

**The Potential Economic Impacts of
Reducing the Federal Government's Ground Rents for
Toronto Pearson International Airport
and
Reducing the Federal Excise Tax on Aviation Fuel**

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Executive Summary

The air transportation industry generates, for all countries, and in particular for Canada given our geography and location, important economic benefits that go beyond the estimated employment, production and tax revenues created by this industry. These “externalities” stem from the higher rates of productivity and economic growth made possible by the industry’s contribution to the integration of markets and the time savings for both passengers and freight. In a recent study, IATA highlighted that “connecting businesses to global markets is vital for business productivity and economic growth...and new research shows a clear link between a country’s business productivity and connectivity to global markets.”

The air transportation industry links people, companies and markets. As a result of its facilitation of a more accelerated pace of economic integration both within and among countries, the air transportation industry:

- Expands markets for companies, enabling them to exploit economies of scale;
- 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;
- Expands the scope for tourism, thus generating more tourism-related employment and enhancing the importance of brands further contributing to the potential for leveraging economies of scale;
- Reduces the aggregate number of traffic accidents, fatalities and injuries worldwide for all modes of transportation.

The Air Transport Action Group has emphasized these contributions:

“Air transport facilitates world trade: air transport helps countries participate in the global market by increasing access to main markets and allowing globalisation of production. Air transport also encourages countries to specialize in activities in which they have a comparative advantage, and to trade with countries producing other goods and services.

Air transport boosts productivity across the global economy: improved transport links expand the market in which companies operate. As a result, companies are better able to exploit economies of scale thereby reducing costs, and to specialise in areas of comparative advantage. By opening up markets, air services expose companies to stiffer competition, encouraging them to become more efficient.

Air transport improves the efficiency of the supply chain, for example, many industries use air transport to shorten delivery times as part of their just-in-time delivery systems, enabling them to deliver products to clients quickly and reliably and to reduce costs.

Air transport can act as a spur to innovation by encouraging effective networking and collaboration between companies located in different parts of the globe. A good transport infrastructure can also encourage greater spending on research and development by companies – for example, increasing the size of potential markets allows the fixed costs of innovation to be spread over larger sales.”

The air transportation industry is thus essential to 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!

Yet, in Canada, this industry is treated as a cash cow by the Federal Government. In 2005, Ottawa collected \$303 million in ground rents from the eight major airports and \$144 million (48 percent of the total) from the Greater Toronto Airports Authority (GTAA) alone. If the current formula does not change, GTAA’s share of the total ground rents could increase to 63 percent by 2010. In addition, the Federal Government collected \$108 million across Canada from its excise tax on aviation fuel.

Overall in 2005, the federal and provincial governments extracted \$315 million, over and above their financial contributions, out of the air transportation sector, or approximately \$4.95 per passenger, while providing a net subsidy of \$185 million, or \$45.20 per passenger, for Via Rail. Since security for the air transportation sector is really a matter of national security, and government programs for safety and policy are likely to be inefficient, removing the CATSA operating and capital costs and 50 percent of safety and policy expenses from the calculations, results in the governments taking \$915 million out of this sector – approximately \$14.35 per passenger.

Transport Canada stated, quite clearly and correctly, 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.”

This sector therefore, should not be held back by unnecessary taxes. Lawrence Cannon, the Minister of Transport at the time (November 27, 2006), recognized “the legitimacy of” the concerns of Canadian airlines “about federal fees and costs affecting their industry” and “the need to ensure that these costs do not impede the air industry’s ability

to compete.” So if the Federal Government wants to maximize the benefits for Canada and Canadians of its Blue Sky policy, it will have to address these concerns.

In this report, we have examined the standard economic effects of reducing the excise tax by between 25% and 100%. This translates into savings of between \$0.95 and \$3.79 per domestic passenger. As well, we estimated the possible economic effects of reducing the ground rents for Toronto Pearson Airport (YYZ) by an average of \$58 million (approximately \$3.72 per passenger) per year.

The complete elimination of the federal excise tax on aviation fuel might result in as many as 422,000 additional passengers at Canadian airports. A reduction of \$58 million in the annual ground rents at Pearson might lead to an additional 214,000 passengers at YYZ. Altogether, the cut in ground rents and in the excise tax might generate an additional 636,000 passengers per year in Canada.

These additional passengers could stimulate as many as 4,213 additional full-time jobs. Furthermore, these additional passengers and jobs could increase GDP across Canada by \$359 million per year, and generate up to \$72 million per year in tax revenues for the Federal Government, offsetting a large part of the foregone revenues resulting from a reduction in the ground rents and the elimination of the excise tax.

While the standard economic effects of the proposed cuts in ground rents at YYZ and in the federal excise tax are substantial, it is important to note that any policy initiative that increases the likelihood that YYZ will become a key hub airport in the global air transportation network will generate significant, long-term productivity gains for the Canadian economy. Increases in direct connectivity between Canada and other parts of the world, both for passengers and cargo, and reductions in travel times because the connectivity is direct rather than circuitous through foreign hub airports are important contributors to productivity and productivity growth.

The Federal Government will have to choose between two courses of action. Either it can develop an air transportation policy that will provide the framework for Canadian carriers to thrive globally, the Blue Sky policy being part of this framework. This will ensure that Canadians are 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. This environment also will make Canadian airports more viable by generating more traffic for them.

Or it can continue to pursue the path of the past 25 years – one of confusion and lack of purpose – thus ensuring that there will be no Canadian airline among the major global carriers, or no Canadian airport among the major hub airports in the global network. Canadians will still be connected to global networks – via foreign airlines and via hubs such as Chicago, Dallas, Los Angeles, Miami, Minneapolis-St. Paul, New York, London, Frankfurt, Paris, Hong Kong, Singapore or Dubai. But it will take longer, be less convenient and be more expensive. The airports in Toronto and Vancouver will stagnate and all airports across Canada will find it difficult to cover their expenses.

The choice is obvious! The Federal Government must act quickly to introduce a new policy framework for this industry. The new policy framework must remove inter-transport mode distortions, and facilitate the development of strong, financially healthy and globally competitive Canadian airlines and hub airports that in turn will contribute to economic growth and maximize the economic and social benefits, locally, regionally and nationally, that can be produced by the air transportation industry.

Introduction: Two Key Questions

In 2005, Ottawa collected \$144 million in ground rents from the Greater Toronto Airports Authority, the operator of Pearson International Airport. According to the GTAA, the ground rents are expected to rise to \$167 million by 2010. In addition, the Federal Government collected \$108 million across Canada in 2005 from its excise tax on aviation fuel.

This report intends to address two questions related to these “taxes”:

- Are they supportive of the Federal Government’s policy objectives for the air transportation industry?
- What might be the economic impacts of reducing both of these taxes?

Ground Rents

In 2005, the Federal Government collected \$303 million in ground rents from the eight major airport authorities – Toronto (YYZ), Vancouver (YVR), Calgary (YYC), Edmonton (YEG), Winnipeg (YWG), Ottawa (YOW), Montreal (YUL), and Halifax (YHZ). For these airports collectively, the ground rents accounted for an average of:

- 24% of their total expenses, excluding rents;
- 34% of their aeronautical fees (landing fees and terminal charges);
- 64% of their airport improvement fees (AIFs); and
- 22% of their aeronautical fees and AIFs.

