008	471	24	54	549
2009	NA	NA	NA	NA
Total Ontario				
2008	19,790	9,327	8,967	38,084
2009	18,545	8,775	9,194	36,514
Vancouver				
2008	9,068	4,365	3,676	17,109
2009	8,356	3,762	3,386	15,504
Calgary				
2008	8,691	2,455	1,064	12,210
2009	7,835	2,321	1,100	11,256
Edmonton				
2008	4,954	929	349	6,232
2009	4,467	983	337	5,788
Montreal				
2008	5,026	2,826	4,312	12,164
2009	4,560	2,702	4,445	11,707
Total Canada				
2008	68,270	21,553	19,203	109,026
2009	63,489	20,201	19,399	103,089

Source: Statistics Canada, Air Traffic at Canadian Airports, 2009, Cat. 51-203-X, Table 1-2

Among the airlines serving Toronto Pearson Airport are the following: ANA, AeroSvit Airlines, Aeromexico, Air Canada, Air France, Air India, Air Jamaica, Air New Zealand, Air Transat, Air Wisconsin, Alaska Air Cargo, Alitalia, American Airlines, American Eagle, Asiana, Atlantic Southeast, Austrian Airlines, Avianca,

British Airways, CSA Cargo, Canjet, Caribbean Airlines, Cathay Pacific, Chautauqua Airlines, Comair - Delta, Commutair, Continental, Cubana, Delta Air Lines, EVA Air, El Al, Emirates, Enerjet, Etihad Airways, ExpressJet, Finnair, Iberia, Icelandair Cargo, Japan Airlines, Jet Airways, KLM, Korean Air, LAN Airlines, LOT, Lufthansa, Mexicana, Miami Air International, Pakistan Int'l, Pinnacle Airlines, Qantas Freight, Republic Airlines, Royal Jordanian, SAS-Scandinavian, SATA International, SWISS, Shuttle America, Singapore Airlines, Singapore Airlines Cargo, SkyWest Airlines, Skyservice, Sunwing Airlines, TACA/LACSA, TAROM-Romanian, Thai Airways, Thomas Cook Airlines, Transaero, Turkish Airlines, US Airways, United Airlines, and Westjet Airlines.

Table 3 highlights cargo traffic at YYZ in 2009. YYZ stands out as the major airport in cargo as well in Canada, especially in transborder and international cargo.

TABLE 3: Cargo Loaded and Unloaded at Toronto Pearson Airport, 2009 (tonnes)

	Loaded	Unloaded
Domestic	29,306	29,185
% of Canada	13.6%	13.7%
Transborder	36,273	52,002
% of Canada	47.7%	44.4%
International	61,432	82,439
% of Canada	44.8%	51.3%

Source: Statistics Canada, Air Traffic at Canadian Airports, 2009, Cat. 51-203-X, Table 2-2

Despite Toronto Pearson's critical position in the passenger and cargo segments of the aviation industry in Canada, there is no assurance that this airport will end up as an international gateway airport – a Tier 1 hub in the global system.

International gateway airports generate more value for their respective regional, provincial and national economies than regional hubs (Tier 2), local hubs (Tier 3), or stub airports.⁴ John Bowen has observed:⁵

“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.”

⁴ The different tiers are defined by several characteristics – total number of passengers and/or tonnes of cargo; total number of passengers per person in the catchment area of the airport; connectivity – number of non-stop destinations and geographic spread of destinations, number of spokes from the hub; importance and size of the hub carrier(s); and importance of airport in attracting companies.

⁵ John Bowen, “Airline hubs in Southeast Asia: national economic development and nodal accessibility”, *Journal of Transport Geography*, v. 8 (2000), p. 28, 37.

International gateway airports, with very few exceptions, have developed because major carriers use them as the principal hubs for their networks. Tables 4 and 5 set out the largest 35 airports in the world based on number of passengers and tonnes of cargo in 2008 – as pointed out in footnote 3, these are only two of the criteria for distinguishing the different levels of tiers of airports.

TABLE 4: Top 35 Airports by Number of Passengers, 2008 (millions)

Airport	City	Rank	Passengers	Hub carrier(s)	Pax/Pop
ATL	Atlanta	1	90.0	Delta	16.7
ORD	Chicago	2	69.4	United, American	9.1
LHR	London	3	67.1	British Airways	12.2
HND	Tokyo	4	66.8	Japan Airlines, All Nippon Airways	7.7
CDG	Paris	5	60.9	Air France	8.6
LAX	Los Angeles	6	59.5	United	6.4
DFW	Dallas	7	57.1	American	10.3
PEK	Beijing	8	55.9	Air China	4.1
FRA	Frankfurt	9	53.5	Lufthansa	26.8
DEN	Denver	10	51.2	United, Frontier	20.4
MAD	Madrid	11	50.8	Iberia	8.0
HKG	Hong Kong	12	47.9	Cathay Pacific	6.7
JFK	New York	13	47.8	American, Delta, JetBlue	5.6
AMS	Amsterdam	14	47.4	KLM	31.7
LAS	Las Vegas	15	43.2		23.2
IAH	Houston	16	41.7	Continental	8.8
PHX	Phoenix	17	39.9	US Air	9.3
BKK	Bangkok	18	38.6	Thai Air	3.1
SIN	Singapore	19	37.7	Singapore Airlines	7.8
DXB	Dubai	20	37.4	Emirates	23.5
SFO	San Francisco	21	37.2	United	11.4
MCO	Orlando	22	35.7		17.4
EWR	New York	23	35.4	Continental	
DTW	Detroit	24	35.1	Delta	7.9
FCO	Rome	25	35.1	Alitalia	8.5
CLT	Charlotte	26	34.7	US Air	20.4
MUC	Munich	27	34.5	Lufthansa	18.0
LGW	London	28	34.2	British Airways	
MIA	Miami	29	34.1	American	10.5
MSP	Minneapolis	30	34.1	Delta	10.5
NRT	Tokyo	31	33.5	Japan Airlines, All Nippon Airways	
CAN	Guangzhou	32	33.4	China Southern	
SYD	Sydney	33	33.3	Qantas	7.4
YYZ	Toronto	34	32.3	Air Canada	5.8
CGK	Jakarta	35	32.2	Garuda	3.6

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

TABLE 5: Top 35 Airports by Total Cargo, 2008 (000s of metric tons)

