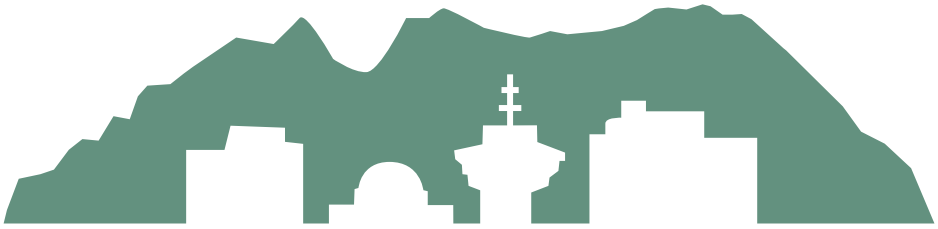

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Fiscal Transfers to Immigrants in Canada

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METROPOLIS BRITISH COLUMBIA

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Working Paper Series

Fiscal Transfers to Immigrants in Canada

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Abstract

One of the common issues contested by analysts and policymakers is whether immigrants fully pay—in terms of taxes—for the public services they use. The Fraser Institute recently released a study (Grady and Grubel 2011) that estimates the fiscal burden created by immigrants arriving in Canada between 1987 and 2004. The central finding of this study is that "in the fiscal year 2005/2006 immigrants on average received an excess of $6,051 in benefits over taxes paid", or, as high as $23 billion per year for the nearly four million post-1986 immigrants to Canada. This brief report identifies some of the issues related to the internal and external validity of the study performed by Grady and Grubel. There are a number of errors and inconsistencies in their analysis, and this report presents a corrected estimate of the fiscal transfer that they sought to estimate.

Grady and Grubel present results on the fiscal transfer between all Canadian residents and recent immigrants, as defined as the difference in taxes paid between these groups less the difference in benefits received. They find essentially no difference in benefits received between all Canadian residents and immigrants. We also find that immigrants who arrived between 1987 and 2004 received similar benefits on average to those received by all Canadian residents. Since benefits are found to be similar between groups, their result hinges on the large estimate of the difference in taxes paid, which is $6,161 per immigrant. However, the results presented by Grady and Grubel on taxes paid have arithmetic errors (apparently typographical in origin). Correcting these arithmetic errors results in a difference of $5,473 in taxes paid per immigrant.

Further, Grady and Grubel use an educated guess for the amount of property taxes paid by immigrants. However, data are available on the property values of immigrant households, and use of this data results in a difference of $5,089 in average per capita taxes per immigrant.

Grady and Grubel investigate only recent immigrants, who are younger than the immigrant population as a whole. To the extent that their youth results in lower incomes, and their lower incomes result in lower tax revenues, it would be more revealing to examine the entire immigrant population, so as to capture their entire life cycle of incomes. If one investigates the taxes paid by immigrants who entered Canada between 1970 and 2004 (instead of between 1987 and 2004), we see a difference of $2,470 per immigrant. We also find that immigrants who entered Canada between 1970 and 2004 receive an average of $345 *less* in benefits than do all Canadian residents.

We also argue that comparing the taxes paid by immigrants to those of all Canadian residents and computing a fiscal transfer is somewhat misleading because the group of all Canadian residents includes immigrants, therefore it is not a transfer from one group to another. Apart from Canadian-born residents and immigrants who entered Canada between 1987 and 2004, the sample of all Canadian residents also includes non-immigrant residents, immigrants who entered Canada before 1987, and immigrants who entered Canada in 2005 (with incomplete reported income and income tax). These people are irrelevant to the calculation of fiscal transfer and serve only to bias the results. A more relevant comparison would be between the taxes paid by Canadian-born people and those paid by immigrants. For immigrants who entered Canada between 1970 and 2004, this difference is $2,696 per immigrant. Turning to the benefits received, we find that these immigrants received an average of $554 *less* in benefits than did the Canadian-born.

Finally, some tax revenue goes to support pure public goods, such as National Defense and basic research. For public goods, the tax revenue generated from immigrants is essentially "free money" for the Canadian born. Previous estimates of how much revenue goes to public goods range from about 5% to 20%. Our preferred estimate, which assumes that public goods account for 10% of revenue, reduces the fiscal transfer to immigrants by $1692.

Adding all of this together, we find a fiscal transfer from Canadian-born people to immigrants of $450 per immigrant.

Executive Summary

According to Canada's Immigration Program (October 2004), Canada has the highest per capita immigration rate in the world. One of the common questions contested by analysts and policymakers is whether immigrants fully pay—in terms of taxes—for the public services they use. The Fraser Institute, a Canadian public policy think tank, has recently released a new study that estimates the fiscal burden created by recent immigrants into Canada.[1] Herbert Grubel, a senior fellow at the Fraser Institute, and Patrick Grady, an economist and consultant with Global Economics Limited, authored the study, which uses data from the 2006 Census to produce estimates of average income and income taxes paid by immigrants who entered Canada between 1987 and 2004. It also provides estimates of other taxes these recent immigrants paid and the value of government services they received.

The central finding of this study is that "in the fiscal year 2005/2006 immigrants on average received an excess of $6,051 in benefits over taxes paid. Depending on assumptions about the number of recent immigrants in Canada, the fiscal burden in that year is estimated to be between $23.6 billion and $16.3 billion." Based on these numbers, Grady and Grubel conclude that "to curtail this growing fiscal burden from immigration" Canada's immigration selection process should be reformed so the number and the composition of immigrants is determined by market forces and within a framework set and managed by the government. They note that their recommended policies would most likely decrease overall immigration flows significantly.

1 Immigration and the Canadian Welfare State, Fraser Institute, 2011, http://www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/publications/immigration-and-the-canadian-welfare-state-2011.pdf.

This report identifies some of the issues related to the internal and external validity of Grady and Grubel's study, and illuminates some of the important issues that must be taken into account in order to best assess the net impact of immigration on the Canadian economy.

Internal Validity

In our assessment of *internal validity*, we consider whether or not Grady and Grubel have correctly arrived at the number that they set out to estimate, beginning with a discussion of the calculation of the difference in taxes paid by immigrants.

Their result hinges on the large estimate of the difference in taxes paid, which is $6,161 per immigrant. However, the results have arithmetic/typographical errors. Specifically, in Table 2, there are several arithmetic errors due to inconsistencies between the text and the numbers that appear in the table. For instance, the text claims that "the ratio for corporate income tax is assumed to be 30%", while the ratio used in the table is 20%. Similarly, a few lines later, the text states "it was assumed that the amounts paid as property and related taxes and other taxes were related to total income." However, the ratio used to calculate the tax paid by immigrants on "property and related taxes" is 41%, which has nothing to do with the total income ratio (72% as shown in Table 1 of their data). Correcting these arithmetic errors results in a difference of $5,473 per immigrant. Grady and Grubel use an educated guess for the amount of property taxes paid by immigrants. They estimate that immigrants pay 72% as much in property tax per person, as do all Canadian residents. We prefer data to guesses. Since data are available on the property values of immigrant households, we are able to estimate the ratio of immigrant property tax payments to those of the

general population. In applying the available data, we find that immigrants who arrived in Canada between 1987 and 2004 pay 96% as much in property tax per person, as do all Canadian residents. Use of this data results in a difference of $5,089 per immigrant.

Grady and Grubel investigate only recent immigrants, who are both younger and, therefore, poorer than the immigrant population as a whole. Canada's income tax system is progressive, so people with lower incomes face somewhat lower tax rates than those with higher incomes. This results in a compound effect for the taxes paid by recent immigrants: they pay lower tax rates on their lower incomes, resulting in sharply lower total taxes paid. However, young people become older people who make more money, and recent immigrants become long-time residents who make more money. Thus, a more relevant investigation of taxes paid would include immigrants who have been here a long time and who are in their prime earning years, rather than just those who arrived relatively recently and are relatively young. If one investigates the taxes paid by immigrants who entered Canada between 1970 and 2004, the difference in taxes paid by immigrants and the average Canadian resident is $2,470 per immigrant.