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 percent of total revenues, with Toronto, Vancouver and Montreal in the 12 percent bracket.

The formula is problematic because it creates a vicious circle for airports. Specifically, if 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 percent bracket, it must set the fee at \$113.65. So the 12 percent ground rate levy results in a markup of 13.6 percent.¹

Now we turn our attention to the fairness and efficiency of the ground rent regime for Pearson. A pragmatic starting point for consideration of these issues is a comparison of the finances among these eight major airports. This analysis will enable us to assess how

¹ The markup is $1/(1-x)$, where x is the rate for the ground rent.

Pearson compares, and will provide the initial step towards answering the first question posed above.

There are a number of comparisons that are useful, and several are set out in Tables 1 and 2. Of the total \$303 million collected in ground rents in 2005, \$144 million was collected from YYZ, or 48% of the total (see Table 2). The ground rents averaged \$4.80 per embarking (E) and disembarking (D) passenger at YYZ. Only for YVR were ground rents as large on a per passenger basis. For the other six airports, ground rents averaged between \$1.20 (YWG) and \$3.45 per passenger (YOW).

Table 1: A Comparison of the Fiscal Impacts of Ground Rents among the Eight Major Airports in Canada, 2005

| <i>Ground Rents</i> | <i>YYZ</i> | <i>YVR</i> | <i>YYC</i> | <i>YEG</i> | <i>YWG</i> | <i>YOW</i> | <i>YUL</i> | <i>YHZ</i> |
|------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| \$ millions | \$144.4 | 78.7 | 24.9 | 12.7 | 3.9 | 13.0 | 20.8 | 4.4 |
| Per passenger | \$4.80 | 4.80 | 2.45 | 2.80 | 1.20 | 3.45 | 1.90 | 1.35 |
| % of total revenues | 15% | 24 | 15 | 13 | 7 | 18 | 8 | 9 |
| % of aeronautical fees | 26% | 65 | 41 | 47 | 24 | 52 | 30 | 26 |
| % of AIF | 82% | 90 | 47 | 42 | 20 | 53 | 30 | 37 |
| % of aeronautical fees + AIF | 20% | 38 | 22 | 22 | 11 | 26 | 15 | 15 |

Sources: Airport Authority annual reports; passenger data from Transport Canada

On other comparisons, the relative financial burden of ground rents at YYZ tended to be in the middle of the pack in 2005 – the exception being ground rents as a share of AIFs, where YYZ had the second highest ratio among the eight major airports – 82 percent.

Table 2 provides another set of relative comparisons. In 2005, YYZ generated 48% of the total ground rents, although this airport accounted for only 36% of the total traffic. Only YVR also generated a disproportionate amount of ground rents. If we divide the percentage of ground rents by the percentage of passengers, the relative burden for YYZ is slightly greater than for YVR (1.33 vs. 1.30).

If the current formula does not change, YYZ’s share of the total ground rents could increase from 48% to 63% by 2010. All the other airports, with the exceptions of YWG and YHZ, could find themselves contributing relatively less in 2010.

Table 2: Distribution of Ground Rents (2005 and 2010) and Passengers (2005) among the Eight Major Airports in Canada

| | <i>2005</i> | <i>2005</i> | <i>2010</i> |
|------------|------------------------|--------------------------|--------------------------|
| | <i>% of passengers</i> | <i>% of ground rents</i> | <i>% of ground rents</i> |
| <i>YYZ</i> | 36% | 48% | 63% |
| <i>YVR</i> | 20 | 26 | 16 |
| <i>YYC</i> | 12 | 8 | 6 |
| <i>YEG</i> | 6 | 4 | 3 |
| <i>YWG</i> | 4 | 1 | 2 |
| <i>YOW</i> | 5 | 4 | 2 |
| <i>YUL</i> | 13 | 7 | 6 |
| <i>YHZ</i> | 4 | 1 | 2 |

Sources: Airport Authority annual reports

The data do suggest that the current ground rent regime is unfair for YYZ. Indeed, even some of the seemingly favourable comparisons for YYZ in Table 1 are misleading, since YYZ was the only Canadian airport that had been forced, either by the terms of its lease with Transport Canada, or through extraordinary circumstances,² to incur large amounts of debt. These in turn necessitated substantial increases in revenues, and thus contributed to larger payments of ground rents.

The new rent formula also fails the test of economic efficiency since there is no connection between the amount of rent paid and the imputed rental value of the bequeathed government assets and land. Under the current formula, the highest amount of rent is charged to the airports (in particular YYZ) that have expanded the most in the time since they were established as independent, not-for-profit airport authorities.

Despite the unfairness and inefficiency, have the ground rents hurt YYZ and its customers, especially the airlines? Since the ground rents have been passed onto the airlines, by raising their costs of operations at YYZ, the ground rents must have had a negative impact on the airlines at YYZ. Moreover, this must have diminished the role of YYZ in the global air transportation network.

In 2001, Pearson ranked as the 26th busiest airport in the world in terms of number of passengers. By 2005, YYZ had slipped to 29th. More telling is that in comparison to near-by competing³ hub airports, YYZ is the smallest and experienced the lowest rate of growth between 2001 and 2005 (Table 3).

Table 3: Global Rankings (2005) and Passenger Growth Rates (2001-2005), YYZ and Competing Hub Airports

² Because of the poor condition of Pearson’s infrastructure at the time of transfer, Transport Canada inserted a clause into Pearson’s ground lease requiring the authority to invest at least \$1.8 billion into capital improvements during the first 20 years of the lease. In addition, in the aftermath of the 1993 election, Pearson was encouraged in 1997 to buy Terminal 3, the only privately-owned major airport terminal in Canada, for \$719-million.

³ Competing as connecting points for international travelers; that is, for passengers traveling between North America and the other continents.

| <i>Airport</i> | <i>Global Ranking</i> | <i>Rate of Growth</i> |
|----------------------|-----------------------|-----------------------|
| Toronto Pearson | 29 | 6.8% |
| Chicago O'Hare | 2 | 13.5 |
| New York JFK | 13 | 43.0 |
| Minneapolis-St. Paul | 19 | 9.6 |
| Detroit | 20 | 12.7 |
| Newark | 22 | 11.1 |

Source: Airport Council International

While we cannot conclude that the relative decline of YYZ is the direct consequence of the higher relative burden of the ground rents, the future of YYZ as a major airport in the global network, especially with the introduction of the A380, which will be used to connect high volume hubs, and the B787, which will be used to by-pass hubs and connect many city-pairs directly, may be in jeopardy if it is unable to lower its costs. And the ground rents constitute the largest uncontrollable cost component for the airport, and a major component of its total costs (16 percent of total costs excluding ground rents).

Fuel Excise Tax

The federal excise tax is set at \$0.04 per litre for domestic travel only. Transport Canada in its 2005 Annual Report⁴ reported the following total number of passengers at the 26 NAS airports in Canada:

- Domestic: 28.5 million;
- Transborder: 19.8 million;
- International: 15.3 million.

Thus, the \$108 million collected in 2005, averaged about \$3.79 per domestic passenger.

The tax was introduced originally to finance airport infrastructure. When the airports were divested, the tax was maintained to help eliminate the budgetary deficit. Hence, since the mid 1990s, there has been no sound policy objective for this tax.