Airport	City	Rank	Cargo	Hub carriers
MEM	Memphis	1	3,695	FedEx
HKG	Hong Kong	2	3,661	Cathay Pacific
PVG	Shanghai	3	2,603	Shanghai Airlines, Air China
ICN	Incheon	4	2,424	Korean Airlines, Asiana
ANV	Anchorage	5	2,340	FedEx, UPS
CDG	Paris	6	2,280	Air France
FRA	Frankfurt	7	2,111	Lufthansa
NRT	Tokyo	8	2,100	Japan Airlines, Nippon Cargo
SDF	Louisville	9	1,974	UPS
SIN	Singapore	10	1,884	Singapore Airlines
DXB	Dubai	11	1,825	Emirates
MIA	Miami	12	1,807	America, FedEx, LAN
LAX	Los Angeles	13	1,630	
AMS	Amsterdam	14	1,603	KLM
TPE	Taipei	15	1,493	Eva Airlines, China Airlines
LHR	London	16	1,486	British Airways
JFK	New York	17	1,451	
PEK	Beijing	18	1,366	Air China
ORD	Chicago	19	1,332	American, United
BKK	Bangkok	20	1,173	Thai Air
IND	Indianapolis	21	1,040	FedEx
EWR	New York	22	887	Continental, FedEx
HND	Tokyo	23	852	Japan Airlines, Nippon Cargo
KIX	Osaka	24	846	Japan Airlines
LUX	Luxembourg	25	788	Cargolux
CAN	Guangzhou	26	686	China Southern, FedEx
KUL	Kuala Lumpur	27	667	Malaysia Airlines
DFW	Dallas	28	660	American
BRU	Brussels	29	659	
ATL	Atlanta	30	655	Delta
OAK	Oakland	31	622	FedEx
SZX	Shenzhen	32	598	Shenzhen Airlines, UPS
CGN	Cologne	33	578	FedEx
BOM	Mumbai	34	559	Air India
BOG	Bogota	35	548	Avianca
YYZ	Toronto	40	484	Air Canada

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

Two observations stand out. With the two exceptions on the passenger side, and three on the cargo side, each of the largest airports serves as a hub for at least one major airline. Hub carriers are important. YYZ barely makes the top 35 for passengers and ranks only 40th in terms of cargo.

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

Table 6 compares YYZ and YOW with airports in cities of comparable population. The comparisons are based on total number of passengers per population (pax/pop) – as noted in footnote 3, this is another criterion for distinguishing the various levels of tiers.⁶

TABLE 6: Comparison of YYZ and YOW with Other Airports of Comparable Population, 2008

City	Population (000s)	Hub carrier	Pax/Pop
Toronto	5,623	Air Canada	5.8
Atlanta	5,376	Delta	16.7
Dallas	6,300	American	10.3
Houston	5,728	Continental	8.8
Miami	5,415	American	10.5
Madrid	6,387	Iberia	8.0
Sydney	4,504	Qantas	7.4
Philadelphia	5,838	US Air	5.5
Washington	5,358	United, US Air	7.8
Ottawa	1,221		3.6
Amsterdam	1,497	KLM	31.7
Dubai	1,596	Emirates	23.5
Dublin	1,046	Aer Lingus	22.4
Salt Lake City	1,116	Delta	18.6
Memphis	1,286	Delta	8.5

Sources: Airport Council International North America

In almost all cases, the two Ontario airports fare worse than their comparator airports. For example, Toronto has fewer passengers per population than all of its comparators with the exception of Philadelphia, and Philadelphia is not the major hub for US Airways. 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.

Ottawa lags behind all of its comparator airports.

⁶ For cities with multiple airports, the total number of passengers is the sum of the passengers at each of the airports serving that city.

Yes, YYZ and YOW are important in Ontario, and YYZ is important in Canada, but neither is important globally yet. And the leakage to Buffalo does not help YYZ, Air Canada and the Ontario economy.⁷

1.4 Tourism

Airlines play an important role in facilitating tourism. Indeed, airlines are the focal point in an important value chain – globally and nationally. The value chain consists of:

- Manufacturers: airframes, engines, mechanical systems, computers, electronics, software;
- Aviation services: insurance, leasing/financing, aircraft maintenance, fuel suppliers, consultants, fixed base operators;
- Airports and services;
- Tourism; and
- Freight: forwarders, transport, warehousing, input to other industries.

The tourism industry in turn consists not only of air transportation, including airports, but also of the following sectors:

- Other transportation
- Accommodation
- Food and Beverage Services
- Recreation and Entertainment
- Travel Services

Table 7 highlights tourism GDP and total spending, including spending by non-resident tourists (exports of tourism services) in 2004. Tourism contributed 2.0% of Canada's GDP and 3.8% of total employment (616,600 jobs). Non-residents accounted for 30% (\$17.5 billion) of total spending by all tourists across Canada. The industries other than air transportation generated 89% of total tourism GDP, accounted for 82% of all tourism spending, and 84% of all tourism spending by non-residents in 2004.

TABLE 7: Tourism GDP and Spending by Industry, Canada, 2004 (\$ Billions)

	GDP	Total Spending	International Spending (Exports)
Transportation	\$5.1	\$20.9	4.8
Air Transportation	2.7	10.8	2.8
Accommodation	5.9	9.2	4.1
Food & Beverage Services	3.0	8.9	2.9
Other Tourism Industries*	3.9	9.8	2.3
Other Industries**	5.9	9.9	3.4
Total Tourism GDP	23.9	58.6	17.5

*: Includes recreation and entertainment services and travel services industries

** : Includes non-tourism industries that produce some commodities bought by tourists

Source: Statistics Canada, Canadian Tourism Satellite Account, 2004

⁷ Between 2000 and 2009, total passenger traffic at Buffalo Airport increased 25%. During this same period passenger traffic at Pearson increased only 5%.

Tourism is Ontario's seventh largest export with over \$21.4 billion in receipts and \$11.6 billion in tourism value added (2.2% of provincial GDP).

Tourism has continued to grow since 2004, with the exception of 2009, a recession year worldwide. Total tourism spending was \$71.5 billion in 2009, with \$14 billion spent on airfares.⁸ However, non-Canadian tourism expenditures have declined every year since 2004, falling from \$17.5 billion to \$14.2 billion.