Comparing the taxes paid by immigrants to those of all Canadian residents and computing a fiscal transfer is somewhat misleading, because the group of all Canadian residents includes immigrants, thus it is not a transfer from one group to another. Moreover, the sample of all Canadian residents also includes non-immigrant residents, immigrants who entered Canada before 1987, and immigrants who entered Canada in 2005 (with incomplete reported income and income tax). These people are irrelevant to the calculation of fiscal transfer and only bias the results, making the discussion of a fiscal transfer quite confusing. A more relevant comparison would be between the

taxes paid by Canadian-born people and those paid by immigrants. For immigrants who entered Canada between 1970 and 2004, this difference is $2,696 per immigrant.

Turning to the assessment of benefits received, Grady and Grubel use educated guesses to create estimates of the dollar cost of benefits received by immigrants. As noted above, data are better than guesses. Although most categories of expenditure are not available by immigrant status, we are able to use data to estimate the cost of education and housing benefits received by immigrants. We use proportions of the population enrolled in full-time schooling to compute the cost of education provided to immigrants, and we use estimates by Fleury (2007) to compute the cost of housing provided to immigrants. Otherwise, we use the same guesses as Grady and Grubel. Since immigrants often arrive in Canada with schooling, they are less intensive users of K-12 education than Canadian-born residents, which drives down the benefits they receive. We find that immigrants who entered Canada between 1970 and 2004 get an average of $554 *less* benefits per person than those born in Canada.

Finally, some tax revenue goes to support pure public goods such as National Defense and research. For public goods, the tax revenue generated from immigrants is essentially “free money” for the Canadian born. In their calculations of the fiscal burden of immigration, Grady and Grubel do not account for the fact that some of the services provided by the government are in the form of public goods, and therefore independent of the number of people they serve. Some of the services that appear in their calculations are, for example: protection of persons and property, foreign affairs and international assistance, and research establishments. Therefore, the cost of providing these services to immigrants is virtually zero; in fact tax payments by im-

migrants lower the average cost of the provision of these public goods to all taxpayers.

Previous estimates of the public goods share range from about 5% to 20% of revenue. With a public goods share of 4.4% (the lowest reasonable estimate), we find the fiscal transfer from Canadian-born people to immigrants arriving between 1970 and 2004 drops by $728. If this share is 10% or 15%, the fiscal transfer drops by $1,692 or $2,539, respectively. We take a share of 10% as our preferred estimate.

Overall, we find that in the 2005 tax year: (1) immigrants arriving between 1970 and 2004 paid an average of $2,696 less per immigrant in taxes than did Canadian born people; (2) these immigrants received an average of $552 less per immigrant in benefits than did Canadian born people; and (3) these immigrants contributed an average of $1,692 to public goods consumed by Canadian born people.

Adding it altogether, we find a fiscal transfer from Canadian-born people to immigrants who arrived in Canada between 1970 and 2004 of $450 per immigrant.

External Validity

Our discussion of external validity focuses on whether or not the static fiscal transfer (or, fiscal burden) adequately captures the costs and benefits of immigrants on the Canadian economy.

The quantitative analysis done by Grady and Grubel to estimate the fiscal burden created by recent immigrants adopts a static, cross-sectional approach. Since the population of natives and immigrants in Canada is clearly dynamic in nature, this approach fails to provide a picture of the long-term effect of

immigration on public finances. Auerbach and Oreopoulos (2000) argue that to avoid potentially misleading conclusions due to the methodological shortcomings of the static approach, a dynamic analysis that takes into account the future consequences of immigration needs to be adopted. Such an analysis would take into account, for example, the fact that immigrants have children, integrate over decades or generations, and change the structure of the labour market and society as a whole. Further, such an analysis would account for the fact that continued immigration provides some support in the future to a strained public pension system.

The main result, and the immigration policy reforms subsequently proposed by Grady and Grubel, is driven by the fact that immigrants have lower incomes than do Canadian-born workers. Lower incomes mean less tax is paid. However, there are other labour market effects that may be beneficial to Canadian-born workers, investors, and landholders. For example, the lower average wage of immigrants provides a cheap labour input for firms, which in turn generates higher profits. Indeed, Dustmann (2009) finds that immigrant workers raise the incomes of most native-born workers. Additionally, immigrants increase the production and variety of goods and services in the economy. This can result in increased innovation and specialization. Immigrants also provide a boost to international trade.

Thus, although we find a sizeable fiscal transfer of $450 per capita from Canadian-born people to immigrants who arrived between 1970 and 2004, we do not conclude that immigrants are “bad” for Canadian society, or that we need to reduce the flow of immigrants to Canada. We do conclude, however, that there is a sizeable cost in terms of lower tax revenue to having a large population of relatively poorly paid immigrants. Policies that improved

the labour market potential and performance of immigrants to Canada would therefore have a beneficial fiscal impact on the current residents of Canada.

1. Introduction

According to Canada's Immigration Program (October 2004), Canada has the highest per capita immigration rate in the world. One of the common issues contested by analysts and policymakers is whether immigrants fully pay—in terms of taxes—for the public service they use. The Fraser Institute, a Canadian public policy think tank, has recently released a new study that estimates the fiscal burden created by recent immigrants into Canada.[2] The study is authored by Herbert Grubel, a senior fellow at the Fraser Institute, and Patrick Grady, an economist and consultant with Global Economics Ltd.. It uses data from the 2006 Census to produce estimates of average per capita income and income taxes paid by immigrants who entered Canada between 1987 and 2004. It also provides estimates of other taxes these recent immigrants paid and the value of government services they received.

The central finding of this study is that "in the fiscal year 2005/2006 immigrants on average received an excess of $6,051 in benefits over taxes paid [from all Canadian residents]. Depending on assumptions about the number of recent immigrants in Canada, the fiscal burden [imposed by recent immigrants on all Canadian residents] in that year is estimated to be between $23.6 billion and $16.3 billion." Based on these numbers, Grady and Grubel conclude that "to curtail this growing fiscal burden from immigration" Canada's immigration selection process should be reformed so the number and the composition of immigrants is determined by market forces and within a framework set and managed by the government. They point out "the policies proposed are not opposed to immigration but rather are intended to replace the judgment of civil servants on who is to be admitted into Canada with judgments made by

2 Immigration and the Canadian Welfare State 2011.

private employers in Canada." However, they also point out that the recommended policies would most likely decrease the overall immigration level significantly. Following is a summary of the list of recommendations proposed by Grady and Grubel to reform the current immigration policy process:

- All current channels for obtaining immigrant visas should be terminated, except those applicable to refugee claimants. Limited entry into Canada for settlement will be granted only to those with a valid offer of employment in certain occupations decided by the federal government and with the assistance of private-sector employers.
- Individuals with valid job offers from Canadian employers will receive temporary work visas, which will be valid for two years or as long as they remain employed, and can be extended for two more years. Individuals who lose their job for whatever reason need to leave the country after a three-month grace period if they do not find another job.
- At the end of four years, these individuals can become landed immigrants, and become eligible to apply for full citizenship two years after they achieve this status.

This report identifies some of the issues related to the internal and external validity of the Grady and Grubel study and illuminates some of the important issues that require consideration in order to assess the net fiscal impact of immigration on the Canadian economy. We also re-calculate the average per capita fiscal cost imposed by immigrants by using a more appropriate sample and more accurate estimates. Our results suggest that once a more appropriate cohort of immigrants is used and the right comparison group is selected, and once we use more accurate estimates of per capita taxes paid by immigrants and adjust for the contribution of immigrants in provision of public

goods, the average per capita fiscal cost imposed by immigrants on Canadian-born residents is $450.

This paper is organised as follows. The next three sections consider how to estimate the taxes paid, and benefits received, by immigrants to Canada. The section that follows considers how to aggregate these numbers, while accounting for the funding of public goods, into estimates of "fiscal transfers" to immigrants. The final sections assess the value of fiscal transfer estimates in order to understand the place and value of immigrants in the Canadian economy and suggest that, while interesting, fiscal transfer estimates reveal only part of the contribution of immigrants to Canadian economic performance.