Of course, if the government decides to introduce a general, carbon-based tax in order to fulfill its commitments under the Kyoto Accord, then airlines operating in Canada might have to face a tax on aviation fuel. But in light of the positive economic externalities generated by the air transportation sector (see Appendix B), a good case can be made to exempt airlines from a carbon-based tax, and from all sector specific taxes.

Range of Cuts to be Considered

In this report, we will examine the economic effects of reducing the excise tax by between 25% and 100%. This translates into a savings of between \$0.95 and \$3.79 per

⁴ Transport Canada, Transportation in Canada 2005, Table 9-1. (www.tc.gc.ca/pol/en/report/anre2005)

domestic passenger based on the 2005 passenger totals. As well, we will estimate the possible economic effects of reducing the ground rents for YYZ by an average of \$58 million per year over the period 2006 to 2010. This figure is derived by removing the revenues required to cover YYZ's debt service costs, marked up by 13.5 percent, from the rent formula,⁵ and forgiving the SARS rent deferral.⁶ The \$58 million cut in ground rents translates into approximately \$3.72 per passenger⁷ at YYZ based on the estimates for 2006.

The need to invest in airport infrastructure was the driving force for the creation of the airport authorities. It is illogical to tax the investments made by the airport authorities on behalf of the people of Canada.

Question 1

The ground rent cuts for Pearson and the cuts in the excise tax on aviation fuel are necessary if the Federal Government is serious in achieving its objectives for the air transportation sector. As well, economic theory is clear that industries which create positive externalities should be the beneficiaries of subsidies – they definitely should not be subject to additional taxes.

Transport Canada stated, quite clearly and correctly, 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.” [See Appendix A for a review of studies which highlight the importance of the air transportation sector.]

This sector therefore, should not be held back by unnecessary taxes. Lawrence Cannon, the Minister of Transport at the time (November 27, 2006), recognized “the legitimacy of” the concerns of Canadian airlines “about federal fees and costs affecting their industry” and “the need to ensure that these costs do not impede the air industry's ability to compete.” So if the Federal Government wants to maximize the benefits for Canada and Canadians of its Blue Sky policy, it will have to address these concerns.

The Federal Government will have to choose between two courses of action. Either it can develop an air transportation policy that will provide the framework for Canadian carriers to thrive globally, the Blue Sky policy being part of this framework. This will ensure that Canadians are connected directly, conveniently and efficiently into global networks, thus enhancing their mobility, both for business and leisure, and their ability to transport

⁵ \$267 million in total over this five year period.

⁶ \$42 million in total, \$21 million between 2006 and 2010.

⁷ Departing passengers only.

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.

Or it can continue to pursue the path of the past 25 years – one of confusion and lack of purpose – thus ensuring that there will be no Canadian airline among the major global carriers, or no Canadian airport among the major hub airports in the global network. Canadians will still be connected to global networks – via foreign airlines and via hubs such as Chicago, Dallas, Los Angeles, Miami, Minneapolis-St. Paul, New York, London, Frankfurt, Paris, Hong Kong, Singapore or Dubai. But it will take longer, be less convenient and be more expensive. The airports at Toronto and Vancouver will stagnate and all airports across Canada will find it difficult to cover their expenses.

The choice is obvious! The Federal Government must act quickly to introduce a new policy framework for this industry. It can no longer use this sector as a cash cow, and the Federal Government can no longer continue to heavily subsidize rail service, a competing transportation mode.

Table 4, which presents a very conservative view of the accounting, shows that, in 2005, the federal and provincial governments extracted \$315 million out of the air transportation sector, or approximately \$4.95 per passenger, while providing a net subsidy of \$185 million, or \$45.20 per passenger, for Via Rail. Since security for the air transportation sector is really a matter of national security, and government programs for safety and policy are likely to be inefficient, removing the CATSA operating and capital costs and 50 percent of safety and policy expenses from the calculations, results in the governments taking \$915 million out of this sector – approximately \$14.35 per passenger.

Table 4: Revenues and Expenditures for Federal and Provincial Governments, Aviation and Via Rail, 2005 (\$M)

| | <i>Aviation</i> | <i>Via Rail</i> |
|--|-----------------|-----------------|
| Fuel excise tax – federal government | \$108.4 | 2.4 |
| Fuel excise tax – provincial governments | 172.8 | 2.7 |
| ATSC charge | 383.0 | 0 |
| Airport rents | 302.7 | 0 |
| Total government revenues | 1096.8 | 5.1 |
| Operating assistance | 0 | 169.0 |
| Aircraft services | 65.0 | 0 |
| Capital assistance program | 30.6 | 0.7 |
| Safety & policy | 173.0 | 20.6 |
| CATSA operating & capital costs | 512.8 | 0 |
| Total government expenses | 781.4 | 190.3 |
| Net | 315.4 | -185.2 |
| Total passenger journeys in | 63.7 | 4.1 |

| | | |
|-------------------|------|--------|
| Canada | | |
| Net per passenger | 4.95 | -45.20 |

Sources: Airport Authority annual reports; Via Rail annual reports; Transport Canada annual reports; Transport Canada provincial and federal fuel excise tax revenue data; Statistics Canada “Rail in Canada”, catalogue 52-216

A new policy framework must remove inter-transport mode distortions, and facilitate the development of strong, financially healthy and globally competitive Canadian airlines and hub airports that in turn will contribute to economic growth and maximize the economic and social benefits, locally, regionally and nationally. A good starting point will be to reduce the excise tax on aviation fuel and the ground rents at YYZ. It is tempting to include the remaining Air Transportation Security Charge to this list, but we do not do so in this report.

Question 2

Economic Impacts of Reducing YYZ Ground Rents

The methodology for estimating the potential economic impacts of reducing ground rents at Pearson and reducing the excise tax on aviation fuel is straightforward. However, a number of assumptions are required in the process.

The initial assumptions in the case of reducing the ground rents at YYZ are:

- the rent reductions will be passed on entirely to the airlines,⁸ and
- the airlines will pass on the resulting cost savings to passengers.

The reduction expected for 2006 is \$58 million, or approximately 14.2 percent of the total landing fees levied by YYZ in 2005. As noted above, this translates into a reduction of \$3.72 per passenger at YYZ (15.5 million passengers in 2006). With an estimate of the average fare at YYZ, we can calculate the percentage reduction in the average fares charged by the airlines for travel to and from YYZ.

For the first nine months of 2006, Air Canada’s total passenger revenues⁹ totaled \$6.8 billion.¹⁰ During this same period, Air Canada’s total available seat miles (ASMs) increased by 4.7 percent over the preceding period in 2005. Therefore, assuming that the number of passengers carried by Air Canada increased at the same rate during this period, the total number of passengers Air Canada carried during this nine-month period totaled approximately 23.4 million. The average fare turns out to be about \$288 for Air Canada.

⁸ The GTAA has committed that decreases in rent will be passed through to the airlines in the form of a landing fee reduction (November 15, 2005).

⁹ Includes Air Canada and Jazz.

¹⁰ Air Canada, 3rd quarter financial results – see Sedar filing by Air Canada.

Westjet's total revenues for 2006 are approximately \$1.8 billion.¹¹ Applying the estimated 19.1% growth in 2006 in Westjet's ASMs to the number of passengers carried in 2005, results in 11.2 million passengers for Westjet in 2006. This produces an average fare for Westjet of \$158.

