

November 2015



151 Slater Street, Suite 710  
Ottawa, Ontario, K1P 5H3  
Tel: 613-233-8891  
csls@csls.ca

CENTRE FOR THE  
STUDY OF LIVING  
STANDARDS

**Interprovincial Migration in Canada:  
Implications for Output and Productivity  
Growth, 1987-2014**

Roland Tusz, Erika Rodrigues, and Matthew Calver

CSLS Research Report 2015-19

November 2015

# Interprovincial Migration in Canada: Implications for Output and Productivity Growth, 1987-2014

---

## Abstract

There were slightly more than 300,000 interprovincial migrants in Canada in 2014, representing 0.85 per cent of the population. Interprovincial migration provides significant economic benefits by reallocating labour from low-productivity regions with high unemployment to high productivity regions with low unemployment. A previous report released by the Centre for the Study of Living Standards estimated the impact of net interprovincial migration on aggregate output and productivity between 1987 and 2006. This study uses the same basic methodology to provide updated estimates, which is extended to estimate the long-term effects. We estimate that interprovincial migration raised GDP by \$1.23 billion (chained 2007 dollars) in 2014, or 0.071 per cent of GDP. This may seem like a small amount, but migration flows are often persistent. We estimate that cumulative net migration flows over the 1987-2014 period increased GDP by \$15.8 billion dollars (0.9 per cent of GDP) in 2014 and generated cumulative benefits of \$146 billion over the 1987-2014 period. Most of these gains can be attributed to migration to Alberta and British Columbia, which are by far the largest destinations of net interprovincial migration.

# Interprovincial Migration in Canada: Implications for Output and Productivity Growth, 1987-2014

---

## Table of Contents

Executive Summary .....	3
I. Introduction .....	7
II. Migration Flows .....	8
A. Migration Flows, 2014 .....	8
B. Migration Flows, 1987-2014 .....	11
C. Net Migration and Gross Migration Relative to Total Population .....	13
D. Looking Further Back.....	14
III. Literature Review on Interprovincial Migration .....	16
A. Drivers of Interprovincial Migration .....	16
B. Barriers to Interprovincial Migration .....	18
C. Consequences of Interprovincial Migration .....	18
IV. Methodology of Estimating the Impact of Interprovincial Migration on Productivity .....	20
A. An Overview of the Methodology.....	20
B. Applying the Methodology.....	23
V. Results and Caveats .....	27
A. Analysis of Output Gains .....	27
i. Output Gains, 1987-2014.....	27
ii. Decomposition of Output Gains .....	30
B. Limitations of the Analysis .....	40
i. Downward Biases .....	40
ii. Upward Biases .....	42
iii. Ambiguous Biases .....	43
VI. Conclusion.....	45
References.....	47
Appendix.....	49
List of Tables in the CSLS Interprovincial Migration Database .....	59

# Interprovincial Migration in Canada: Implications for Output and Productivity Growth, 1987-2014

---

## Executive Summary

In 2014, slightly more than 300,000 Canadians relocated from one province to another. While many of these individuals may have moved because of personal reasons, preferences over local amenities, or differences in the cost of living, many chose to migrate in hopes of better labour market opportunities. Migration to regions with higher paying jobs and lower unemployment rates benefits not only the individuals who move, but also the economy as a whole through a more efficient allocation of the labour force. There is a general belief among policymakers that the gains from interprovincial migration are substantial and that governments can and should do more to facilitate the movement of labour across provincial borders, but how large have the economic benefits actually been?

In 2007, researchers from the Centre for the Study of Living Standards (CSLS) examined this question utilizing a novel approach to estimate the impact of net interprovincial migration on employment, labour productivity, and real GDP between 1987 and 2006. This report extends this earlier work with more recent data on interprovincial migration up to 2014 and provides an estimation of the cumulative impact of migration since 1987.