2. Arithmetic Errors---Inconsistencies between text and tables

Looking at Table 2, where Grady and Grubel estimate the difference in average per capita taxes paid by immigrants [1987-2004] and all Canadian residents, several inconsistencies between the text and the numbers appear:

- The text (page 6, the line before the end line) claims that "the ratio for corporate income tax is assumed to be 30%", while the ratio used in the table is 20%.
- To justify the use of 30% as the ratio for corporate income taxes (although they end up using 20% in their table), Grady and Grubel argue that "according to the PUMF data, the [recent] immigrants' investment income is only 41% of the average of all Canadians and that this probably includes a disproportionate amount of investment other than corporate stocks."

TABLE 1

	(1) Average Income	(2) Average Income Tax Paid	(3) Average investment income	(4) Number of individuals in school and below the age of 20 (% in parenthesis)	(5) Number of individuals in school and above the age of 19 (% in parenthesis)	(6) Average percentage difference in value of dwelling (compared to Canadian-born residents) [proportion owner in parenthesis]	(7) Average percentage difference in gross monthly rent (compared to Canadian-born residents) [renter proportion in parenthesis]	(8) Weighted average of the percentage difference in value of dwelling and gross monthly rent	(9) Number of observations in each sample (proportion in the total population in parenthesis)
(1) Immigrants (1987-2004)	$25,396	$3,437	$672	4,855 (7.5%)	10,868 (16.8%)	-2.2 % (56.5%)	-5% (43.5%)	-3.4%	64,792 (9.3 %)
(2) Immigrants (1970-2004)	$31,290	$4,865	$1,058	4,861 (5%)	13,339 (13.5%)	3.5% (64.6%)	-5.4% (35.4%)	0.3%	98,793 (14.2 %)
(3) All Canadian residents	$35,057	$5,995	$1,472	46,168 (6.6%)	79,229 (11.5%)	N.A.	N.A.	N.A.	692,509 (100 %)
(4) Canadian-born residents	$35,704	$6,222	$1,427	40,050 (7.5%)	59,145 (11.3%)	N.A.	N.A.	N.A.	529,207 (76.4 %)
(5) non-immigrant residents or pre-1987 immigrants	$38,893	$6,652	$2,314	915 (1%)	8,462 (8.9%)	7.4% (73.26%)	-1.7% (26.74%)	5%	94,845 (13.7 %)
(6) non-immigrant residents or pre-1970 immigrants	$36,866	$6,132	$2,603	909 (1.5%)	5,995 (9.8%)	6.6% (71.88%)	0.5% (28.12%)	4.9 %	60,844 (8.8 %)
(1)/(3)	72.4%	57.3%	45.6%	113.6 %	146%	N.A.	N.A.	N.A.	N.A.
(1)/(4)	71.1%	55.2%	47%	100%	148%	N.A.	N.A.	N.A.	N.A.
(2)/(3)	89.2 %	81.1%	71.8%	75.7%	117%	N.A.	N.A.	N.A.	N.A.
(2)/(4)	87.6%	78.1%	74%	66%	119%	N.A.	N.A.	N.A.	N.A.
(5)/(4)	109%	107%	162%	13%	79%	N.A.	N.A.	N.A.	N.A.
(6)/(4)	103%	98%	182%	20%	87%	N.A.	N.A.	N.A.	N.A.

*Numbers reported in columns (1) to (9) are all calculated using the 2006 Census data.
**Numbers reported in column (6) are generated by regressing natural logarithm of value of dwelling on an indicator (which is equal to 1 for the relevant reference group, as specified in different rows of the table, and equal to zero for Canadian-born residents as the comparison group) and a set of controls for province of residence and Census Metropolitan Areas within each province (33 indicators). The numbers reported in column (7) are generated similarly, with natural logarithm of gross monthly rent as the dependant variable.

TABLE 2

PANEL A: (TABLE 2 IN GRUBEL AND GRADY) TAXES PAID BY ALL CANADIAN RESIDENTS AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1987-2004) as % of *all Canadian residents*	(6) Dollars per capita paid by immigrants (1987-2004) (4)*(5)	(7) Difference ($) in per-capita tax (6) – (4)
Personal income taxes	180,757	34.7	5,720	57	3,260	-2,460
Health & social insurance levies	87,354	16.8	2,764	100	2,764	0
General sales taxes	68,538	13.1	2,169	72	1,561	-607
Corporate income taxes	57,859	11.1	1,831	20	366	-1,465
Property & related taxes	51,417	9.9	1,627	41	677	-960
Other taxes	75,510	14.4	2,390	72	1,721	-669
Total	521,435	100.0	16,501	N.A.	10,340	-6,161

PANEL B: TAXES PAID BY *ALL CANADIAN RESIDENTS* AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.
Correcting for inconsistencies in Grubel and Grady (changes are marked in bold).

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1987-2004) as % of *all Canadian residents*	(6) Dollars per capita paid by immigrants (1987-2004) (4)*(5)	(7) Difference ($) in per-capita tax (6) – (4)
Personal income taxes	180,757	34.7	5,720	57	3,260	-2,460
Health & social insurance levies	87,354	16.8	2,764	100	2,764	0
General sales taxes	68,538	13.1	2,169	72	1,561	-607
Corporate income taxes	57,859	11.1	1,831	**30**	**549**	**-1,282**
Property & related taxes	51,417	9.9	1,627	**72**	**1,171**	**-456**
Other taxes	75,510	14.4	2,390	72	1,721	-669
Total	521,435	100.0	16,501	N.A.	**11,027**	**-5,473**

PANEL C: TAXES PAID BY *ALL CANADIAN RESIDENTS* AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.
Changes in panel B + Using a more accurate estimate for *property & related taxes* paid by immigrants (changes are marked in bold).

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1987-2004) as % of *all Canadian residents*	(6) Dollars per capita paid by immigrants (1987-2004) (4)*(5)	(7) Difference ($) in per-capita tax (6) – (4)
Personal income taxes	180,757	34.7	5,720	57	3,260	-2,460
Health & social insurance levies	87,354	16.8	2,764	100	2,764	0
General sales taxes	68,538	13.1	2,169	72	1,561	-607
Corporate income taxes	57,859	11.1	1,831	30	5,49.3	-1,282
Property & related taxes	51,417	9.9	1,627	**95.6***	**1,555***	**-72**
Other taxes	75,510	14.4	2,390	72	1,720	-669
Total	521,435	100.0	16,501	N.A.	**11,411**	**-5,089**

PANEL D: TAXES PAID BY *ALL CANADIAN RESIDENTS* AND IMMIGRANTS [1970-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.
Changes in C + Using a more appropriate cohort of immigrants [1970-2004] as the reference group, adjusting estimates accordingly (changes marked in bold).

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1987-2004) as % of *all Canadian residents*	(6) Dollars per capita paid by immigrants (1970-2004) (4)*(5)	(7) Difference ($) in per-capita tax (6) – (4)
Personal income taxes	180,757	34.7	5,720	**81**	**4,633**	**-1,087**
Health & social insurance levies	87,354	16.8	2,764	100	2764	0
General sales taxes	68,538	13.1	2,169	**89**	**1,930**	**-239**
Corporate income taxes	57,859	11.1	1,831	**52****	**952**	**-879**
Property & related taxes	51,417	9.9	1,627	**99.8**	**1,623**	**-3**
Other taxes	75,510	14.4	2,390	**89**	**2,127**	**-263**
Total	521,435	100.0	16,501	N.A.	**14,030**	**-2,470**

* to calculate the average per capita property and related tax paid by immigrants [1987-2004], we use the following formula:
(1) Average per capita tax paid by Canadian residents = (proportion of Canadian-born residents)*(average per capita tax paid by Canadian-born residents) + (proportion of immigrants [1987-2004])*(average per capita tax paid by immigrants) + (proportion of non-immigrants residents and pre-1987 immigrants)*(average per capita tax paid by non-immigrant residents and pre-1987 immigrants).
Assuming property and related taxes are related to average value of dwelling and gross monthly rate(calculated in table 1), we will have:
(2)average per capita tax paid by immigrants = 96.6% *(average per capita tax paid by Canadian-born residents)
(3)average per capita tax paid by non-immigrant residents and pre-1987 immigrants=104.8%*(average per capita tax paid by Canadian-born residents)
Plugging equations (2) and (3) into equation (1), we are able to find the average per capita tax paid by Canadian-born residents and subsequently the average per capita tax paid by immigrants[1987-2004]. Having both average per capita tax paid by immigrants and average per capita tax paid by all Canadian residents, we can also calculate the Tax paid by immigrants[1987-2004] as % of all Canadian residents. We use the same method in panel C.
** Grubel and Grady assume that the per capita corporate income tax paid is disproportionately related to investment income. We adopt the same assumption to calculate the corporate tax paid by immigrants [1970-2004] as % of all Canadian residents. Using the 2006 Census, the ratio of investment income between these two groups, as calculated in table 1, is equal to 71.8%. We discount this proportion by the same amount as Grubel and Grady (41%*72%=30%) and calculate the corporate tax paid by immigrants [1970-2004] as % of all Canadian residents to be equal to 52%.