TABLE 8: Tourism GDP and Spending, Canada, 2004-2009 (\$ Billions)

	GDP	Total Spending	Total Spending: Non-Canadians
2004	\$23.9	\$58.6	17.5
2005	25.3	62.3	16.9
2006	27.2	66.8	16.5
2007	28.6	70.8	16.2
2008	30.3	74.7	15.7
2009	29.0	71.5	14.2

Sources: Statistics Canada, Cansim Table 387-0010, "Tourism GDP", Quarterly, and Cansim Table 387-0001, "Tourism Demand in Canada", Quarterly

In 2008, average expenditures, excluding air transportation, by non-resident travelers in Canada, who stayed one or more nights were \$527 for US residents and \$1,404 for residents of other countries.⁹

Tables 9 and 10 summarize the total spending, excluding airfares and other transportation costs incurred to travel to Canada, and average spending per person-visit in 2008 by province for US residents and non-US residents. 46% of US residents traveling to Canada visited Ontario, but only 34% of residents of other countries did so. The US tourists spent \$2.7 billion in Ontario, \$428 per person-visit, and 40% of their total spending in Canada. Non-US tourists spent \$2 billion, \$973 per person-visit. Both US tourists and non-US tourists spent less on average in Ontario than they did on average across Canada.

TABLE 9: Trip Characteristics of US Residents Entering Canada and Staying One or More Nights, by Province Visited, 2008

	Person-visits (000s)	Spending (\$ M)	Avg. Spending (\$)
Ontario	6,210	2,661	428
% of Total	46.3	40.4	87.2
Atlantic	806	389	482
Quebec	1,837	1,067	581
Manitoba	242	135	559
Saskatchewan	139	81	584
Alberta	831	589	710
BC	3,345	1,660	496
Total	13,411	6,583	491

Source: Statistics Canada, International Travel, 2008, Cat. 66-201-X, Table 12

⁸ Jacobs Consultancy Canada Inc., "The Strategic Impact of the Canadian Aviation Based Travel and Tourism Industry on Canada's Economy", Prepared for The National Travel and Tourism Coalition, September 2010.

⁹ Statistics Canada, International Travel, 2008, Cat. 66-201-X, Table 10.

Approximately 24% of the US tourists who visited Ontario arrived by plane. 16% of these tourists came to Ontario for business, conventions or employment; another 21% came to visit friends and relatives; and the remaining 63% came for pleasure, recreation or holidays.

TABLE 10: Trip Characteristics of Residents of Countries Other than the US Entering Canada and Staying One or More Nights, by Province Visited, 2008

	Person-visits (000s)	Spending (\$ M)	Avg. Spending (\$)
Ontario	2,045	1,990	973
% of Total	34.3	31.5	91.8
Atlantic	274	246	897
Quebec	1,166	1,235	1,059
Manitoba	72	51	711
Saskatchewan	62	54	866
Alberta	810	858	1,059
BC	1,527	1,876	1,229
Total	5,955	6,310	1,060

Source: Statistics Canada, International Travel, 2008, Cat. 66-201-X, Table 12

Most of the non-US tourists who visited Ontario arrived by plane. But about 25% to 30% did so indirectly via the US – see Table 11. 16% of these tourists came to Ontario for business, conventions or employment; another 42% came to visit friends and relatives; and the remaining 42% came for pleasure, recreation or holidays. 50% of the non-US tourists to Ontario came from Europe, 28% from Asia, and 6% from South America.

TABLE 11: Visitors to Canada from Countries other than the US, 2006-09 (000s)

	2006	2007	2008	2009
Total	4,518	4,679	4,764	4,170
By Plane	3,904	4,037	4,061	3,051
Direct	3,020	3,129	3,197	2,285
Via US	884	908	864	766

Source: Statistics Canada, Cansim Table 387-0004, "International Travellers", Quarterly

Canada continues to record a deficit in the travel account in the balance of payments. The deficit has been increasing every year in bi-lateral trade with the US and with all other countries – Table 12.

TABLE 12: Balance of Payments in the Travel Account Between Canada and Other Countries, 2004-2008 (\$ Billions)

	2004	2005	2006	2007	2008
All Countries					
Receipts	17.0	16.7	16.6	16.5	16.1
Balance	-3.3	-5.2	-6.8	-10.0	-12.6
US					
Receipts	9.9	9.0	8.7	8.3	7.6
Balance	-1.2	-3.0	-4.3	-6.8	-9.0
Other					
Receipts	7.1	7.7	7.9	8.2	8.5
Balance	-2.1	-2.2	-2.5	-3.2	-3.7

Source: Statistics Canada, International Travel, 2008, Cat. 66-201-X, Table 1

Jacobs Consultancy concluded that the global travel and tourism industry is clearly important to Canada's economy. The World Travel and Tourism Council ranked Canada's travel and tourism economy ninth (of 181 countries) in absolute size worldwide, but only 87th in relative contribution to GDP, and 82nd in terms of long-term (10-year) growth. While tourism is important for Canada and Ontario, there appears to be ample room for further growth.

Jacobs Consultancy pointed out that air travel is particularly price sensitive in the leisure markets, and "even when ground transportation costs are factored in, leisure travellers will often choose to depart from a U.S. based airport to save money." They also emphasized that governments across Canada raise revenues from tourism through a variety of taxes and other means:¹⁰

"A study commissioned by Statistics Canada and the Canadian Tourism Commission concluded that in 2007, government revenue from tourism activities in Canada reached \$19.7 billion – of this, \$5.1 billion stemmed from spending by non-resident visitors to Canada. Total tourism spending in that year was \$70.8 billion, implying that every dollar spent by tourists generated \$0.28 on average for all three levels of government combined."

1.5 Economic Benefits of the Air Transportation Industry

The importance of the airline industry and the entire air transportation sector extends well beyond the tourism industry. This industry and this sector:

- Expand markets for companies, enabling them to exploit economies of scale and learning curves; Facilitate the international division of labor thus allowing for the more productive use of labor and other factors of production, and encouraging increased levels of investment by labor in their human capital; Spur competition within countries and across countries thus promoting innovation and higher levels of productivity growth; and Magnify 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.

¹⁰ Jacobs Consultancy Canada Inc., "The Strategic Impact of the Canadian Aviation Based Travel and Tourism Industry on Canada's Economy", Prepared for The National Travel and Tourism Coalition, September 2010.

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

Productivity growth continues to hover near the top of all governments' economic policy agendas. Without higher and sustained rates of productivity growth, every government will have difficulty achieving their fiscal goals and maintaining their social programs. The air transportation 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 transportation industry thrives and Canadian carriers and Ontario airports succeed in the North American and international markets.