Assuming that Air Canada's average fare is typical of other airlines operating at YYZ and competing on the transborder and international routes, and assuming that Air Canada and these other carriers account for 85% of the total traffic at YYZ (probably on the low side), leaving 15% for Westjet, produces an average fare at YYZ of \$269.¹²

The passenger revenues earned by the airlines do not represent the full fares paid by passengers. They do not include the AIFs, security taxes and sales taxes. Hence, another assumption is needed to convert the estimated percentage reduction in the average fares charged by the airlines into the percentage reduction in the actual gross fares paid by passengers.

Two assumptions are used; namely, that the average fares charged by the airlines account for either 90 percent of the gross fares, or 80 percent of the gross fares. For example, if an airline charges a net fare of \$269 for one-way travel between YYZ and another destination, the gross fare for passengers, using the 90 percent (80 percent) assumption, is \$299 (\$336). Therefore, the percentage reduction in the total average fares paid by passengers for travel to and from YYZ in the 90 percent (80 percent case) case equals 1.24 percent (1.11 percent).¹³

The estimated reductions in the average gross fares for passengers using YYZ are combined next with an estimate of the price elasticity of demand for air travel to produce estimates of the percentage increase in the number of passengers. That is, the percentage increase in the number of passengers is the product of the percentage reduction in average fares times the price elasticity of demand.

The Department of Finance¹⁴ conducted a review and analysis of 254 demand elasticity estimates from 21 studies. Table 5 provides a summary of the results. The median elasticity estimates are reported for each grouping of studies.

Table 5: Median Estimates of Own-Price Elasticities for Air Travel for Selected Groupings of Studies (Absolute Values)

| | |
|--|------|
| All studies 254 estimates | 1.12 |
| All short/medium haul studies 109 estimates | 1.15 |

¹¹ Westjet 3rd quarter financial results – see Sedar filing by Westjet.

¹² 85% times \$288 plus 15% times \$158.

¹³ \$3.72 divided by \$299 in the 90% case, \$336 in the 80% case.

¹⁴ Canada, Department of Finance, "Air Travel Demand Elasticities: Concepts, Issues and Measurement" (www.fin.gc.ca/consultresp//Airtravel/airtravStdy_1e.html).

| | |
|---|------|
| All long-haul domestic studies 36 estimates | 1.15 |
| All short-haul leisure travel studies 19 estimates | 1.52 |
| All cross-section studies 85 estimates | 1.33 |
| All time series studies 136 estimates | 0.85 |
| All studies less than 5 years' old 30 estimates | 0.85 |
| Studies that account for inter-modal effects 109 estimates | 1.11 |

In this report¹⁵ we use the median estimate (1.112) for the studies that accounted for inter-modal effects, since this was one of the set of studies and estimates preferred by the Department of Finance. This produces the following percentage and absolute increases¹⁶ in the total number of passengers at YYZ as a result of the reduction in the annual ground rents for YYZ of \$58 million:

- 90 percent case: 1.38 percent or 214,000 additional passengers;
- 80 percent case: 1.23 percent, or 191,000 additional passengers.

The next step involves translating the increases in the number of passengers into the resulting potential increases in total economic output, or GDP. The economic impact study prepared by InterVistas (March 2006) for the Vancouver International Airport Authority estimated that every “extra” million passengers through YVR generate approximately 1,240 additional person years of employment.¹⁷ Since a passenger can be either an embarking or a disembarking passenger, the estimated “additional” passengers at YYZ have to be doubled, since they represent only originating/embarking passengers, in order to produce an estimate of the “extra” E and D passengers.

Thus, the new passengers might generate an additional 532 “direct” jobs (see Appendix A for a definition of direct) in the 90 percent case or 473 “direct” jobs in the 80 percent case. According to the National Accounts data for Canada, at the end of the third quarter of 2006, GDP per employed person¹⁸ averaged \$86,600. Consequently, the additional YYZ passengers might have produced:

¹⁵ InterVISTAS found a more elastic response to the recent aviation security charge (ATSC) reported in their 2004 study “Aviation Taxes and Charges; International Perspectives”. These elasticity estimates were used in the 2006 IATA study “Impact of reducing crown rents on Toronto Pearson International airport” producing a larger increase in passenger numbers than those estimated in this study.

¹⁶ The absolute increases equal the percentage increases times 15.5 million passengers.

¹⁷ For comparison purposes, the 2004 economic impact study prepared for the Calgary International Airport Authority by RP Erickson & Associates estimated that within the Calgary area alone, each 1,000 E and D passengers would generate 6.5 full-time jobs. Since these were the total estimates, and the employment multiplier for this report was about 2.7, each 1,000 E and D passengers would generate 2.4 full-time jobs, or roughly twice the estimate in the YVR study.

¹⁸ Includes both full-time and part-time employees.

- 90% case: \$46 million in direct GDP;
- 80% case: \$41 million in direct GDP.

These same studies also provide estimates of the output and/or GDP multiplier to translate the direct effects into total impacts (see Appendix C). For the Canadian studies, the GDP multipliers ranged between 1.82 and 2.31. The output multiplier for the U.S. study was 2.63. The U.S. study has a higher multiplier because it measured the indirect and induced effects across the country; whereas, the Canadian studies measured these effects only across the greater metropolitan region surrounding the airport or across the province in which the airport was located.

Table 6 presents the potential total GDP impacts that might result from a reduction in ground rents at YYZ. The aggregate increase in GDP might range from \$75 million to \$121 million. Assuming that each dollar of GDP produces \$0.20 in tax revenues (income and sales taxes) for the Federal Government, then the potential annual increases in federal government tax revenues that might be generated by a reduction of \$58 million in the ground rents at YYZ might range between \$15 million and \$24 million.

Table 6: Estimated Total GDP Impacts Produced by a Rent Reduction at YYZ (\$ millions)

| <i>Multiplier</i> | <i>90% case</i> | <i>80% case</i> |
|-------------------|-----------------|-----------------|
| 1.82 | \$84 | \$75 |
| 2.31 | 106 | 95 |
| 2.63 | 121 | 108 |

Economic Impacts of Reducing the Federal Excise Tax

A similar methodology was used for estimating the potential economic impacts of reducing the federal excise tax on aviation fuel. Reductions of 25 percent and 100 percent in the excise tax are examined. These reductions equal approximately \$0.95 and \$3.79 per domestic passenger in 2005 respectively.

Using the same average fare assumptions as above for the ground rent reductions for YYZ, and considering again that the passenger revenues earned by the airlines do not represent the full fares paid by passengers, results in the following percentage reductions in the average fares charged by all Canadian airlines (Table 7).

Table 7: Estimated Percentage Reduction in the Total Fares Paid by Passengers on Domestic Trips (%)

| <i>Reduction in Excise Tax</i> | <i>Airline fares as % of Total Fares</i> | |
|--------------------------------|--|------------|
| | 90% | 80% |
| 25% | 0.32 | 0.28 |

| | | |
|-------------|------|------|
| 100% | 1.27 | 1.13 |
|-------------|------|------|

The estimated reductions in the average gross fares for passengers are combined with an estimate of the price elasticity of demand for air travel to produce estimates of the percentage increase in the number of passengers. The next step involves translating the percentage increases in the number of passengers into an absolute number of additional passengers because of the reduction in the excise tax on aviation fuel. Multiplying the percentage increases reported in Table 7 times the price elasticity of demand (1.124) times 29.9 million domestic passengers¹⁹ produces the potential increases, reported in Table 8, in the total number of passengers for 2006, as a result of a reduction in the excise tax.