However, a closer examination of the PUMF data reveals that this number is in fact 46%.[3]

- Grady and Grubel claim "it was assumed that the amounts paid as *property and related taxes* and *other taxes* were related to total income." However, the ratio used in Table 2 to calculate the *property and related taxes* paid by immigrants is 41%, which has nothing to do with the total income ratio (which is 72%, as calculated in Table 1 by Grady and Grubel).

In panel B of Table 2, we correct these mistakes and inconsistencies. Correcting these mistakes will still render the same general result, although with smaller estimates of the difference in average per capita tax paid by immigrants compared to all Canadian residents (-$5,473 versus -$6,161). However, this inattention to detail does not inspire confidence and makes a careful reader skeptical about the general quality of the analysis.

3. Accuracy of the estimates and reliability of assumptions

Reliable and accurate estimates of the fiscal effects of immigration cannot be obtained without the data needed to make detailed cost/benefit calculations. Some of the critical parameters that are absent in the study by Grady and Grubel are: the count of immigrants by immigration status and their relevant characteristics, immigrants' *actual* use of different government services and the *actual* costs of providing these services to immigrants, as well as the *actual* amount of immigrants' contribution to different revenue sources. Inaccurate assumptions about these critical parameters not only affect the magnitude of the estimates, but they could also affect their sign. What follows

3 The average investment income of immigrants [1987-2004] is $672, while for all Canadian residents this number is $1473.

are some examples of the inaccurate assumptions made by Grady and Grubel regarding the per capita taxes paid and benefits received by immigrants.

3.1. Property and related taxes

Grady and Grubel assume that the amount paid as *property and related taxes* by immigrants, compared to all Canadian residents, is related to their ratio of total income (which is estimated to be 72%). Since the 2006 Census data provides measures of the value of dwellings for owners and measures of the gross monthly rent for renters, we are able to investigate this issue further to check the reliability of this assumption. We use the following regression analysis to estimate the average percentage difference in the value of dwellings and the average percentage difference in gross monthly rent between recent immigrants and Canadian-born residents. For homeowners, we regress the natural logarithm of value of dwelling on an indicator for recent immigrants, controlling for province of residence and Census Metropolitan Areas within each province (33 indicators). For renters, we use the same regression specification and we use the natural logarithm of gross monthly rent for renters as the dependant variable. The estimated coefficients are reported in columns 6 and 7 of Table 1.[4]

Our results suggest that, on average, recent immigrants [1987-2004] reside in dwellings that are only 2.2 percent cheaper than that of Canadian-born residents. Looking at renters, recent immigrants, on average, pay only 5 percent lower gross monthly rents compared to Canadian-born residents. Given the proportion of immigrants who are homeowners or renters (56.5% and 43.5% respectively), the weighted average of the percentage difference

4 We run the same regressions for a longer cohort of immigrants [1970-2004] as the reference group. We use these estimates later on in our analysis.

in the value of dwelling and gross monthly rent between recent immigrants and Canadian-born residents, as reported in column 8 of Table 1, is only -3.4 percent. As mentioned before, assuming the *property and related taxes* paid by recent immigrants is related to their value of dwelling and gross monthly rent, our results suggest that recent immigrants, on average, only pay 3.4% lower taxes on property compared to Canadian-born residents. Grady and Grubel, however, assume that amounts paid as property and related taxes are related to total income, which does not seem to be supported by our regression results, and find that recent immigrants pay 28% lower taxes on property. In panel C of Table 2, we use this more accurate estimate of the average per capita property and related tax paid by recent immigrants to re-calculate the difference in average per capita tax paid by immigrants and all Canadian residents. Our estimate is 17% smaller (-$5089) compared to that of Grady and Grubel (-$6161), and 7% smaller compared to our estimate in Panel B.

3.2. Education

Grady and Grubel assume that recent immigrants on average receive 9 percent higher benefits from government spending on education compared to “other Canadians”, but their explanation to justify this number is not clear and convincing. We believe we can find a more accurate estimate of the benefits received by immigrants for education. We break down the government expenditures on education into four categories: elementary and secondary education, post-secondary education, special retraining services, and other education.[5] This enables us to separately calculate the per capita benefit received for each category. We use the 2006 Census data to calculate the proportion of individuals older than 19 and in school, and the proportion of indi-

5 The numbers are from Statistics Canada, Table 385-0001.

viduals younger than 20 and in school, separately for recent immigrants and all Canadians (the proportions are reported in Table 1).[6] Our results suggest that the rate of school attendance below the age of 20 for recent immigrants is 113% of the Canadian average, which suggests recent immigrants receive higher benefits in terms of elementary and secondary education. For post-secondary education, we find that the rate of school attendance above the age of 19 for recent immigrants is 146% of the Canadian average, which, again, suggests that recent immigrants also receive higher benefits in terms of post-secondary education. We use these more accurate estimates in panel A of Table 3 to re-calculate the difference in average per capita benefits received by recent immigrants and all Canadian residents.

3.3. Housing

Grady and Grubel assume that "immigrants benefit by 10% more than other Canadians" from housing. However, a recent study by Fleury (2007) from HRSDC Canada finds that in 2004 only 20.4% of recent low-income immigrants used subsidized housing, while this number is 22.5% for low-income native Canadians. We use the ratio reported in this study (20.4%/22.5% = 90%) to obtain a more accurate estimate of housing benefits received by immigrants.

As mentioned before, Panel A of Table 3 adjusts for the estimates of housing and education benefits received by recent immigrants. Our results suggest that immigrants, on average, receive $290 more in per capita benefits compared to all Canadian residents. Grady and Grubel find this number to be -$110.

6 We also calculate these proportions for other groups, which we will use later on in our analysis.

TABLE 3

PANEL A: BENEFITS RECEIVED BY *ALL CANADIAN RESIDENTS* AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/06.
Using a more accurate estimate for education and housing (changes are marked in bold).

(1) Type of government expenditure (program spending)	(2) Total expenditure ($ millions)	(3) Per-capita benefits received ($) by an average Canadian resident	(4) Benefits received by Immigrants [1987-2004] (% of all Canadian residents)	(5) Per-capita benefits received by recent Immigrants ($)	(6) Difference ($) in per-capita benefits (5) – (3)
General government services	20,074	635	100	635	0
Protection of persons and property	43,299	1,370	72	986	-383
Health	99,531	3,150	100	3,150	0
Social services	164,568	5,208	100	5,208	0
Education					
Elementary and secondary education	47,134	1,491	**113***	**1,684**	**193**
Postsecondary education	32,887	1,041	**146***	**1,519**	**478**
Special retraining services	3,598	114	**100**	**114**	**0**
Other education	1,140	36	**100**	**36**	**0**
Recreation and culture	14,268	452	100	452	0
Labour, employment and immigration	2,480	78	120	93	15
Housing	4,527	143	**90**	**128**	**-14**
Regional planning and development	2,235	71	100	71	0
Transportation and communication	24,838	786	100	786	0
Resource conservation and industrial development	19,760	625	100	625	0
Environment	13,158	416	100	416	0
Foreign affairs and international assistance	5,585	177	100	177	0
Research establishments	1,859	59	100	59	0
Other expenditures	1,738	55	100	55	0
Total	502,680	15,907	N.A.	16,197	290

PANEL B: BENEFITS RECEIVED BY *ALL CANADIAN RESIDENTS* AND IMMIGRANTS [1970-2004], ALL LEVELS OF GOVERNMENT, 2005/06.
Changes in panel A + Using a more appropriate cohort of immigrants [1970-2004] as the reference group, and adjusting the estimates accordingly (changes are marked in bold).