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. Hidden taxes may not be apparent to consumers, but they do have significant effects on their expenditures and standards of living.

2. ECONOMIC AND REVENUE IMPACTS OF ELIMINATING THE FUEL TAX FOR TRANSBORDER AND INTERNATIONAL FLIGHTS

2.1 Gross Revenue Losses

As noted above, the Government of Ontario collected approximately \$53 million in aviation fuel tax revenues in 2009 from airline operations at the Ottawa Macdonald-Cartier and Toronto Pearson airports. Transborder and international flights at these two airports generated about \$35 million in tax revenues in 2009. According to the estimates for 2010, if the Government of Ontario were to eliminate the payment of the aviation fuel tax for all transborder and international flights, the revenue loss at YOW and YYZ would be \$37 million. Based on the data in Table 2, these two airports accounted for 98% of all transborder and international traffic at all Ontario airports in 2009. Thus, the total revenue loss for the Ontario Government might be just under \$38 million.

2.2 Potential Economic Impacts

There are several steps in estimating the potential positive economic impacts (incremental spending, GDP and employment) of eliminating the fuel tax for all international flights in Ontario. The detailed methodology is set out in Appendix A.

The elimination of Ontario's aviation fuel tax might result in an initial increase in the total number of passengers (enplaned and deplaned) at YYZ and YOW of up to 105,000 – 61,000 more international passengers and 44,000 additional transborder passengers. Not all would be non-Canadian passengers. According to the analysis in Appendix A, the elimination of the fuel tax might increase the number of non-Canadian tourists visiting Ontario by as much as 29,000 per year. The aggregate expenditures of these potential additional passengers consist of the additional airfares and the additional tourism expenditures. In order to estimate the potential economic impacts in Ontario, it is necessary to estimate the incremental airfares for NACC members only. The remaining airfares would accrue to foreign airlines operating at YYZ and

YOW. The total estimated incremental tourism expenditures in Ontario depend upon the proportions of the incremental transborder and international passengers that are non-Canadian.

Applying the output multipliers to the potential aggregate incremental air transport expenditures (\$17-\$25 million) and the tourism expenditures (\$15 to \$22 million) in Ontario yields a potential total economic output impact in Ontario ranging between \$50 million and \$74 million. The potential increase in Ontario's GDP, stemming from the elimination of the aviation fuel tax on all international and transborder flights, might range between \$23 million and \$33 million. The incremental GDP produced in Ontario as a result of the elimination of the tax might translate into 693 to 1,015 additional jobs.

2.3 Net Revenue Impacts

Just as there are several steps in estimating the potential positive economic impacts of eliminating the fuel tax for all international flights in Ontario, so too are there several steps in estimating the net revenue impacts. Appendix B describes the detailed methodology.

If I only consider the incremental traditional economic impacts from eliminating the aviation fuel tax on international flights, the Ontario Government would experience a net reduction in its revenues. GDP would not increase sufficiently to generate additional tax revenues for the government to fully offset the lost revenues needed to provide the stimulus to the airline industry. The additional tax revenues generated by the traditional economic impacts might total between \$2.1 and \$3.0 million in the first year, falling far short of the gross revenue losses of the Ontario Government.

However, when the catalytic effects and their impacts on government revenues are considered, the annual revenue losses do begin to decline.

3. CONCLUSIONS

There are at least four good reasons why the Government of Ontario should eliminate the 2.7¢ per liter aviation fuel tax on transborder and international flights.

First of all, the Government of Ontario is out of step with the federal government; several provincial governments; the US Government; and most US state governments. Ontario remains one of the few jurisdictions in Canada and the United States to levy the fuel tax on international flights.

The Government of Ontario recognizes the importance of transborder and international air travel for business and tourism since it has not imposed its sales tax on transborder and international flights. The Ontario Government continued to exempt such flights from the sales tax as it moved to harmonize its sales tax with the federal government's GST. So on the one hand, the government understands the importance of transborder and international air travel; but on the other hand, it seems to have difficulty to recognizing the importance.

Ben Cherniavsky, a leading airline analyst in Canada, and Benjamin Dachis, a graduate from the London School of Economics, commented in their 2007 CD Howe Commentary:¹¹

“A comparative assessment of this tax burden, which we undertake in this paper, reveals that the current tax treatment of airlines is inequitable and inefficient...Among the recommended reforms: fuel taxes, currently applied unevenly and inequitably across jurisdictions, should ideally be scrapped altogether, unless earmarked for either air infrastructure or environmental investment...The goal is to ensure that this sector of the economy is taxed on a level playing field with other transportation modes domestically and other airline sectors internationally. This would be a small step toward making our airlines more competitive internationally and less vulnerable to the cyclical downturns inherent in the business. And it will be an especially crucial change if we are to seek a more liberal market for air travel with other countries, particularly the US.”

Cherniavsky and Dachis added:¹²

“The wide variation in fuel taxes and differences in exemptions have a number of impacts. Firstly, provinces without fuel tax exemptions on international flights are less attractive to carriers connecting to international destinations...Provinces provide no aviation infrastructure, and provincial fuel tax flows into general revenue. Governments have no justification, currently, for these taxes...US federal jet fuel taxes are apportioned to the Airport and Airways Trust Fund, which finances air traffic control, airport improvements, and other aviation related infrastructure.”

Secondly, removing the tax on transborder and international flights could generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario could provide important stimulus to the tourism industries in the province and to the overall economy. As I pointed out above, the removal of this tax might lead, based on traditional economic impact analysis, to additional economic output of between \$50 and \$74 million, 19,000 to 29,000 more tourists per year and an additional 690 to 1,015 jobs in the province. The traditional economic impact analysis however, ignores the catalytic impacts of the airline industry on the economy.

Airports and airlines play important economic and social roles, and their continued expansion can contribute to productivity growth. 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,¹³ added catalytic impacts to the standard direct, indirect and induced impacts. They defined catalytic impacts as follows:¹⁴

¹¹ Ben Cherniavsky and Benjamin Dachis, “Excess Baggage: Measuring Air Transportation’s Fiscal Burden”, CD How Commentary No. 242, February 2007, p. 1.

¹² Ibid, p. 7, 8 and 9.

¹³ York Aviation and ACI, Europe, “The social and economic impacts of airports in Europe”, January 2004.

¹⁴ Ibid, p.5.

“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.

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:¹⁵

“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 economic and social impacts of the air transport industry greatly exceed the direct, indirect and induced effects.