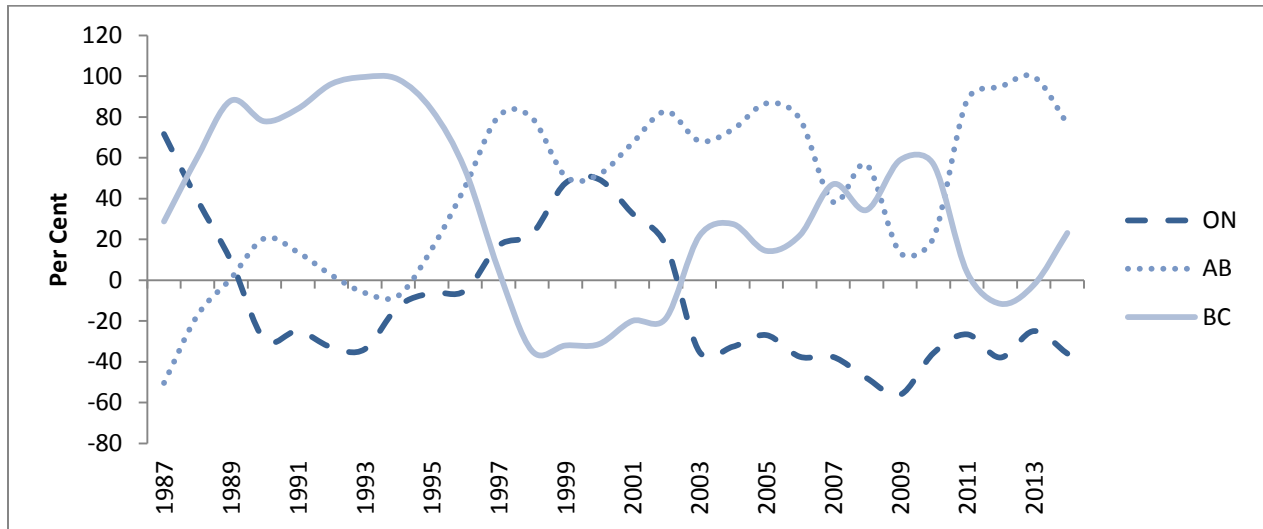
Since 1987, there has been a gradual decline in gross interprovincial migration, which fell from an average of 302,426 migrants (1.08 per cent of the population) annually between 1987 and 1996 to an average of 286,251 (0.80 per cent of the population) between 2007 and 2014. This report only estimates the effects of net migration at the provincial level, that is, the change in the provincial distribution of the national population resulting from migration. Note that net migration does not include benefits from inflows of migrants into a province which are offset by migrants leaving the province. It also does not capture migration within provinces. *Net positive interprovincial migration*, defined as the sum of the net migrants (inflow minus outflow) for the provinces with positive net migration, represented 12.8 per cent of annual gross migration on average over the 1987-2014. Net positive migration is offset by *net negative interprovincial migration*, the sum of net migration for the provinces with negative net migration.

Positive net interprovincial migration has been concentrated in a small number of provinces: in 2014, Alberta accounted for 76 per cent of Canada's net positive migration, British Columbia 23 per cent, and Saskatchewan one per cent. Over the longer time horizon of 1987-2014, only two provinces had positive net migration. Alberta gained 433,851 people from net interprovincial migration (57 per cent of total net positive migration) and British Columbia gained 331,083 (43 per cent). All other provinces had more out-migrants than in-migrants over this period.

Net migration flows have varied considerably through time, both in terms of the number of net positive migrants and their destination provinces. These variations are related to provincial economic performance. In the early 1990s, most of the net internal migration was to British

Columbia (Chart A). Beginning in 1996, Alberta has been the major destination of interprovincial migrants. Ontario had the second highest net positive migration from 1997 to 2002 while British Columbia experienced net outflows over this period. Since 2003, British Columbia has again become a major destination province for internal migration. Unsurprisingly, net migration to Alberta appears to be closely related to the price of oil. When the price of oil collapsed in 2009, there was a sharp decline in net migration to Alberta. When oil prices soared again a couple years later, net migration to Alberta soared. The recent drop in oil prices and associated economic challenges has resulted in increased outflows from Alberta in 2015.

**Chart A: Provincial Shares of National Net Positive Annual Migration Flows, Ontario, Alberta, and British Columbia, 1987-2014**



Source: CSLS calculations using data from Appendix Table 1

The idea underlying the methodology employed in this report to estimate the economic benefits of these migration flows is straightforward. National GDP can be calculated using the employment rates and average labour productivities in each province weighted by the distribution of the working age population across the provinces. The core assumption used in this report is that migrants have the same employment rate and average labour productivity (if working) as that which prevails among the working age population of the province the migrant happens to be residing in. This assumption allows for the calculation of counterfactual aggregate employment, productivity, and GDP using the working age population distribution across the provinces which would have been observed if there had been no interprovincial migration. Comparing this counterfactual to the real outcomes provides an estimate of the economic benefits of net migration.