The additional passengers that might be induced to travel as a result of the lower average fares stemming from a reduction in the federal excise tax on aviation fuel range from 93,700 (25 percent reduction in excise tax – from \$0.04 per litre to \$0.03 per litre) to 374,700 (100 percent reduction) in the 80 percent case; and from 105,400 (25 percent reduction) to 421,600 (100 percent reduction) in the 90 percent case.

Table 8: Estimated Increases in Passengers Produced by a Reduction in the Excise Tax (000s)

| <i>Reduction in Excise Tax</i> | <i>Airline fares as % of Total Fares</i> | |
|--------------------------------|--|------------|
| | 90% | 80% |
| 25% | 105 | 94 |
| 100% | 422 | 375 |

The next step involves translating the increases in the number of passengers into the resulting potential increases in total economic output. The direct job and GDP impacts, and the total GDP impacts are presented in Tables 9 and 10.

Table 9: Estimated Direct Job and GDP Impacts and Total GDP Impacts Produced by a 25% Reduction in the Excise Tax

| | <i>90% case</i> | <i>80% case</i> |
|--------------------------|-----------------|-----------------|
| <i>Direct Employment</i> | 261 | 232 |
| <i>Direct GDP (\$ M)</i> | \$23 | 20 |
| <i>Total GDP (\$ M)</i> | | |
| <i>Multiplier</i> | | |
| 1.82 | \$41 | 37 |
| 2.31 | \$52 | 46 |
| 2.63 | \$59 | 53 |

¹⁹ The 28.5 million domestic passengers reported for all NAS airports in Canada in 2005 increased by 5%.

A 25 percent cut in the federal excise tax might produce an increase in total GDP ranging between \$37 million (80% case) and \$59 million (90% case). The increase in total output could yield tax revenues for the Federal Government of between \$7 and \$12 million.

Table 10: Estimated Direct Job and GDP Impacts and Total GDP Impacts Produced by a 100% Reduction in the Excise Tax

| | <i>90% case</i> | <i>80% case</i> |
|--------------------------|-----------------|-----------------|
| <i>Direct Employment</i> | 1,046 | 929 |
| <i>Direct GDP (\$ M)</i> | \$91 | 80 |
| <i>Total GDP (\$ M)</i> | | |
| <i>Multiplier</i> | | |
| 1.82 | \$165 | 146 |
| 2.31 | \$209 | 186 |
| 2.63 | \$238 | 212 |

A 100 percent cut might result in an increase in total GDP between \$146 million and \$238 million. This could produce federal government tax revenues of between \$29 and \$48 million.

Conclusions

A reduction of \$58 million in the annual ground rents at Pearson, if the savings to YYZ are to be passed on entirely in lower fares, might lead to an additional 191,000 to 214,000 passengers at YYZ. A 25 percent reduction in the federal excise tax on aviation fuel, if the cost savings for the airlines are passed on entirely in lower fares, might lead to an increase of between 94,000 and 105,000 passengers. The complete elimination of this tax might result in an additional 375,000 to 422,000 passengers at Canadian airports. Altogether, the cut in ground rents and in the excise tax might generate an additional 285,000 (80% case and 25% cut in excise tax) to 636,000 passengers (90% case and 100% cut in excise tax) per year in Canada.

These additional passengers could stimulate an additional 1,375 to 4,213 full-time jobs.²⁰ Furthermore, these additional passengers and jobs could increase GDP across Canada by \$112 million to \$359 million per year.²¹ Tax revenues might increase by at least \$22 to \$72 million per year.

While the standard economic effects of the proposed cuts in ground rents at YYZ and in the federal excise tax are substantial, it is important to note that any policy initiative that increases the likelihood that YYZ will become a key hub airport in the global air

²⁰ The lower estimate is derived using the 80% case, a 25% cut in the excise tax and the low end multiplier for employment (1.95). The higher estimate is derived using the 90% case, a 100% cut in the excise tax, and the high end value for the employment multiplier (2.67).

²¹ The lower estimate is derived using the 80% case, a 25% cut in the excise tax and the low end multiplier for GDP (1.82). The higher estimate is derived using the 90% case, a 100% cut in the excise tax, and the high end value for the output multiplier (2.63).

transportation network will generate significant, long-term productivity gains for the Canadian economy. Increases in direct connectivity between Canada and other parts of the world, both for passengers and cargo, and reductions in travel times because the connectivity is direct rather than circuitous through foreign hub airports are important contributors to productivity and productivity growth.

Appendix A: Summary of Economic Impact Studies

U.S. Studies

1. DRI-WEFA, “The National Economic Impact of Civil Aviation”, July 2002

In this Report, DRI-WEFA pointed out (p. 3):

“Civil aviation has become an integral part of the U.S. economy. It is a key catalyst for economic growth and has a profound influence on the quality of life of populations around the globe. It integrates the world economy and promotes the international exchange of people, products, investments and ideas. Indeed, to a very large extent, civil aviation has enabled small community and rural populations to enter the mainstream of global commerce by linking such communities with worldwide population, manufacturing, and cultural centers.”

The Report estimated that in the year 2000, the total impact on the U.S. economy of the civil aviation industry exceeded \$900 billion and 11 million jobs.²² The total impact was broken down as follows:

- Direct impact: \$343 billion and 4.2 million jobs;
- Indirect impact: \$255 billion and 3.2 million jobs;
- Induced impact: \$305 billion and 3.8 million jobs.

2. Wilbur Smith Associates, “The Economic Impact of Civil Aviation on the U.S. Economy”, Update 2000, Report prepared for the FAA, April 2003

In their latest report for the FAA, Wilbur Smith Associates estimated that the commercial aviation industry in the U.S. generated US\$832 billion in economic output in the country and US\$467 billion in GDP (4.7 percent of total U.S. GDP) in 2000.

Commercial Aviation Economic Impacts, U.S., 2000 (US\$ Billions)

| | <i>GDP</i> | <i>Economic output</i> |
|-----------------|-------------------|-------------------------------|
| Direct | 90 | 123 |
| Indirect | 94 | 171 |
| Induced | 283 | 538 |
| Total | 467 | 832 |

The industry also accounted for over 8.5 million jobs throughout the U.S. economy in 2000. A closer look at their findings indicates the overwhelming importance of airlines in the whole picture:

²² The split was 88% commercial aviation and 12% general aviation.

- The \$106.4 billion in primary impacts by the airlines created 720,000 jobs. These primary impacts generated secondary impacts of \$192.7 billion and 1.5 million jobs (36 percent of the total economic impacts and 26 percent of all jobs created by the commercial aviation industry);
- The \$16.2 billion in primary impacts by the commercial airport operators and other airport businesses created 174,400 jobs. These primary impacts generated secondary impacts of \$33.4 billion and 287,900 jobs (six percent of total gross output and five percent of jobs);
- The \$166.6 billion in primary impacts by the airline passengers created 3.0 million jobs. These primary impacts generated secondary impacts of \$303.5 billion and 2.7 million jobs (56 percent of gross output and 67 percent of jobs);
- In total, 92 percent of the aggregate gross output of \$832 billion and 93 percent of the 8.5 million jobs can be linked directly to the airlines.