(1) Type of government expenditure (program spending)	(2) Total expenditure ($ millions)	(3) Per-capita benefits received ($) by an average Canadian resident	(4) Benefits received by Immigrants [1970-2004] (% of all Canadian residents)	(5) Per-capita benefits received by recent Immigrants ($)	(6) Difference ($) in per-capita benefits (5) – (3)
General government services	20,074	635	100	635	0
Protection of persons and property	43,299	1,370	**89**	**1,219**	**-150**
Health	99,531	3,150	100	3,150	0
Social services	164,568	5,208	100	5,208	0
Education				0	0
Elementary and secondary education	47,134	1,491	**75**	**1,118**	**-372**
Postsecondary education	32,887	1,041	**117**	**1,218**	**177**
Special retraining services	3,598	114	**100**	**114**	**0**
Other education	1,140	36	**100**	**36**	**0**
Recreation and culture	14,268	452	100	452	0
Labour, employment and immigration	2,480	78	120	93	15
Housing	4,527	143	**90**	**128**	**-14**
Regional planning and development	2,235	71	100	71	0
Transportation and communication	24,838	786	100	786	0
Resource conservation and industrial development	19,760	625	100	625	0
Environment	13,158	416	100	416	0
Foreign affairs and international assistance	5,585	177	100	177	0
Research establishments	1,859	59	100	59	0
Other expenditures	1,738	55	100	55	0
Total	502,680	15,907		**15,561**	**-345**

*we assume benefits received by immigrants as % of all Canadian residents (in terms of elementary and secondary education and postsecondary education) are related to the proportion of immigrants below the age of 20 and in school, and proportion of immigrants above the age of 19 and school, compared to all Canadian residents, respectively. These proportions are reported in columns 4 and 5 of table 1.

3.4. Social services

Grady and Grubel assume that immigrants receive the same benefit from social services as all Canadian residents. Baker and Benjamin (1995) find, however, that "immigrants have lower participation rates in Unemployment Insurance and Social Assistance than natives."[7] Unfortunately, due to lack of data, we are unable to estimate the social service benefits received by immigrants, but it should be noted that social services amount to more than one third of total government expenditures, and only a 10 percent difference in the benefits received by immigrants changes the difference in average per capita benefits received by immigrants by $500. The sensitivity of the cost/benefit analysis to the choice of estimates should warn any careful researcher about drawing strong conclusions in the absence of accurate estimates.

4. The choice of reference and comparison group

Grady and Grubel's definition of *all Canadians* is confusing and inappropriate for the purpose of their analysis. It includes Canadians by birth, immigrants, and non-immigrant residents. In all of their calculations, they use a sample including all of these individuals, defined them as *all Canadians*, to measure what is sometimes referred to in the text as the "fiscal transfer from *other Canadians*" received by recent immigrants.[8] Since recent immigrants are also included in the sample of *all Canadians*, the correct interpretation of their estimated fiscal transfer is the average per-capita fiscal transfer received by recent immigrants from *all Canadian residents*, including recent immigrants themselves. It seems that the more appropriate comparison would

7 According to figures of government expenditures provided by Statistics Canada, total spending on social assistance alone amounted to 55% of spending on social services at all government levels in 2006.

8 Some examples of the use of "other Canadians" in the interpretation of their results are: Page 12, paragraph 1, line 1; page 12, paragraph 1, last line.

be to compare taxes paid and benefits received by recent immigrants to those of *Canadian-born residents*. We also believe that a more appropriate cohort of immigrants for an analysis of the fiscal costs/benefits of immigration is a cohort of all immigrants who entered Canada after 1967, the year the point-based immigration system was introduced.[9] We implement these changes one by one to assess the sensitivity of Grady and Grubel's results to the choice of reference group and comparison group. First, we re-calculate our results using the longer cohort of immigrants [1970-2004] as the reference group. Next, we use the sample of Canadian-born residents as the comparison group, still using the longer cohort of immigrants as the reference group.

4.1. Changing the reference group

Panel D of Table 2 uses a longer cohort of immigrants [1970-2004] as the reference group. In this panel, we still follow Grady and Grubel and use the sample of all Canadian residents as the comparison group. The ratios used in column 5 are also adjusted to reflect the change in the reference group, but we still use the same assumptions, as in Grady and Grubel, to calculate these ratios.[10] The only exception is the ratio we use to estimate the average per capita *property and related taxes* paid by immigrants, which is calculated using our regression results, as previously explained. As our results in panel D of Table 2 suggest, after using the longer cohort of immigrants [1970-2004] as the reference group, and also using more accurate estimates for property

9 In the 2006 Census data, the year of immigration is reported in intervals for years before 1980. Therefore, we are unable to identify immigrants who entered Canada between 1967 and 1970 and end up using the sample of immigrants who entered Canada after 1970. This is likely to overestimate (underestimate) the fiscal costs (fiscal benefits) of immigration because older cohorts of immigrants on average have higher incomes relative to more recent cohorts.

10 For instance, Grubel and Grady assume that the other taxes are related to the average income and calculate the ratio of average income between recent immigrants and all Canadian residents to be 72%. We use the same assumption, but since our choice of reference group is immigrants who entered Canada between 1970 and 2004, rather than 1987-2004, our calculated ratio of average income is 89% (as reported in Table 1).

and related taxes, our estimate of the difference in average per capita taxes paid by immigrants [1970-2004] relative to all Canadian residents is now -$2,470. This is less than half of the Grady and Grubel estimate (-$6161). Even after correcting for the inconsistencies in their study mentioned before (panel B of Table 2) and using more accurate estimates for property and related taxes (panel C of Table 2), the difference is still in the same ballpark when we use the longer and more appropriate cohort of immigrants as the reference group.

In panel B of Table 3, we implement the same change in the reference group on the benefit side, along with more accurate estimates for education and housing, which were already implemented in panel A of Table 3. Using the longer cohort of immigrants [1970-2004] changes the difference in the average per capita benefits received by immigrants, relative to all Canadian residents, from -$110 (estimated by Grady and Grubel) to -$345. The change is even more significant when we compare our estimates in panels A and B. Once we use more accurate estimates for education and housing, now the change in the reference group changes the difference in the average per capita benefits received by immigrants, relative to all Canadian residents, from $290 to -$345.

4.2. Changing the comparison group

Panel A of Table 4 uses the sample of Canadian-born residents as the comparison group and adjusts the estimates of average per capita taxes paid by recent immigrants accordingly, based on the same assumptions as in Grady and Grubel. The only exception is the estimate for property and related taxes, which is based on the results of our regression analysis reported in columns 6-8 of Table 1 as explained before. Compared to our results in panel C of Table

TABLE 4

PANEL A: TAXES PAID BY *CANADIAN-BORN RESIDENTS* AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.
Using Canadian-born residents as the comparison group, and adjusting the estimates accordingly. Also using a more accurate estimate for property and related taxes.

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1987-2004) as % of *Canadian -born residents*	(6) Tax paid by non-immigrant residents and pre-1987 immigrants as % of *Canadian-born residents*	(7) Dollars per capita paid by Canadian-born residents (4)/ [0.76+(5)*0.09+ (6)*0.14]	(8) Dollars per capita paid by immigrants (1987-2004) (5)*(7)	(9) Difference ($) in per-capita tax (8) – (7)
Personal income taxes	180,757	34.7	5,720	55	107	5947	3271	-2676
Health & social insurance levies	87,354	16.8	2,764	100	100	2780	2780	0
General sales taxes	68,538	13.1	2,169	71	109	2214	1572	-642
Corporate income taxes	57,859	11.1	1,831	34	116	1918	652	-1266
Property & related taxes	51,417	9.9	1,627	96.6	105	1630	1575	-55
Other taxes	75,510	14.4	2,390	71	109	2440	1732	-707
Total	521,435	100.0	16,501	N.A.	N.A.	16932	11584	-5347

PANEL B: TAXES PAID BY *CANADIAN-BORN RESIDENTS* AND IMMIGRANTS [1970-2004], ALL LEVELS OF GOVERNMENT, 2005/2006.
Changes in panel A + Using a more appropriate cohort of immigrants [1970-2004] as the reference group, and adjusting the estimates accordingly.