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.¹⁶ Their 2005 study for Eurocontrol¹⁷ found that a 10% increase in the 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 European Union countries covered by their study.

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 labor productivity levels – a 10% rise in connectivity relative to a country’s GDP could boost labor productivity levels by 0.07%.¹⁸

¹⁵ OECD, European Conference of Ministers of Transport, Transport and Economic Development, Round Table 119, Report by J. Berechman, p. 115, 116.

¹⁶ Oxford Economic Forecasting, “The Contribution of the Aviation Industry to the UK Economy”, 1999.

¹⁷ Oxford Economic Forecasting, “The Economic Catalytic Effects of Air Transport in Europe”, prepared for Eurocontrol, 2005.

¹⁸ International Air Transport Association, Economics Briefing No 08, “Aviation Economic Benefits,” 2007.

Thus, the removal of the aviation fuel tax on transborder and international flights might lead to a modest increase in the productivity growth rates in the province and enhance the competitiveness of Ontario-based manufacturing and service companies.

Even a modest increase in the rate of productivity growth might be sufficient to generate future tax revenues that would more than pay for the aviation fuel taxes foregone annually by the Government of Ontario.

Thirdly, while the removal of the province's fuel tax on transborder and international flights might be viewed as only a small step in helping Pearson Airport continue to develop into a global hub – federal government policies play a much more substantial role – nevertheless, this would play a role, and with a change in federal government policies, Pearson's chances of becoming a global hub would greatly improve.

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 traveler, and for all companies that ship or receive goods by air.

Weidemann and Associates et al, have stated:¹⁹

“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 travelers 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.²⁰ Extrapolating these results to a domestic carrier with a large domestic and global network implies substantial benefits for travelers 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:²¹

“the value of time between departures reflects travelers' 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

¹⁹ 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.

²⁰ 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.

²¹ Steven Morrison and Clifford Winston, “The economic effects of airline deregulation,” Brookings (1986), p. 18, 35.

business travelers 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 travelers that is captured in our demand model suggests that significant benefits to these travelers can be generated by increases in the frequency of service...our qualitative conclusion regarding the welfare effects on travelers of deregulation is robust, with a reliable conservative quantitative estimate of annual benefits approaching \$6 billion. In addition, for all assumptions but the most liberal one regarding discount fare travel, the largest contribution to the welfare change comes from changes in departure frequency.”

Travelers prefer non-stop and direct, on-line connections to interline connections. Domestic carriers with expansive networks generate significant time-savings for travelers. Accessibility and connectivity are critical for externalities to be maximized. Airline links are important components of a city’s aspirations to world city status.

As the airline industry continues to evolve, we will probably move towards a global network consisting of 10 to15 gateway airports (Tier 1 hubs), 25 or so regional hub airports (Tier 2 hubs), a number of local hub airports (Tier 3) and hundreds of stub airports (the end-points of spokes from one or more of the other hub airports). 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.

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 Emirates is investing tens of billions of dollars to greatly expand their airports. 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.

A number of other studies have shown how gateway airports give their cities an enormous advantage in competing for talent and money in the global economy. So it comes as no surprise that the United Arab Emirates are investing heavily in the air transport industry, and China will not be far behind. Where will Canada and Ontario end up?

Brent Jang, a reporter for the Globe and Mail Report on Business, pointed out in a column published on November 27, 2010, that a record 2.3 million Canadians flew to or from the US border airports, with approximately 1.9 million flying out of Buffalo. Jang emphasized that:

“The loss of those passengers hurts Canada’s domestic airline industry, but it also has had a much wider impact. Local companies are losing the revenue that airport traffic generates. Businesses with far-flung operations are facing higher flying costs for employees who use Canadian airports. In an age where a top-notch air hub is seen as a vital ingredient in attracting enterprises to a region, Canada’s leading airports are finding it challenging to increase their passenger traffic.”

It will matter to Canadians whether they connect through Toronto or Vancouver; 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.

Every policy initiative that lowers the costs for the air transportation system and levels the playing field for this industry in Ontario and throughout the country matters!

A much more enlightened set of government policies at both the federal and provincial levels is needed if the members of 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, Toronto Pearson is unlikely to join the ranks of international gateways, with their significant economic benefits. Furthermore, productivity growth will be negatively impacted, creating a host of other problems for governments and the country.

Finally, as I show in Appendix B, the Government of Ontario's net revenue losses might begin to decline within a very short period of time. Part of the \$37 million in foregone tax revenues from eliminating the fuel tax on international and transborder flights at YYZ and YOW would be offset by tax revenues generated by the incremental GDP created by the elimination of the tax. When the catalytic effects and their impacts on government revenues are considered, the annual revenue losses decline. Thus, for a very small annual investment, the Ontario Government could generate significant economic benefits, including a modest increase in productivity growth. Indeed, the initial net revenue investments per job created might range between \$33,500 and \$50,000 – 35% to 55% less than the usual expenditure costs per job.

APPENDIX A: Methodology for Estimating the Economic Impacts

The starting point for estimating the economic impacts of eliminating the aviation fuel tax on transborder and international flights in Ontario is estimating the possible cost savings per passenger.

Data were made available on fuel purchases by airlines at both YYZ and YOW for 2008 and 2009 and the first 10 months of 2010. Passenger traffic data were available from Statistic Canada. I relied on these data, even though they differed from those reported by YYZ and YOW, because they excluded non-revenue passengers. I was able to estimate the average Ontario aviation fuel tax per passenger in 2009 using these data, by assuming that the average stage length of all international routes from both YOW and YYZ were approximately four times the average stage length of the transborder routes.

The estimated fuel taxes per passengers were as follows:

- For YYZ: \$6.26 for international flights and passengers; \$1.56 for transborder flights and passengers.
- For YOW: \$4.19 for international flights and passengers; \$1.05 for transborder passengers.

The GTAA provided their own estimates based on fuel consumption and passenger data for 2009. Their estimated fuel taxes per passenger were as follows: \$6.03 for international flights and \$2.19 for transborder flights. When I substituted the Statistics Canada passenger data for the GTAA data, and used the GTAA fuel consumption data, the estimated fuel taxes per passenger were: \$6.59 for international passengers and \$2.27 for transborder passengers. The estimates for international passengers are in line with those I produced. The transborder estimates are lower.