The gains from net interprovincial migration in any given year tend to be modest, reflecting the relatively small share of interprovincial migrants in the total population. In 2014, net positive interprovincial migration was 43,405 persons. On average, these people moved from provinces with an average employment rate of 58.0 per cent into ones with an average employment rate of 66.0 per cent, raising employment by 2,865 workers and generating \$376

million of increased output (2007 chained dollars) through the additional employment. Similarly, average labour productivity was \$131,130 per worker in the net positive migration provinces, weighted by the provincial share of net migration, compared to only \$89,979 per worker in the net negative migration provinces, which resulted in increased labour productivity of \$41,151 for each migrant worker and \$854 million of increased output. The total gains amount to \$1.23 billion, or 0.071 per cent of Canada's real GDP. This may not seem like very much when expressed as a share of GDP, but it accounts for a non-negligible part of trend growth in real GDP (3.07 per cent of 2.36 per cent trend GDP growth from 1987-2014) and labour productivity (5.63 per cent of 0.98 per cent trend labour productivity growth from 1987-2014).

Over the longer period of 1987 to 2014, annual interprovincial migration was responsible for 0.03 percentage points of trend labour productivity growth of 0.98 per cent in Canada on average (or 3.14 per cent of trend labour productivity growth) and 0.05 percentage points of trend real GDP growth of 2.36 per cent (or 2.07 per cent of trend GDP growth).

It is important to keep in mind that the effects of net interprovincial migration are persistent beyond the year in which the migration occurred. We estimate the cumulative benefits of net positive interprovincial migration since 1987 in order to obtain an estimate of the long-term impacts of interprovincial migration, ignoring complications related to population aging such as children reaching working age, deaths, and age composition of the labour force. We find that net interprovincial migration over the 1987-2014 period raised GDP in Canada in 2014 by \$15.8 billion (0.9 per cent of GDP) from what it would have been without this migration and that the cumulative impact of net migration since 1987 was \$146 billion over the 1987-2014 period.

Alberta plays a central role in the benefits of interprovincial migration because of its extremely high productivity and high employment rates compared to the other provinces throughout the period under consideration. With recent declines in oil prices, we may witness outflows from Alberta and declines in its employment rates which will lower the estimated long term benefits of net interprovincial migration. An important difference between this study and the previous work by the CSLS is the use of 2007 chained dollars instead of 1997 constant dollars when quantifying real output and relative labour productivity levels. Constant 1997 dollars reflected the relatively low relative price of oil in 1997 and resulted in lower estimated economic benefits of interprovincial migration.

The results presented here should be viewed cautiously for two major reasons. First, only the economic benefits of net migration are quantified, but there may be significant gains associated with offsetting gross migration between provinces as well. Excluding these gains from will lead to an underestimation of the benefits. Second, the methodology does not control for compositional differences between migrants and the general populations of the origin and destination provinces. For example, those who migrate tend to be more educated than those who do not, so they are more likely to succeed in the labour market. On the other hand, suppose the unemployed are more likely to move for work. If they are unemployed because they are less productive than the average worker, then they may have below average prospects in their province of destination.

Nonetheless, the gains from net interprovincial migration seem to be substantial, which is consistent with what policymakers would expect. There remain barriers to the interprovincial

mobility of labour, such as issues with recognition of some professional certifications and credentials, and inadequate quality and dissemination of labour market information. Efforts to overcome these barriers would be expected to increase the amount of interprovincial migration and the resulting economic benefits.

# Interprovincial Migration in Canada: Implications for Output and Productivity Growth, 1987-2014<sup>1</sup>

---

## I. Introduction

An important source of aggregate labour productivity growth is the reallocation of resources from low to high productivity activities (Harberger, 1998). Such reallocation can take several forms: it can be movement between positions within a firm, between firms within the same industry, between sectors, between occupations all in the same region, or it can take the form of inter-regional or interprovincial mobility. Equally, an important source of output growth is the increase in employment from the ranks of the unemployed or from those outside the labour force. Movement of persons from provinces with limited employment opportunities to provinces with ample opportunities can boost employment. Greater levels of interprovincial migration have the potential to improve Canada's labour productivity and output growth, which have been relatively weak in recent years.