Canadian Studies

1. “The Economic Impact of Canadian Airports 2002”, produced for Airports Council International, North America

In 2001, airports across Canada supported over 300,000 jobs in Canada and generated \$34 billion in economic output as well as contributing \$4 billion in tax revenues.

Commercial Aviation Economic Impacts, Canada, 2001

| | <i>Output (\$ B)</i> | <i>Employment</i> |
|---------------|----------------------|-------------------|
| Direct | 18.5 | 143,000 |
| Total | 34.1 | 304,000 |

2. GTAA, Briefing Paper #3, “Economic impact summary” (September 2001)

According to the GTAA study, in 2000 the air transportation industry at Pearson Airport accounted for \$14 billion in revenue for local businesses and 138,000 jobs in the Greater Toronto Area (GTA), and \$3.9 billion in personal income and \$2.8 billion in tax revenues.

Summary of GTAA Economic Impacts, GTA, 2000

| | <i>Business revenue (\$ M)</i> | <i>Employment (FTE)</i> |
|-----------------|--------------------------------|-------------------------|
| Direct | \$7,680 | 70,752 |
| Indirect | 4,120 | 38,447 |
| Induced | 2,056 | 28,945 |
| Total | 14,036 | 138,144 |

Of the direct economic impact of \$7.7 billion, air carriers accounted for almost 50 percent (\$3.8 billion). Air cargo generated an additional 11 percent of the direct economic

impact, and air traveler services accounted for 25 percent. Airport operations represented only five percent of the total direct impact attributed to the GTAA.

It is reasonable to assume that air traveler services are the direct consequence of the aviation activities of the air carriers at Pearson. Thus, the air carriers and related air traveler services generated three-quarters of the direct economic impacts in the GTA and accounted for 54,000 (77 percent) of the direct full-time equivalent jobs.

3. SGE Acres Limited, “Halifax International Airport Economic Impacts 2005”, October 2006

The report concluded that the Halifax International Airport represents a major economic, fiscal and employment generator for the Halifax Regional Municipality and the province of Nova Scotia. The airport’s total contribution to economic output for the economy of the Halifax Regional Municipality was over \$680 million. This was composed of approximately \$375 million of direct output, \$100 million of indirect output and \$207 million of induced output.

The airport, airlines, air freight firms and other companies directly involved in the air transportation sector at the airport contributed \$1.15 billion in total economic output for the Nova Scotia economy. The airport and the air transportation industry generated 11,625 jobs in Nova Scotia (2.6 percent of total employment in the province), and personal, consumption and sales taxes for the province of \$73 million.

As well, the airport played a major role in tourism as a gateway to Nova Scotia, with tourists accessing the province via the airport generating \$464 million in tourism-related spending. This spending generated an additional 12,365 direct and indirect jobs in the province and \$64 million in tax revenues for the federal and provincial governments.

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

Every 1,000 E&D passengers support 6.5 full time jobs and generate \$533,000 in GDP in the Greater Calgary Area. The airport and air transportation industry based at the airport accounted for \$2.5 billion in labour income and \$4.9 billion in GDP in total in the Greater Calgary Area in 2004. Air carriers accounted for 45 percent of the labour income, and 37 percent of the total value added GDP

In addition, spending by visitors traveling by air to the Calgary area is an important contribution to the overall economic impact of the airport. The direct impacts of spending in the Calgary area by non-resident visitors arriving by air were \$210 million of labour income and \$511 million of GDP. The total impacts were \$389 million of labour income and \$1.1 billion of GDP.

5. Sypher-Mueller International, “2004 Economic Impact of the Ottawa International Airport”, April 2004

The study estimated that the total economic output in the Greater Ottawa area attributable to the airport was \$1.1 billion, and over 8,200 jobs were produced by the activities at the airport. Furthermore, every additional million passengers served by the airport would generate approximately 1,200 jobs.

Summary of Ottawa Airport Economic Impacts, Ottawa Region, 2004

| | <i>Business revenue (\$ M)</i> | <i>Employment (FTE)</i> |
|---------------|--------------------------------|-------------------------|
| Direct | \$541 | 3,914 |
| Total | 1,061 | 8,529 |

6. InterVistas, “The Economic Impacts of Edmonton International Airport”, 2001

The airport is an important generator of tax revenues for all levels of government. Total taxes paid by the airport community and passengers using the airport in 2000 were estimated at nearly \$100 million, with 79 percent of the taxes collected going to the Federal Government.

The study found that the airport contributed 8,275 jobs in total across the province, and generated \$1 billion in economic output and \$430 million in GDP in Alberta.

Summary of Edmonton Airport Economic Impacts, Alberta, 2000

| | <i>Employment</i> | <i>Output (\$ M)</i> | <i>GDP (\$ M)</i> |
|-----------------|-------------------|----------------------|-------------------|
| Direct | 3,479 | \$480 | \$189 |
| Indirect | 2,680 | 292 | 127 |
| Induced | 2,112 | 231 | 111 |
| Total | 8,217 | 1,003 | 427 |

7. InterVistas, “YVR Economic Impact”, March 2006

The on-going operations of YVR supported approximately 26,700 direct jobs in the Lower Mainland of B.C. The commercial carriers at YVR accounted for 42 percent of the total direct employment. Every extra million passengers through YVR generate roughly 1,240 additional person years of employment.

The direct economic impact of this employment on the provincial economy was: \$1.7 billion in GDP and \$3.4 billion in economic output. Including the indirect and induced effects, the total provincial impacts of operations at YVR were approximately 52,400 jobs; \$3.1 billion in GDP; and \$6.8 billion in economic output.

This study also estimated that the on-going economic activity at YVR contributed \$680 million annually in tax revenues to all levels of government, with the Federal Government being the largest recipient, receiving approximately 74 percent of the total tax revenues.

Summary of Vancouver Airport Economic Impacts, Lower Mainland B.C., 2004

| | <i>Employment</i> | <i>Output (\$ M)</i> | <i>GDP (\$ M)</i> |
|-----------------|-------------------|----------------------|-------------------|
| Direct | 26,688 | \$3,400 | \$1,700 |
| Indirect | 13,125 | 1,900 | 600 |
| Induced | 12,560 | 1,500 | 800 |
| Total | 52,373 | 3,100 | 6,800 |

Air Transport Industry: Airlines vs. Airports

The preceding studies all focused on the economic impacts of airports. However, there is a chicken and egg dilemma inherent in these studies. Should the impacts be attributed 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 transportation industry and they have always had a symbiotic relationship. But the airline operators have faced a disproportionate share of the cyclical and business risks in the industry, while the airports have largely been sheltered from most of these risks. So it would appear that the airlines have played a more critical role in the overall evolution of the industry.

The various economic impact studies emphasized the importance of the airlines. For example, the Sypher-Mueller study for Ottawa Airport pointed out:

“By facilitating the activity of the government, high-technology and tourism sectors – connecting them to global economic activity – the Ottawa Airport plays a key role in the Region’s ability to attract and retain business. Clearly, air transportation has facilitated local businesses ability to move its products around the world. But it has played a far more important role in bringing business managers together, enabling them to build the links, communications, and personal relationships necessary to achieve such a level of international business activity. This is especially true in the local high-technology and government sectors. These benefits cannot always be quantified but are of the utmost significance.”