As a cross-check, I referred to the Air Canada data on their fleet (aircanada.com) in order to derive other estimates. Table A.1 summarizes the information of fuel capacity and total number of passengers for the various aircraft currently or recently in the Air Canada fleet. I supplemented these data with data from Boeing and Airbus on additional aircraft types.

TABLE A.1: Fuel Capacity, Passengers, Aviation Fuel Tax and Fuel Tax per Passenger, Various Aircraft

	Fuel Capacity (Liters)	Total Passengers	Fuel Tax per Passenger	Adjusted Fuel Tax per Passenger
Transborder*				
A319	23,859	120	\$5.37	4.03
A320	23,859	146	4.41	3.31
A321	26,692	174	4.14	3.11
E-175	11,671	73	4.32	3.24
E-190	16,209	93	4.71	3.53
B737-800**	26,020	162	4.34	3.25
CRJ-705	10,977	75	3.95	2.96
CRJ100/200	8,082	50	4.36	3.27
D-300	3,202	50	1.73	1.30
International				
B777-300ER*	181,280	349	14.02	12.27
B777-200LR*	202,287	270	20.23	17.70
B747-400**	216,820	416	14.07	12.31
B767-200ER**	90,770	224	10.94	9.57
B767-300*	90,547	211	11.59	10.14
A330-200***	139,100	253	14.84	12.99
A330-300*	97,530	265	9.94	8.69
A380***	310,000	525	15.94	13.95
A340-300***	141,500	295	12.95	11.33
A340-500*	212,617	267	21.50	18.81

Sources:

* Air Canada Fleet Facts, aircanada.com

** Boeing website

*** Airbus website

The single aisle aircraft, including the Bombardier regional jets and turbo-props, generally operate on transborder routes, although several also are used on international routes to the Caribbean, Mexico and Central America. The wide-body, dual aisle aircraft are used principally on longer-haul, international routes. Applying the 2.7¢ per liter tax to the fuel capacity and dividing by the passenger capacity, at least as configured by Air Canada, produced the estimates for the average fuel tax per passenger.

For the short-haul aircraft, a proxy for transborder routes, the average tax per passenger ranges between \$1.73 and \$5.37. For the international routes, the average tax per passenger ranges between \$4.14 and \$21.50.

I also adjusted the costs by assuming that actual fuel loads and passenger loads differed from 100% and from each other.²² In the case of transborder flights, it is probably reasonable to assume that because of the tax in Ontario, airlines economize on fuel loads at YYZ and YOW, carrying close to the minimums allowed for each flight, and taking on larger loads in the US. Thus, I assumed that for the types of aircraft likely to be used on transborder flights, fuel loads would be only 60% and passenger loads would average 80%. This resulted in scaling down the fuel costs per passenger estimates based on 100% fuel and passenger loads (see footnote 23) by 25%.

In the case of the international flights, especially since many go to the Caribbean, Mexico, Central America and Western Europe, I assumed that fuel loads might only be 70%, while passenger loads average 80%. This resulted in scaling down the fuel costs per passenger by 12.5%.

As a result, for the transborder routes, the average tax per passenger ranges between \$1.30 and \$4.03. For the international routes, the average tax per passenger ranges between \$3.11 and \$18.81.

Consequently, going forward I used the range of estimated Ontario aviation fuel taxes per passenger in Table A.2.

TABLE A.2: Aviation Fuel Tax per Passenger, Transborder and International, YOW and YYZ

	Transborder	International
YYZ		
Low	\$1.50	\$6.00
High	\$3.00	\$8.00
YOW		
Low	\$1.00	\$5.00
High	\$3.00	\$8.00

Source: Calculated by author

The average one-way airfares are set out in Table A.3.

TABLE A.3: Average One-Way Fares, Transborder and International, YOW and YYZ

	Transborder	International
YYZ	\$319	\$660
YOW	\$347	\$787

Source: NACC/IATA

Assuming that the entire savings from the elimination of the aviation fuel tax is passed on to consumers, the resulting percentage reductions in the average round-trip airfares at these two airports are summarized in Table A.4.

²² If fuel loads and passenger loads are both 80% for example, the resulting estimated fuel tax costs per passenger are the same as the estimates in Table A.1. If they are both 70%, the fuel tax costs per passenger estimates still remain the same.

TABLE A.4: Reductions in Average Round-Trip Airfares, Transborder and International, Resulting from the Elimination of the Aviation Fuel Tax per Passenger, YOW and YYZ

	Transborder	International
YYZ		
Low	-0.235%	-0.455%
High	-0.470%	-0.606%
YOW		
Low	-0.144%	-0.432%
High	-0.318%	-0.508%

Source: Calculated by author

To translate these possible reductions in transborder and international airfares into possible increases in the total number of transborder and international passengers at Ottawa Macdonald-Cartier and Toronto Pearson airports, I need an estimate of the price elasticity of demand since:

- (1) % change in number of passengers = price elasticity of demand for air travel * % change in average fares
- (2) increase in number of passengers = % change in number of passengers * current number of total passengers

where

- (3) price elasticity of demand = % change in number of passengers / % change in average airfares.

The Department of Finance conducted a review and analysis of 254 demand elasticity estimates from 21 studies.²³ Table A.5 provides a summary of the results. The median elasticity estimates are reported for each grouping of studies.

TABLE A.5: 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

²³ Canada, Department of Finance, "Air Travel Demand Elasticities: Concepts, Issues and Measurement" (www.fin.gc.ca/consultresp//Airtravel/airtravStdy_1e.html.)

I used the median estimate (-1.112) for the studies that accounted for inter-modal effects, since this was the one preferred by the Department of Finance. For comparison purposes, InterVistas estimated a price elasticity of -0.88 for transborder traffic and -0.95 for international traffic.²⁴ On the other hand, Jacobs Consultancy noted:²⁵

“IATA indicates that existing estimates of price sensitivity using averages of the past 15-20 years, will be underestimates. Even so, they show that leisure travel is already very sensitive, declining 15% in response to a 10% rise in price.”

This translates into a price elasticity of -1.5.

Table A.6 lists the passenger totals reported in Table 2 above for 2009. The passenger totals include both enplaned and deplaned passengers.

TABLE A.6: Total Transborder and International Passengers, YYZ and YOW, 2009 (000s)

	2009
YYZ	
Transborder	7,800
International	8,800
YOW	
Transborder	680
International	380

Combining the price elasticity (-1.112) together with the estimated percentage reductions in average round-trip airfares (Table A.4) and the passenger totals (Table A.6)²⁶ – as described in equations (1) to (3) – produces the estimates for the resulting incremental passengers in Table A.7.