In fact, in 2014 the level of interprovincial migration in Canada rose significantly from the low levels of the 2009-2012 period. This development has indeed been positive for both output and labour productivity. It is important to be able to quantify how much this boost in interprovincial migration has contributed to employment, productivity, and output growth. If it is found that the results are large, more policies to foster interprovincial migration may be justified if there is reason to think that further interprovincial migration could generate additional improvements.

The objective of this report is to provide a comprehensive analysis of the role of interprovincial migration in contributing to economic and labour productivity growth in Canada. The report is organized into five sections reflecting the objectives of the study.

The first section provides a comprehensive discussion of interprovincial migration in Canada using annual estimates compiled by Statistics Canada from both child benefit data and income tax data. The absolute and relative contributions of net interprovincial migration to population growth by province are calculated. The second section reviews the literature on the determinants, barriers and consequences of interprovincial migration in Canada. The third section applies the methodology that the Centre for the Study of Living Standards developed in 2007 (Sharpe, Arsenault and Ershov, 2007a and 2007b) to quantify the impact of interprovincial migration on both output and labour productivity up to 2014. The original methodology, which captured just the one-year output and productivity impact of interprovincial migration flows, is extended to capture multi-year impacts. This extended methodology results in much larger estimates of the contribution of interprovincial migration to output and productivity than the one-

---

<sup>1</sup> This report was originally drafted by Roland Tusz and later updated and revised by Erika Rodrigues and Matthew Calver under the supervision of Andrew Sharpe. The CSLS would like to thank Federal-Provincial-Territorial Relations at the Privy Council Office for financial support and Mario Lapointe, Bert Waslander, and Jasmin Thomas for comments. Email: matthew.calver@csls.ca



year time-frame used in the earlier work. The fourth section summarizes the results, and the final section concludes.<sup>2</sup>

## II. Migration Flows

Interprovincial migration flows can be measured in two ways: gross flows and net flows.<sup>3</sup> Gross interprovincial migration flows at the national level are equal to the sum of all the individuals entering a province from another province (in-migrants) or all the individuals leaving a province for another province (out-migrants). Although net migration flows, the number of in-migrants minus the number of out-migrants, to any province for the total population can have either a positive or negative balance, net migration for the total population at the national level is equal to zero. This is because the total number of interprovincial in-migrants at the national level must be the same as the total number of interprovincial out-migrants. Net migration of *workers* within Canada need not, however, be equal to zero even at the national level because a person unemployed in their province of origin may become employed in the destination province.

This report uses the concept of *net positive migration*, calculated as the sum of the net migrants (inflow-outflow) for the provinces with positive net migration (necessarily equal to net negative migration) to calculate output gains of interprovincial migration.<sup>4</sup> This section discusses and illustrates net migration trends for 2014 and for the 1987 to 2014 period. This section also compares gross and net interprovincial migration flows relative to the size of the total population.

### A. Migration Flows, 2014

In 2013 and 2014, interprovincial migration in Canada picked up. Gross interprovincial migration totalled 279,189 in 2013 and 301,323 in 2014, up from annual gross migration in the 253 to 262 thousand range between 2009 and 2012 but still below the 2006 peak of 306,004 and the levels above 300 thousand in the late 1980s and early 1990s.

In 2014, only three provinces had a net gain from interprovincial migration: Alberta, British Columbia and Saskatchewan. Alberta, the province with the highest productivity per worker (\$139,083 in chained 2007 dollars, in 2014), gained 33,283 persons (Chart 1). This province accounted for about 77 per cent of total net migration in provinces with net gains.

---

<sup>2</sup> The CSLS Interprovincial Migration Database, which was constructed as part of this project, is posted with this report on the CSLS website at <http://www.csls.ca/reports/csls2015-19database.xlsx>. A list of the tables in the database is found at the end of the report.

<sup>3</sup> To estimate interprovincial migration, Statistics Canada uses quarterly estimates of migration between provinces and territories derived from Child Tax Benefits, as well as more accurate annual estimates derived from yearly tax returns. The two sources are then reconciled to create the final estimates, available from CANSIM Table 051-0017.