The InterVistas study for the Edmonton Airport emphasized:

“Edmonton International Airport also provides the important service of connecting the region to the national and international economies. YEG air services link the regional and national economies and support development in many sectors of the local economy. Tourism in the region has benefited from increased connectivity with the U.S. market since “open skies” in 1995. Manufacturing firms are better able to service their customers with increased cargo services at YEG. New businesses

are attracted to the region by increases in passenger and cargo services at YEG. Existing businesses may find growth opportunities with increased air cargo and passenger access to the region through YEG.”

Finally, the InterVistas report for Vancouver noted that “YVR provides the essential infrastructure to link Vancouver and other B.C. communities to cities around the world, making it a critical component of Canada's trade and commerce with other countries, especially those in the Asia Pacific and NAFTA economies.”

Moreover, Berechman, in commenting on the economic impacts of the proposed Terminal 5 at Heathrow, argued that the economic impacts should not be attributed to the terminal. Instead, they will flow from the growth of the airlines using this terminal.²³

“Despite these significant employment effects from [Heathrow’s] Terminal 5 investment, a close examination of the methodology and results show some difficult questions... Amounting to 20 percent of the total employment attributed to the project, it is a direct function of the projected increase in air traffic at Heathrow. What this means is that the real generator of economic growth, in the form of induced employment, is a factor external to the project (growth in aviation) and not the Terminal 5 investment per se.”

Frybourg and Nijkamp have been even more forceful in suggesting that it is the operators of networks (sic, airlines) and not the infrastructure that creates positive economic impacts:²⁴

“A network is not just a sum of links and nodes, but an infrastructure configuration that is operated to provide services through one or several operators. A network is thus a value added configuration taking advantage of an essentially passive infrastructure. The positive impacts of infrastructure do not only derive from the mere creation of physical facilities, but from the services generated by the operators... Thus, a network employs passive infrastructure whose amount of added value is related to the efficiency of operators.”

Glossary of Economic Impacts

Direct economic impacts are measured by the expenditures made by firms directly involved in the provision of air transport services. These firms include: 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. The

²³ OECD, European Conference of Ministers of Transport, Transport and Economic Development, Round Table 119, Report by J. Berechman, p. 130.

²⁴ Michael Frybourg and Peter Nijkamp, “Assessing changes in integrated European transport network operations”, p. 16 in Kenneth Button, Peter Nijkamp, Hugo Priemus (eds.), *Transport Networks in Europe*, Edward Elger (Cheltenham UK).

direct impacts consist of three general classes of expenditures: payroll, capital expenses, and non-payroll operating expenses.

Indirect economic impacts are generated by the expenditures of visitors, who travel by air (commercial passengers and general aviation visitors), at hotels, restaurants, entertainment venues, etc. and the expenditures of travel agents.

The **secondary 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 household 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:²⁵

“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 single new dollar is magnified by respending of that dollar.”

²⁵ 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.

Appendix B: Air Transportation Sector Externalities

Source of Positive Externalities

The U.K. Civil Aviation Authority has pointed out:²⁶

“The economic effects of air transport extend beyond the direct contribution of the aviation and aerospace industries. Air transport links are vital to many businesses, whether for transporting goods or for business travel... Good air transport links have the potential to contribute to national productivity and aviation is of particular importance to the City of London and to tourism, our two largest exporters of invisibles. Air transport links also support foreign direct investment into and out of the U.K., often accompanied by improved technology and innovation... The development of a successful airport may also encourage the formation of clusters of industries. Many regions across the U.K. are keen to benefit from the economic effects associated with good air transport links. Not only can they benefit from jobs, there may also be scope to attract more aviation-related businesses, such as airline catering and training activities. They can further benefit from the range of businesses that use aviation services for passenger travel, air cargo, or both. The development of a regional airport may also help to stimulate tourism in that area by encouraging travelers to fly there.”

Hence, this industry’s economic impacts extend well beyond the standard impacts that have been measured in a number of studies summarized in Appendix A. These economic benefits, over and above the standard economic impacts, are the consequence of the positive externalities this industry produces for each country. The externalities stem from the higher rates of productivity and economic growth made possible by the industry’s contribution to the integration of markets and the time savings for both passengers and freight.

In a recent study IATA commented that “connecting businesses to global markets is vital for business productivity and economic growth...and new research shows a clear link between a country’s business productivity and connectivity to global markets.”²⁷

Berechman has argued:²⁸

“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

²⁶ Civil Aviation Authority’s Response to the Government’s Consultation Documents on Air Transport Policy, “The Future Development of Air Transport in the U.K.”, June 2003.

²⁷ “Airline Network Benefits”, 2006, www.iata.org/economics.

²⁸ OECD, European Conference of Ministers of Transport, Transport and Economic development, Round Table 119, Report by J. Berechman, p. 115, 116.

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.”

Vickerman has added that more comprehensive transportation networks surely must contribute to higher levels of productivity growth.²⁹

The air transportation industry is an important enabling mechanism for economic growth and development. The industry links people, companies and markets. As a result of its facilitation of a more accelerated pace of economic integration both within and among countries, the air transportation industry:

- Expands markets for companies, enabling them to exploit economies of scale;
- 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;
- Expands the scope for tourism, thus generating more tourism-related employment and enhancing the importance of brands further contributing to the potential for leveraging economies of scale;
- Reduces the aggregate number of traffic accidents, fatalities and injuries worldwide for all modes of transportation.

The Air Transport Action Group has emphasized:³⁰

²⁹ “Consider the impact of transport investment on market integration at the aggregate level... The process is analogous to that of the removal or reduction of tariffs or non-tariff barriers... The Cecchini Report argued that the Single Market would raise productivity through reducing the resources tied up in inventories, through promoting economic rationalization to achieve economies of scale and the removal of inefficiency and monopoly rents by strengthening competitive pressures, and by facilitating greater specialization along the lines of comparative advantage... the evidence seems to be clear that reducing barriers to trade raises total factor productivity (TFP) growth. Edwards (1998) finds robust and sizeable relationships across countries between their openness to trade measured in several alternative ways and TFP growth. It seems plausible that similar effects will result from substantial improvements in transport networks.” [OECD, European Conference of Ministers of Transport, Transport and Economic development, Round Table 119, Report by R. Vickerman, p. 155, 157; S. Edwards, “Openness, productivity and growth: What do we really know?”, *Economic Journal*, v. 108 (1998), 383-398].

³⁰ ATAG, “The economic and social benefits of air transport”, 2005.

“Air transport facilitates world trade: air transport helps countries participate in the global market by increasing access to main markets and allowing globalisation of production. Air transport also encourages countries to specialize in activities in which they have a comparative advantage, and to trade with countries producing other goods and services.

Air transport boosts productivity across the global economy: improved transport links expand the market in which companies operate. As a result, companies are better able to exploit economies of scale thereby reducing costs, and to specialise in areas of comparative advantage. By opening up markets, air services expose companies to stiffer competition, encouraging them to become more efficient.

Air transport improves the efficiency of the supply chain, for example, many industries use air transport to shorten delivery times as part of their just-in-time delivery systems, enabling them to deliver products to clients quickly and reliably and to reduce costs.

Air transport can act as a spur to innovation by encouraging effective networking and collaboration between companies located in different parts of the globe. A good transport infrastructure can also encourage greater spending on research and development by companies – for example, increasing the size of potential markets allows the fixed costs of innovation to be spread over larger sales.”