(1) Type of Tax	(2) $ billions	(3) Percentage of total revenue	(4) Dollars per capita for all Canadian residents (2)/31.6	(5) Tax paid by immigrants (1970-2004) as % of *Canadian –born residents*	(6) Tax paid by non-immigrant residents and pre-1970 immigrants as % of *Canadian –born residents*	(6) Dollars per capita paid by Canadian-born residents (4)/ [0.76+(5)*0.14+ (6)*0.09]	(7) Dollars per capita paid by immigrants (1970-2004) (5)*(6)	(8) Difference ($) in per-capita tax (7) – (6)
Personal income taxes	180,757	34.7	5,720	78	98	5952	4642	-1309
Health & social insurance levies	87,354	16.8	2,764	100	100	2780	2780	0
General sales taxes	68,538	13.1	2,169	88	103	2214	1948	-265
Corporate income taxes	57,859	11.1	1,831	55	131	1912	1052	-860
Property & related taxes	51,417	9.9	1,627	102	105	1625	1657	32
Other taxes	75,510	14.4	2,390	88	103	2439	2147	-292
Total	521,435	100.0	16,501	N.A.	N.A.	16924	14228	-2696

* to calculate the average per capita taxes paid by immigrants we use the following formula:
(1) Average per capita tax paid by Canadian residents = (proportion of Canadian-born residents)*(average per capita tax paid by Canadian-born residents) + (proportion of immigrants (post-1970 or post 1987))*(average per capita tax paid by immigrants) + (proportion of non-immigrants residents and pre-1987(ore pre-1970) immigrants)*(average per capita tax paid by non-immigrant residents and pre-1987 immigrants).
Assuming property and related taxes are related to average value of dwelling and gross monthly rate(calculated in table 1), we will have:
(2)average per capita tax paid by immigrants = (1- weighted average of the percentage difference in value of dwelling and gross monthly rent between immigrants and Canadian-born residents)*(average per capita tax paid by Canadian-born residents)
(3)average per capita tax paid by non-immigrant residents and pre-1987 immigrants = (1- weighted average of the percentage difference in value of dwelling and gross monthly rent between non-immigrant residents/ pre-1987 immigrants and Canadian-born residents) * (average per capita tax paid by Canadian-born residents)
Plugging equations (2) and (3) into equation (1), we are able to find the average per capita tax paid by Canadian-born residents and subsequently the average per capita tax paid by immigrants[1987-2004]. We use the same method in panel B.

TABLE 5:

PANEL A: BENEFITS RECEIVED BY *CANADIAN-BORN RESIDENTS* AND IMMIGRANTS [1987-2004], ALL LEVELS OF GOVERNMENT, 2005/06.
Using Canadian-born residents as comparison group and adjusting the estimates accordingly + using more accurate estimates for education and housing.

(1) Type of government expenditure (program spending)	(2) Total expenditure ($ millions)	(3) Per-capita benefits received ($) (by an average Canadian resident)	(4) Benefits received by recent Immigrants (% of *Canadian –born residents*)	(5) Benefits received by non-immigrant residents and pre-1987 immigrants (% of *Canadian –born residents)*	(6) Per-capita ($) benefits received by *Canadian –born residents* (3)/[0.764+(4)* 0.093+(5)*0.143]	(7) Per-capita ($) benefits received by Immigrants [1987-2004] (4)*(6)	(8) Difference ($) in per-capita benefits (7) – (6)
General government services	20,074	635	100	100	638	638	0
Protection of persons and property	43,299	1,370	71	109	1399	993	-405
Health	99,531	3,150	100	100	3169	3169	0
Social services	164,568	5,208	100	100	5239	5239	0
Education							
Elementary and secondary education	47,134	1,491	100	13	1704	1704	0
Postsecondary education	32,887	1,041	148	79	1031	1525	494
Special retraining services	3,598	114	100	100	114	114	0
Other education	1,140	36	100	100	36	36	0
Recreation and culture	14,268	452	100	100	454	454	0
Labour, employment and immigration	2,480	78	120	100	77	92	15
Housing	4,527	143	90	90	147	132.	-14
Regional planning and development	2,235	71	100	100	71	71	0
Transportation and communication	24,838	786	100	100	790	790	0
Resource conservation and industrial development	19,760	625	100	100	628	628	0
Environment	13,158	416	100	100	418	418	0
Foreign affairs and international assistance	5,585	177	100	100	178	178	0
Research establishments	1,859	59	100	100	59	59	0
Other expenditures	1,738	55	100	100	55	55	0
Total	502,680	15,907	N.A.	N.A.	16213	16303	89

PANEL B: BENEFITS RECEIVED BY *CANADIAN-BORN RESIDENTS* AND IMMIGRANTS [1970-2004], ALL LEVELS OF GOVERNMENT, 2005/06.
Changes in A + Using a more appropriate cohort of immigrants [1970-2004] as the reference group, and adjusting the estimates accordingly.

(1) Type of government expenditure (program spending)	(2) Total expenditure ($ millions)	(3) Per-capita benefits received ($) (by an average Canadian resident)	(4) Benefits received by recent Immigrants (% of *Canadian –born residents*)	(5) Benefits received by non-immigrant residents and pre-1987 immigrants (% of *Canadian –born residents*)	(6) Per-capita ($) benefits received by *Canadian –born residents* (3)/[0.764+(4)* 0.142+(5)*0.094]	(7) Per-capita ($) benefits received by Immigrants [1987-2004] (4)*(6)	(8) Difference ($) in per-capita benefits (7) – (6)
General government services	20,074	635	100	100	638	638.833	0
Protection of persons and property	43,299	1,370	87	103	1400	1218	-182
Health	99,531	3,150	100	100	3169	3169	0
Social services	164,568	5,208	100	100	5239	5239	0
Education							
Elementary and secondary education	47,134	1,491	66	20	1703	1124	-579
Postsecondary education	32,887	1,041	120	87	1029	1235	206
Special retraining services	3,598	114	100	100	114	114	0
Other education	1,140	36	100	100	36	36	0
Recreation and culture	14,268	452	100	100	454	454	0
Labour, employment and immigration	2,480	78	120	100	76	91	15
Housing	4,527	143	90	90	147	132	-14
Regional planning and development	2,235	71	100	100	71	71	0
Transportation and communication	24,838	786	100	100	790	790	0
Resource conservation and industrial development	19,760	625	100	100	628	628	0
Environment	13,158	416	100	100	418	418	0
Foreign affairs and international assistance	5,585	177	100	100	178	178	0
Research establishments	1,859	59	100	100	59	59	0
Other expenditures	1,738	55	100	100	55	55.	0
Total	502,680	15,907	N.A.	N.A.	16212	15657	-554

2, our estimated difference in average per capita taxes paid by immigrants relative to all Canadian residents is not significantly different when we use Canadian-born residents as the reference group (-$5,089 versus -$5,347). The same result holds when we use the longer cohort of immigrants as the reference group and change the comparison group from all Canadian residents to Canadian-born residents (-$2,470 as reported in panel D of Table 2, versus to -$2,696 as reported in panel B of table 4). However, similar to our results in panels C and D of Table 2 before, our results in panels A and B of Table 4 suggest that when we use the sample of Canadian-born residents as the comparison group, using the longer cohort of immigrants as the reference group reduces the estimated difference in average per capita taxes paid by half.