TABLE A.7: Potential Increase in Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights

	YYZ	YOW	Total
Low Estimates			
International	44,278	1,339	45,617
Transborder	20,361	1,090	21,451
Total	64,639	2,428	67,067
High Estimates			
International	59,037	2,142	61,179
Transborder	40,722	3,269	43,991
Total	99,759	5,411	105,170

Source: Calculated by author

²⁴ InterVistas, “Estimating Air Travel Demand Elasticities”, prepared for IATA, 2007.

²⁵ Jacobs Consultancy Canada Inc., “The Strategic Impact of the Canadian Aviation Based Travel and Tourism Industry on Canada’s Economy”, Prepared for The National Travel and Tourism Coalition, September 2010.

²⁶ The larger of the totals for the two years for each of the transborder and international passengers were used for both YYZ and YOW.

The elimination of Ontario’s aviation fuel tax might result in an initial increase in the total number of passengers at YYZ and YOW of 105,000 – 61,000 more international passengers and 44,000 additional transborder passengers.

From here on in, I follow the methodology developed by InterVistas in their study for the Canada Airlines Council in order to derive estimates of the potential economic and employment impacts from eliminating the provincial fuel tax for all transborder and international flights in Ontario.

The aggregate expenditures of the potential additional passengers generated by eliminating the fuel tax consist of the additional airfares and the additional tourism expenditures. The potential additional airfares equal the average one-way airfares reported in Table A.3, times the incremental passengers at these two airports (Table A.7). The total estimated incremental airfares range between \$37 million (low estimates) and \$55 million (high estimates). But not all of these additional amounts accrue to the Canadian carriers (the members of NACC) operating at YYZ and YOW, and to the provincial economy.

In order to estimate the potential economic impacts in Ontario, it is necessary to estimate the incremental airfares for NACC members only. The remaining airfares would accrue to foreign airlines operating at YYZ and YOW. Data were provided that enabled me to separate out the NACC airlines from the non-NACC airlines, all being foreign airlines, operating at YYZ and YOW. Using the NACC airlines’ shares of the total number of transborder and international passengers at these two airports, I was able to estimate their aggregate share of the total potential incremental airfares – \$17 to \$25 million.

The resulting total estimated incremental tourism expenditures in Ontario depend upon the proportions of the incremental transborder and international passengers that are non-Canadian. I assumed that the split between Canadian and non-Canadian transborder and international passengers on NACC airlines was 70%/30%. On the non-NACC airlines, I assumed that the split was 20%/80%. These assumptions, together with the analysis that produced the results reported in Table A.7, also resulted in the following estimates of the total number of incremental non-Canadian passengers at YOW and YYZ combined.

TABLE A.8: Potential Increase in Non-Canadian Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights

	Total
Low Estimates	
International	26,864
Transborder	11,132
Total	37,996
High Estimates	
International	36,011
Transborder	22,672
Total	58,682

Source: Calculated by author

The total number of additional foreign tourists in Ontario each year would be half the totals in Table A.8 since these estimates are for the sum of enplaned (departing) and deplaned (arriving) passengers

(non-Canadian tourists). Thus, the potential increase in the number of foreign tourists in Ontario could range between 19,000 and 29,000 each year.

The potential additional tourism expenditures equal the average expenditures per person-visit in Ontario (Tables 9 and 10) for each of transborder (US residents) and international (non-US residents) tourists. This results in a range of \$15 million and \$22 million for the potential additional tourism expenditures of non-Canadians.

Adding the air fares and the tourism expenditures, the potential aggregate incremental expenditures in Ontario might range between \$32 and \$48 million.²⁷

To translate these potential incremental economic outputs in Ontario into total economic outputs, GDP and employment requires the use of multipliers. The traditional approach, used in many economic impact studies, involves indentifying and measuring each of the following: direct economic impacts, indirect economic impacts and the secondary or induced economic impacts.

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 study of the economic impacts of the Calgary International Airport:²⁸

“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:²⁹

“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

²⁷ I am implicitly assuming no leakages.

²⁸ RP Erickson & Associates, “The 2004 Economic Impact of the Calgary International Airport”, September 2005

, p. 7.

²⁹ InterVistas, “The Vancouver International Airport Economic Impact”, March 2006, p. 22, 23.

- 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.”

I use an approach similar to the ones employed by RP Erickson and InterVistas.

Statistics Canada has produced a set of national and provincial multipliers, based on 2006 data, for the air transport industry, as well as accommodation and food industries and the arts, entertainment and recreation industries. InterVistas used these same multipliers in their recent study, “The Elimination of Airport Rent: Return on Investment” (July 21, 2009), prepared for the Canadian Airport Council.

Table A.9 summarizes the multipliers for Ontario.³⁰ These are the multiplier values that I use.

TABLE A.9: Ontario Multipliers, 2006

	GDP	Output	Jobs
Air Transport	0.61	1.57	6.84
Accommodation and Food	0.78	1.53	23.56
Arts, Entertainment and Recreation	0.82	1.54	19.71

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

Applying the output multiplier to the potential aggregate incremental air transport expenditures (\$17 to \$25 million) and the tourism expenditures in Ontario (\$15 to \$22 million)³¹ yields a potential total economic output impact in Ontario ranging between \$50 million and \$74 million (Table A.10). The potential increase in Ontario’s GDP, stemming from the elimination of the aviation fuel tax on all international and transborder flights, might range between \$23 million and \$33 million. The incremental GDP produced in Ontario as a result of the elimination of the tax translates into 693 to 1,015 additional jobs.

TABLE A.10: Potential Total Impacts, Ontario GDP and Economic Output, Resulting from Elimination of Ontario Fuel Tax on International Flights (\$ Millions)

	GDP	Economic Output	Jobs
Low Estimates	\$23	\$50	693
High Estimates	33	74	1,015

Source: Calculated by author

³⁰ These are the within Ontario only multipliers.

³¹ For the incremental tourism expenditures, I used a simple average of the multipliers for the accommodation and food industries and the arts. Entertainment and recreation industries.