<sup>4</sup> The territories are excluded from all the calculations used in this report because the Labour Force Survey does not provide estimates of labour market performance in the territories for several of the earlier years which we consider. As a result, net positive migration at the national level is not exactly equal to net negative migration, although the two are very close. Our reported figures for net positive migration are calculated as the average of net positive and net negative migration.

**Table 1: Total Gross Migration and Total Net Positive Migration, 1987-2014 (persons)**

	Gross Migration	As a Percentage of the Population	Total Net Positive Migration	As a Percentage of the Population	Net Positive Migration Relative to Gross Migration
	A	B	C	D	D / B * 100
<b>1987</b>	312,154	1.18	57,667	0.22	18.6
<b>1988</b>	317,685	1.19	42,834	0.16	13.4
<b>1989</b>	336,005	1.24	40,579	0.15	12.1
<b>1990</b>	327,190	1.19	51,474	0.19	16.0
<b>1991</b>	307,459	1.10	41,170	0.15	13.6
<b>1992</b>	303,504	1.07	41,152	0.15	14.0
<b>1993</b>	278,537	0.97	37,730	0.13	13.4
<b>1994</b>	281,333	0.97	34,989	0.12	12.4
<b>1995</b>	281,090	0.96	28,024	0.10	10.4
<b>1996</b>	279,304	0.95	32,930	0.11	11.6
<b>1997</b>	286,613	0.96	40,428	0.14	14.6
<b>1998</b>	293,294	0.98	50,500	0.17	17.3
<b>1999</b>	271,864	0.90	38,744	0.13	14.4
<b>2000</b>	285,847	0.93	47,141	0.15	16.1
<b>2001</b>	266,371	0.86	35,190	0.11	12.8
<b>2002</b>	278,985	0.89	23,700	0.08	9.0
<b>2003</b>	258,068	0.82	13,973	0.04	4.9
<b>2004</b>	265,553	0.83	28,277	0.09	10.8
<b>2005</b>	287,506	0.89	50,147	0.16	18.0
<b>2006</b>	306,004	0.94	58,457	0.18	19.1
<b>2007</b>	288,604	0.88	35,660	0.11	12.5
<b>2008</b>	284,892	0.86	31,545	0.10	11.6
<b>2009</b>	253,667	0.76	16,423	0.05	6.6
<b>2010</b>	258,907	0.76	10,945	0.03	3.9
<b>2011</b>	261,851	0.76	17,840	0.05	6.6
<b>2012</b>	262,225	0.76	39,681	0.11	14.5
<b>2013</b>	279,189	0.80	36,157	0.10	12.5
<b>2014</b>	301,323	0.85	43,405	0.12	14.1
<b>Period Averages</b>					
<b>1987-1996</b>	302,426	1.08	40,855	0.15	13.9
<b>1997-2006</b>	280,011	0.90	38,655	0.14	15.6
<b>2007-2014</b>	273,832	0.80	28,957	0.08	10.0
<b>1987-2014</b>	286,251	0.94	36,670	0.12	12.8

Source: CSLS Interprovincial Migration Database, Tables 5, 5A, 6, and 6A, which are constructed using estimates from Statistics Canada.

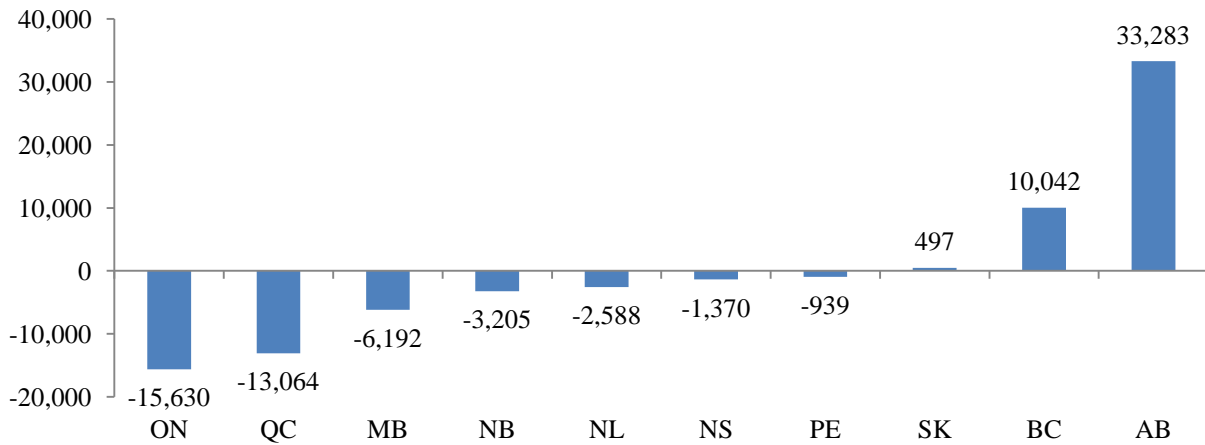
British Columbia gained 10,042 persons while Saskatchewan saw a razor-thin gain of 497 persons.