5. Public goods and the contribution of immigrants

Grady and Grubel do not take into account that some of the services provided by the government are in the form of pure public goods, and therefore independent of the number of people they serve. Thus, tax payments by immigrants lower the average cost of public goods to all taxpayers. On the other hand, a significant reduction in the number of immigrants, which is an inevitable result of the proposed reforms by Grady and Grubel, will increase the per capita cost of providing these services by the government to other Canadians. Following Simon (1981) and Akbari (1989), we adjust for immigrants' public goods contribution by using the following formula:

$$FT = (G_i - G_c) - \alpha * T_i + (1 - \alpha)(T_c - T_i) FT = (G_i - G_c) - \alpha * T_i + (1 - \alpha)(T_c - T_i)$$

FT is the average per capita fiscal transfer to immigrants from Canadian residents, adjusted for immigrants' public goods contributions. i denotes immigrants and c denotes Canadian-born residents. The first term in the equation above is the difference in average per capita benefits received by immigrants

and Canadian-born residents. The second term is the public goods contributions of immigrants, where α is the share of public goods expenditures in total tax receipts. The last term is the difference in average per capita taxes paid by Canadian-born residents and immigrants on non-public goods. Simon (1981) estimates the amount of α to be equal to 20% for US. Akbari (1989) estimates α to be 5.9 per cent of 1980 consolidated government expenditures, treating national defense, science and technology, foreign affairs and international assistance as pure public goods. If we use the same expenditures, as in Akbari (1989), we get α = 4.4%.[11] However, we believe this number is an underestimation of the true share of pubic good expenditures in total tax receipts. Akbari (1989) only uses those expenditures that are pure public goods to calculate α. However, it is not unreasonable to assume that part of the expenditures on services such as education, recreation and culture, regional planning and development, environment, resource conservation and industrial development goes toward the provision of public goods in those sectors. Therefore, we also use α = 10% and α = 15% in our calculations of fiscal transfer.

Table 6 reports our estimates of average per capita fiscal transfers to immigrants from Canadian-born residents using different estimates of average per capita taxes and transfers discussed before. In what follows we will only discuss the results that use Canadian-born residents as the comparison group, since we believe this is the appropriate and meaningful comparison group when calculating the fiscal transfer to immigrants.[12] However, we also report these estimates using all Canadian residents as the comparison group, as in Table 6. Correcting for inconsistencies in Grady and Grubel, using more accurate estimates, and using Canadian-born residents as the comparison group re-

11 Expenditure on national defence in 2005/2006 is estimated to be 14.7 billion dollars (Defence Budgets 1999-2007). We use expenditures on research establishments as a substitute for science and technology.

12 It does not make much sense to calculate the fiscal transfers to immigrants from all Canadian residents, including immigrants themselves.

Table 6: Estimates of Fiscal Transfers

	average per capita fiscal transfer to immigrants from Canadian –born residents ($)
(1) Original estimate by Grubel and Grady Immigrants [1987-2004] as reference group and all Canadian residents as comparison group	(6,161- 110) = $6,051
(2) Correcting inconsistencies in Grubel and Grady Immigrants [1987-2004] as reference group and all Canadian residents as comparison group	(5,473 – 110) = $5,363
(3) Correcting inconsistencies and using more accurate estimates Immigrants [1987-2004] as reference group and all Canadian residents as comparison group	(5,089 + 290) = $5,379
(4) Correcting inconsistencies and using more accurate estimates Immigrants [1987-2004] as reference group and Canadian-born residents as comparison group	(5,347 + 89) = $5,436
(5) Correcting inconsistencies and using more accurate estimates Immigrants [1970-2004] as reference group and all Canadian residents as comparison group	(2,470 – 345) = $2,125
(6) Correcting inconsistencies and using more accurate estimates Immigrants [1970-2004] as reference group and Canadian-born residents as comparison group	(2,696 – 554) = $2,142
(7) Correcting inconsistencies and using more accurate estimates Immigrants [1970-2004] as reference group and Canadian-born residents as comparison group Adjusting for immigrants' public goods contributions (α = 4.4%)	(95.7%)*(2,696) – (4.3%)*(14,228) + (–554) = $1,414
(8) Correcting inconsistencies and using more accurate estimates Immigrants [1970-2004] as reference group and Canadian-born residents as comparison group Adjusting for immigrants' public goods contributions (α = 10%)	(90%)*(2,696) – (10%)*(14,228) + (–554) = $450
(9) Correcting inconsistencies and using more accurate estimates Immigrants [1970-2004] as reference group and Canadian-born residents as comparison group Adjusting for immigrants' public goods contributions (α = 15%)	(85%)*(2,696) – (15%)*(14,228) + (–554) = - $397

duces the estimated fiscal transfer to immigrants by $615 or 10% (rows 1 and 4). Next, changing the reference group to immigrants who arrived in Canada between 1970 and 2004 (after the introduction of the point-based system in 1967) reduces the estimated fiscal transfer to immigrants by $3909 or 65%, compared to the estimated fiscal transfer of Grady and Grubel (rows 1 and 6). Finally, adjusting for immigrants' public goods contributions, using α = 4.4%, further reduces the estimated fiscal transfer by $728. Compared to Grady and Grubel, fixing the inconsistencies, using more accurate estimates, using the longer cohort of immigrants as the comparison group, and adjusting for immigrants' contributions to public goods reduces the estimated fiscal transfer

by $4637 or 77%. Using α = 15% changes the picture completely, and now not only are immigrants not a burden to Canadian-born residents, but there is a fiscal transfer of $397 from immigrants [1970-2004] to Canadian-born residents. We prefer to emphasize a "compromise" value of 10% for the public goods contribution, which results in an estimated fiscal transfer of $550 per immigrant.

6. Drawing conclusions based on fiscal transfer analysis

The main result, and the immigration policy reforms subsequently proposed by Grady and Grubel, is driven by the fact that immigrants are paid less in Canada. There are, however, three critical issues that are ignored in the analysis. First, an implicit assumption in Grady and Grubel's analysis is that any observed differences in average wages between natives and immigrants. which subsequently generates lower taxes paid by immigrants, is due to lower ability or lower skills of immigrants relative to native Canadians. There is however a large body of literature in economics that attempts to explain the native-immigrant wage gap.[13] The results of these studies suggest that differences in characteristics between natives and immigrants (e.g. education, labour market experience, age, knowledge of official language, number of children, occupation, industry, etc.) does not explain the existing wage gap between these two groups, and part of the observed wage disparity between them is due to disadvantages that immigrants face in the labour market, such as a lower-earning premium for education or work experience compared to native-born Canadians. A recent study by Oreopoulos (2009), which is based on a field experiment with six thousand fake resumes, finds that "Canadian ap-

13 Examples include the studies by Ornstein and Sharma (1983), Li (1988, 1992), the Economic Council of Canada (1991), Boyd (1992), Abbott and Beach (1993), Christofides and Swidinsky (1994), Reitz and Breton (1994), Bloom et al., (1995), Baker and Benjamin (1997), Reitz and Sklar (1997), Pendakur and Pendakur (1998), Hum and Simpson (1999), Reitz et al. (1999), and Thompson (2000), among others.

plicants that differed only by name had substantially different callback rates: those with English-sounding names received interview results forty percent more often than applicants with Chinese, Indian or Pakistani names. Overall, these results suggest considerable employer discrimination against applicants with ethnic names or with experience from foreign firms."

Another recent study by Pendakur and Woodcock (2008) finds that visible minority immigrants face glass ceilings in Canada that are largely driven by their disproportionate sorting across high-paying and low-paying employers. Reitz (2001) also finds evidence that suggests "if immigrants received full compensation for their years of education and work experience, and with no discounting based on origins, their annual earnings would increase by $15 billion and would be about 20 percent higher than they were in 1996." These findings seem to suggest that one reasonable solution for the fiscal burden imposed on Canadians by recent immigrants is to help to remove the barriers and disadvantages blocking the advancement of immigrants in the labour market, especially given the fact that recent immigrants seem to experience more difficulties assimilating into the labour market despite their higher quality. For instance, one solution to reduce the under-utilization of immigrants in certain occupations tied to the recognition of their foreign credentials would be to use private or public service agencies to assess and interpret immigrant qualifications for employers. As different studies suggest, removing the economic costs of under-utilization of immigrants eliminates a considerable amount of the observed native-immigrant average wage gap and the fiscal burden generated through these lower wages. Policy proposals that aim to reduce the immigration level, directly or indirectly, are in fact ignoring the problem rather than trying to solve it.