Baldwin and Peters have highlighted the importance of networks for acting as a catalyst for innovation.³¹

“Innovation is seen as a process that often evolves most successfully in a network where there is intensive interaction between the buyers and sellers of goods, services, knowledge and technology. This occurs because innovation depends on sources of ideas that are both internal and external to the firm... Customer and supplier sources of ideas for innovation are associated with the evolution of networks – networks through which ideas are exchanged, or more importantly, the fruits of research (coming from R&D or production departments) are transferred either forward to customers or backward to suppliers... It is clear that the innovation process depends very heavily on the diffusion of information from firm to firm.”

Transportation networks, in particular air transportation networks which are most important for connecting the high skilled individuals engaged in research and development activities that are essential for innovation, make possible the connectivity between customers and suppliers, among researchers, and among competitors. Without

³¹ John Baldwin and Alice Peters, “Innovation and connectivity: The nature of market linkages and innovation networks in Canadian manufacturing industries”, Statistics Canada, cat. 11F0019MPE No. 165 (May 2001), p. 1. Their research has found that in Canada “Some 85% of innovators used at least one of the external sources. The most frequently cited external source of new ideas comes from market-related partners (customers, suppliers and related firms), which is used by 68% of all innovators. Clients are important for 46% of firms... Many innovations are inspired by suggestions of clients and originate in firms that pay careful attention to the needs of their clients.”

connectivity, the pace of innovation would be much slower and subsequently, so too would the rate of productivity and economic growth.

Thus, according to Banister and Berechman³²

“It is clear that all countries need a well-developed transport infrastructure to compete internationally in new global markets. As trade barriers are reduced and as new markets are opened up, it is essential to have high levels of accessibility.”

The air transportation industry is essential to 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!

Estimates of Air Transportation Externalities

Recent research by Oxford Economic Forecasting (OEF) provides direct evidence of the value of the wider spin-off effects of the air transportation sector on investment and productivity throughout the European economy. The analysis is based on 10 years of data from 25 European Union countries. It shows that the wider, supply-side impact of the expansion of air services over the past decade has contributed an additional four percent to European GDP. The same scale of impact at the global level would imply that the contribution to world GDP could have been US\$ 1,550 billion in 2004. The same statistical research showed that the expansion of trade by air services over the past decade contributed an additional 0.6 percent to European GDP. This translated into an impact at the global level of around US\$ 230 billion in 2004.

Baum and Korte stated, in their study for the OECD European Conference of Ministers of Transport: “The fact that there are still very few figures on the benefits of transport is due to the practical difficulty of making the empirical assessment.”³³ They suggested that in order to calculate the contribution of the transport sectors to economic growth in Europe or elsewhere, one must employ the counterfactual hypothesis method. That is, one must answer the following question: “How would economic development have been different if it had been impossible to overcome distance by the use of transport, or only possible within a limited area?”

Productivity growth (both labour and total factor productivity) and the growth of the capital stock are major contributors to economic growth. Baum and Korte argued that the transport industry is critical for productivity growth.³⁴

³² David Banister and Yossi Berechman, “Transport investment and the promotion of economic growth”, *Journal of Transport Geography*, v. 9 (2001), p. 212.

³³ OECD, European Conference of Ministers of Transport, *Transport and Economic Development*, Round Table 119, Report by H. Baum and J. Korte, p. 25.

³⁴ *Ibid*, p. 23.

“Transport enables us to overcome distance, improves the division of labour, raises the productivity of the factors of production labour and capital and thereby increases prosperity, income and employment throughout the economy. The principal benefit of transport is the growth in GDP, made by possible by an increase in productivity. The productivity and growth effects of transport are the result of a great many individual factors, including:

- lower costs and prices for goods and services;
- new forms of division of labour in manufacturing and gains from reorganization;
- market expansion and economies of scale;
- new products and improved product quality;
- agglomeration economy;
- increased innovation and technical knowledge;”

As well, they argued that the transportation industry is critical for the accumulation of capital.³⁵

“The development of transport influences capital stock in that, on the one hand, real capital is formed in the transport sector and, on the other hand, some private-sector capital would not have been invested if it had not been possible to overcome distance.”

Baum and Korte, using the counterfactual hypothesis method, 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 transportation sub-sector accounted for two percent of the total contribution of productivity growth to the total growth of the German economy, and one percent of the total growth of the economy between 1950 and 1990.³⁶

They supported their findings with the following arguments:³⁷

“These results are derived from the fact that... the division of labour has been enhanced, markets have been extended, structural change has accelerated and competitiveness and international trade have increased as distance has been overcome. In this respect, the mobility of people and goods has led to higher productivity, growth and employment in the economy.”

Estimates of the contributions that the air transportation industry might have made towards economic growth in Canada have been derived in two ways.

³⁵ Ibid, p. 25.

³⁶ Ibid, p. 32, 33.

³⁷ Ibid, p. 46.

1. The Baum and Korte estimates for Germany have been “extrapolated” to Canada. The air transportation industry has been approximately 2.5-3.0 times as large a sector in Canada as it has been in Germany (relative to the total transportation sector) during the past 40 to 50 years. Thus, we assume that the air transportation industry’s contribution to aggregate economic growth in Canada during the past 40 years has been approximately 2.5 percent to three percent of the total growth of GDP during the past 40 years, or between \$29 and \$35 billion in GDP in 2003 (2.4 percent to 2.9 percent of GDP).

2. Real GDP in Canada increased 346 percent between 1961 and 2003. Labour productivity growth accounted for 63 percent of total real GDP growth during this period. The air transportation industry has played a key part in promoting productivity growth and thus overall economic growth in Canada. Hence, assuming that this industry has accounted for 2.5 percent, five percent or 10 percent of total labour productivity growth, this sector’s possible contributions to aggregate economic growth since 1961 could range as follows:³⁸

Estimates of Economic Growth Externalities Produced by the Air Transportation Industry, (2003 GDP)

| <i>% of Labour Productivity Growth</i> | <i>GDP (\$ billions)</i> | <i>% of GDP</i> |
|--|--------------------------|-----------------|
| 2.5% | \$15 | 1.2% |
| 5.0% | 30 | 2.4 |
| 10.0% | 59 | 4.9 |

The five percent assumption produces an aggregate estimate consistent with the extrapolation of the German study findings to Canada.

³⁸ Baum and Korte estimated that the air transport sector in Germany accounted for 2% of total productivity growth over a 40 year time span. Since the air transport sector in Canada has been approximately 2.5-3.0 times the relative size of this industry in Germany, a simple extrapolation of the German results suggests that the air transport industry may have accounted for between 5% and 7.5% of productivity growth in Canada.

Appendix C: Summary of Economic Impact Study Multipliers for Employment, Output and GDP

Summary of Multipliers

| <i>Study</i> | <i>Employment</i> | <i>Output</i> | <i>GDP</i> |
|--------------------------------|-------------------|---------------|------------|
| 2000: US – DRI-WEFA | 2.67 | 2.63 | |
| 2001: Canadian Airports | 2.13 | 1.84 | |
| 2000: Toronto | 1.95 | 1.83 | |
| 2005: Halifax | 2.17 | 3.07 | |
| 2004: Calgary | | | 2.31 |
| 2004: Ottawa | 2.18 | 1.96 | |
| 2001: Edmonton | 2.38 | 2.09 | 2.26 |
| 2004: Vancouver | 1.96 | 2.00 | 1.82 |