APPENDIX B: Methodology for Estimating the Revenue Impacts for the Government of Ontario

As noted in section 2.1, the Government of Ontario collected \$35 million in 2009 and will collect about \$37 million from its tax on aviation fuel used on transborder and international flights out of Ottawa and Toronto-Pearson airports in 2010. In section 2.2 and Appendix A, I estimated that eliminating this tax for international flights might lead to an increase in GDP in Ontario of between \$23 and \$33 million. If I only consider the incremental traditional economic impacts from eliminating the aviation fuel tax on international flights, the Ontario Government would experience a net reduction in its revenues. GDP would not increase sufficiently to generate additional tax revenues for the government to more fully offset the lost revenues needed to provide the stimulus to the airline industry.

But is it possible that when the catalytic effects are considered, eliminating the tax could spur the airline industry to generate GDP growth large enough to produce additional tax revenues to offset the initial revenue losses for the Ontario Government?

Table B.1 summarizes the ratio to GDP of four major Government of Ontario taxes – personal income tax (PIT), corporate income tax (CIT), retail sales tax (RST – now part of the HST), and the employer health tax (EHT) – for the years 2007 to 2009.

TABLE B.1: Ontario Government Tax Revenues as % of Ontario GDP, 2007-2009

	2007	2008	2009
PIT	4.4	4.4	4.1
CIT	2.2	1.1	1.0
RST	2.9	2.9	3.0
EHT	0.8	0.8	0.8
Total	10.2	9.2	8.9

Sources: Government of Ontario, Annual Budgets

I only use these taxes in the following analysis, and I assume the following GDP ratios for each of these taxes – the assumptions are based on the average values for 2008 and 2009:

- PIT: 4.2%
- CIT: 1.1
- PST: 3.0
- EHT: 0.8%
- Total: 9.1%.

Applying the 9.1% rate for the four taxes listed above to the incremental traditional GDP impacts (resulting from the elimination of the tax on aviation fuel used on transborder and international flights) generates potential new tax revenues for the Government of Ontario of between \$2.1 and \$3.0 million. It is clear that the traditional economic impacts alone fall far short of generating sufficient new revenues to compensate the Government of Ontario for their foregone revenues. Following this traditional analysis, the net costs to the Government of Ontario, using only YOW and YYZ in the analysis, might range between \$34 million and \$35 million annually.

I now expand upon the two cases to consider potential catalytic impacts. The first (case 1) involves the increase of GDP in Ontario of \$23 million combined with the OEF catalytic effect (discussed in section 3.0) of a long-run increase in productivity of 0.56%. The second (case 2) involves the increase in GDP of \$33 million combined with the OEF catalytic effect of 1.3%. In both cases I assume that the Government of Ontario will forego \$37 million in revenues starting in 2011.

The annual gross revenue losses start at \$37 million in 2011 and increase 1.5% per year – the assumed annual rate of increase in fuel consumption on transborder and international flights departing YYZ and YOW. The 1.5% assumption is based on a combination of continued growth in international air travel and improvement in fuel efficiency as airlines bring new planes into their fleets.

The incremental revenue gains start at \$2 and \$3 million for cases 1 and 2 respectively in 2011, and they are assumed to increase in the following years at the same rate of increase assumed for nominal GDP in Ontario (2.5% real and 2% for inflation – 4.6% in total per year).

Are the investments by the Ontario Government warranted?

In case 1, the estimated potential increase in the number of passengers in Ontario was 0.09% of the total number in Canada in 2009. 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 0.005% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.0003%.

Similarly, in case 2, the estimated potential increase in the number of passengers was 0.15% of the total number in 2009. Thus, I assumed that the potential catalytic effects would produce an increase of productivity of 0.019% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.0013%.

In order to estimate the incremental revenue effects for the government, it is necessary to estimate the incremental GDP generated by the catalytic effects. To do this I projected nominal GDP for the time period 2011 to 2025 assuming a constant growth rate of 4.6% per year. I then estimated nominal GDP for each case using annual growth rates equal to 4.6% plus the incremental productivity growth rates – in total, 4.6003% for case 1; 4.6013% for case 2. The resulting differences in GDP are presented in Table B.2.

TABLE B.2: Incremental GDP, Catalytic Effects of Eliminating the Aviation Fuel Tax on International Flights, Cases 1 and 2, 2011-2025 (\$ millions)

	Case 1	Case 2
2011	\$2	\$8
2012	4	16
2013	7	26
2014	9	36
2015	12	47
2016	16	59
2017	19	72
2018	23	86
2019	27	101
2020	31	117
2021	36	135
2022	41	154
2023	46	174
2024	52	196
2025	58	219

It is quite clear in this table that the catalytic effects are substantial. For example, by 2025 the catalytic effects alone contribute to an increase of \$58 million in GDP in case 1. This compares with the estimated initial incremental traditional impact of only \$23 million in 2011. The catalytic effects are even larger in case 2 – an increase in GDP of \$219 million by 2025.

Using the estimates of the catalytic impacts in Table B.2, I applied the 9.1% average tax rate to produce estimates of the catalytic-induced incremental revenues for the Ontario Government. These estimates are combined with those derived from the incremental traditional impact revenues and are presented in Table B.3.

TABLE B.3: Incremental Ontario Government Revenues, Combined Traditional Economic Impacts and Catalytic Effects of Eliminating Aviation Fuel Tax on International Flights, Cases 1 and 2, 2011-2025 (\$ millions)

	Case 1	Case 2
2011	\$2	\$4
2012	3	5
2013	3	6
2014	3	7
2015	4	8
2016	4	9
2017	4	10
2018	5	12
2019	5	13
2020	6	15
2021	6	17
2022	7	19
2023	8	21
2024	8	23
2025	9	26

In case 1, the total new revenues for the Ontario Government do not exceed the foregone revenues in any of the next 15 years. But as can be seen in Table B.4, the net revenue costs for the Government of Ontario do not exceed \$36 million in any year in case 1.

In case 2, the net costs max out at \$34 million and start declining in 2013. By 2025, the net cost to the government is down to \$20 million.

TABLE B.4: Net Revenue Position of Ontario Government, Cases 1 and 2, 2011-2025 (\$ millions)

	Case 1	Case 2
2011	-\$35	-\$33
2012	-35	-33
2013	-35	-32
2014	-35	-32
2015	-36	-31
2016	-36	-31
2017	-36	-30
2018	-36	-29
2019	-36	-28
2020	-36	-27
2021	-36	-26
2022	-36	-25
2023	-36	-23
2024	-36	-22
2025	-36	-20

In both cases, the Government of Ontario does take a hit in case. But are the investments worthwhile? I believe that they are given the longer-term benefits for the economy – enhanced productivity growth, incremental GDP, potential greater connectivity at YYZ and the very low costs per job created.