Second, although Grady and Grubel try to assess other benefits of immigration, their analysis seems to be one-sided and ignores a large body of research providing theoretical and empirical support for other benefits of immigration beyond fiscal costs/benefits. For instance, they ignore the fact that the lower average wage of immigrants provides a cheap labour input for firms, which in turn generates higher profits.[14] A comprehensive study was done by a panel of experts with the National Research Council (National Research Council, 1997) to assess the effects of immigration on the US economy. Using a basic economic model and plausible assumptions, it suggests that "immigration produces net economic gains for domestic residents, for several reasons." At the most basic level, immigration increases the labour supply, which in turn facilitates the production of new goods and services. This will generate a gain for domestic workers as a whole, since immigrant workers are paid less than the total value of these new goods and services. Immigration also increases the productivity of domestic workers by enabling specialization in producing goods and services in which they are relatively more efficient. Immigration also generates specialization in consumption, and similar to the effect of international trade, breaks the link between domestic production and domestic consumption. This study estimates the domestic gains from immigration to be between $1 billion to $10 billion a year for the US economy. Immigration could also increase the total welfare of all Canadians as a result of the cheaper price of goods and services produced by immigrants with lower wages.

Another comprehensive study done by World Bank (Ratha et al. 2011) summarizes some of the findings regarding gains from immigration: "Even though quantitative estimates of the direct gains from migration are difficult

14 This result will not hold if lower wages are a result of lower productivity of immigrants, and also if there are no positive spillovers to other workers in terms of productivity. There are, however, numerous economic studies, some mentioned before, that provide evidence against these assumptions.

to obtain, economic simulations suggest that an increase in South-North migration would produce substantial income gains in the long-run; these income gains could exceed those from comprehensive trade liberalization; and the destination countries in the North would capture one fifth the overall benefits of increased immigration (World Bank 2006, Winters et al. 2003, Anderson & Winters 2008, van der Mensbrugghe & Roland-Holst 2009). Documented welfare gains from South-North migration work primarily through the increase in the available labour force. Ortega and Peri (2009) found that immigration increases employment in the destination countries in the North one for one, implying no crowding-out of natives. This result implies that immigration increases the total GDP of the receiving country without affecting average wages or labour productivity.

Immigration has also been observed to boost productivity through innovation and specialization. Data from the United States show that a one percent increase in the share of migrant university graduates increases the number of patent applications and grants issued per capita (Chellaraj et al. 2008, Hunt & Gauthier-Loiselle 2008). However, burdensome regulatory requirements and procedures that foreign doctors, engineers, architects and accountants have to meet in order to practice in the destination country can impose significant financial and other costs on these highly skilled immigrants (Mattoo and Mishra 2009). Also the less-educated immigrants increase labour productivity, as they complement the uneducated local labour force by facilitating its specialization in more productive complementary tasks, based on its knowledge of the local language and institutions (Peri & Spaber 2009). Furthermore, immigrants are often willing to do jobs that locals are no longer interested in, such as caring for the elderly (UNDP 2009, p. 85). Also, the availability of low-cost childcare

by immigrants can enable young local women to go back to work (Kremer & Watt 2006) thus boosting economic development further.

Countries could also benefit from immigration through its effect on international trade. An important channel through which immigrants influence international trade is the knowledge they have of their home economies, as well as the expertise, linguistic skills and personal connections they have with their home country, which facilitates international trade. International trade accounts for 36% of Canadian GDP and plays an important role in the Canadian economy. A study by Head and Ries (1998) suggests that "immigration has a significant positive relationship with Canadian bilateral trade."

Third, the quantitative analysis done to estimate the fiscal burden created by recent immigrants adopts a static, cross-sectional approach. Since the population of natives and immigrants in Canada is clearly not in a dynamic equilibrium, this approach fails to provide a picture of the long-term effects of immigration on public finances. For example, Grady and Grubel do not account for future paths of government spending and tax rates in their estimate of net fiscal effects of immigration.[15] Therefore, although the static approach provides a snapshot of Canada as a consequence of past immigration policies, it fails to predict the long-term cost to taxpayers resulting from admitting additional immigrants, or the long-term effects of reducing immigration levels significantly. Auerbach and Oreopoulos (2000) argue that to avoid potential misleading conclusions due to methodological shortcomings of the static approach, a dynamic analysis that takes into account the future consequences

15 Reviewing the figures provided by Statistics Canada on government finances, there are significant changes over time. For instance, on a per capita basis, spending on social services in Canada has increased by 80% between 1989 and 2007. In comparison, health expenditures and expenditures on environment have increased by 136% and 116%, respectively. On the other hand, spending on labour, employment and immigration has declined by 17% (Statistics Canada, 2007). Similarly, looking at consolidated revenues at all levels of government, the total personal income tax revenue collected by government has increased by 140% between 1989 and 2009.

of immigration needs to be adopted. Auerbach, Gokhale and Kotlikof (1991) introduce techniques of general accounting that enable researchers to go beyond calculations of the net impact of immigrants and enable them to account for the impact of changes in immigration policy on the relative burdens of different age cohorts. It also provides a platform to compare the fiscal effects of immigration policy with those of other policies, which illuminates the quantitative significance of changes in immigration policy.

Such an analysis for the United States (National Research Council, Chapter 7, 1997) finds that once immigrants and their descendants' effect on tax receipts, transfers and government purchases are taken into account, US immigration generates a net fiscal benefit in present value. This analysis takes annual estimates as a starting point, but does not draw any conclusions due to the limitations of these estimates. Instead, under different assumptions regarding the course of immigration policy, fiscal policy and the economic assimilation of immigrants and their descendants, the long-term analysis projects revenues and expenditures into the future.

Extending the methodology by Auerbach, Gokhale and Kotlikof (1991), Auerbach and Oreopoulos (2000) also find that "net fiscal cost or benefit from immigration depends on the extent to which the existing fiscal imbalance will be borne by future generations. Because new immigrants and their offspring represent a larger fraction of future generations than of present ones, shifting the burden onto future generations also shifts it, relatively, onto new immigrants." They conclude that "the overall fiscal impact of immigration is unclear. Whether there is a gain or loss depends on the extent to which government purchases rise with the immigration population" which in turn depends on the proportion of government purchases that are "public" in nature.

7. Immigrants' performance in the long-run

Grady and Grubel argue that immigrants will not be able to repay the fiscal transfers they receive because that will require them to earn more than average incomes for a longer period in their lives than is possible. However, a closer examination of the 2006 Census data provides a different picture. For instance, looking at the sample of all immigrants who came to Canada between 1975 and 1979, the average income is $43,600, and the average income tax paid is $7,755, which is significantly higher than that of an average Canadian calculated by Grady and Grubel (for all Canadians, these numbers are $35,057 and $5,995 respectively). The same pattern emerges when looking at immigrants who came to Canada between 1970 and 1975 or 1980 and 1986.

8. Categorizing immigrants

In the study, Grady and Grubel focus on immigrants as an aggregate category. Such broad grouping is unable to capture the diversity of immigrants and therefore fails to provide an adequate basis for policy. More appropriate categories would provide a better determinant of which group of immigrants (if any) impose a fiscal burden on the Canadian economy, since different types of immigrants can have a very different economic impact. This will also help to focus the attention of debates over immigration policy on the composition of immigrants.

9. Contradiction between policy proposals and described labour market mechanisms

In a discussion of "other benefits of immigration", Grady and Grubel challenge the idea that "in the absence of immigration, Canada would suffer from a permanent shortage of workers." They argue, by appealing to economic

principles, that in low-skill industries, if employers were unable to fill their vacancies at current wages, “they would raise wage rates until the vacant jobs are filled. Employers would end up with the same rates of profit though, because they would adopt labour saving capital and the producers of capital would come up with new technologies that would save even more labour and raise the skill level of the job.” At high-skill industries, “wages would rise and induce more Canadians to get the needed education and training until the shortages are eliminated.” If these arguments are correct and there exists such mechanisms in the labour market, and this shortage of workers at different skill levels is easily solved by reaching “an efficient equilibrium in demand, supply, prices and wages”, then why would Canadian employers have any incentive to offer jobs to foreigners to work in Canada under the proposed immigration reform by Grady and Grubel? Especially considering the fact that evaluating the qualifications of these foreign job applicants would be costly for employers and the probability of forming a good match is also lower due to larger information asymmetry. Moreover, what is the advantage for the Canadians and the Canadian economy to admit these foreign workers if the mechanisms explained by Grady and Grubel are in place?

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