All other provinces experienced net losses owing to interprovincial migration, with Ontario losing by far the greatest number of persons (15,630). Quebec and Manitoba experienced the second- and third-greatest net loss of persons, losing 13,064 and 6,192 persons respectively.

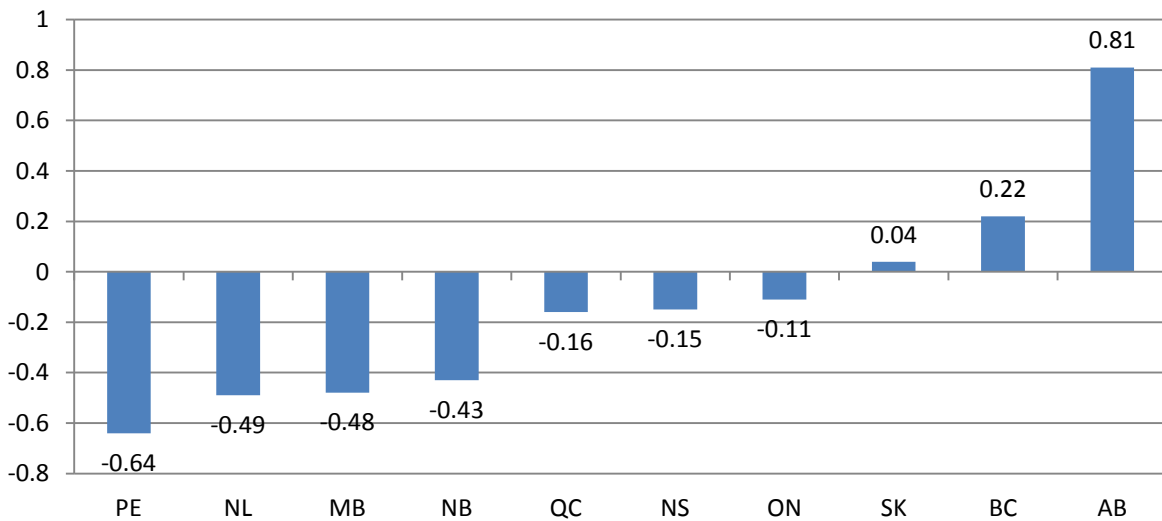
Total net positive interprovincial migration, which was 43,405 persons in 2014 (the sum of net migration to Alberta, British Columbia, and Saskatchewan), represented 0.12 per cent of Canada’s total population (Table 1). While this figure is significantly greater than the 2010 record low flow of 10,945, it does not quite reach the high water mark set in 2006 (58,457 persons), the record over the 1987-2014 period. Similarly, while the 2014 share of net positive interprovincial flows in the total population was larger than the average for 2011-2013 (0.09 per cent), it was smaller than in 2006 (0.18 per cent) and the record in 1987 (0.22 per cent). Of the 28 years from 1987 and 2014, the 2014 level of net positive migration was the 7<sup>th</sup> highest in absolute terms and the 14<sup>th</sup> highest relative to the size of the population.

Table 1 shows the ratio of net positive migration to gross migration. At 14.1 per cent of gross migration in 2014, net migration has increased from the previous year, where it was around 12.5 per cent. This share is also smaller than the highs of 19.1 per cent in 2006 and 18.6 per cent in 1987.

**Chart 1: Net Interprovincial Migration by Province, 2014 (persons)**



**As a Percentage of the Population**

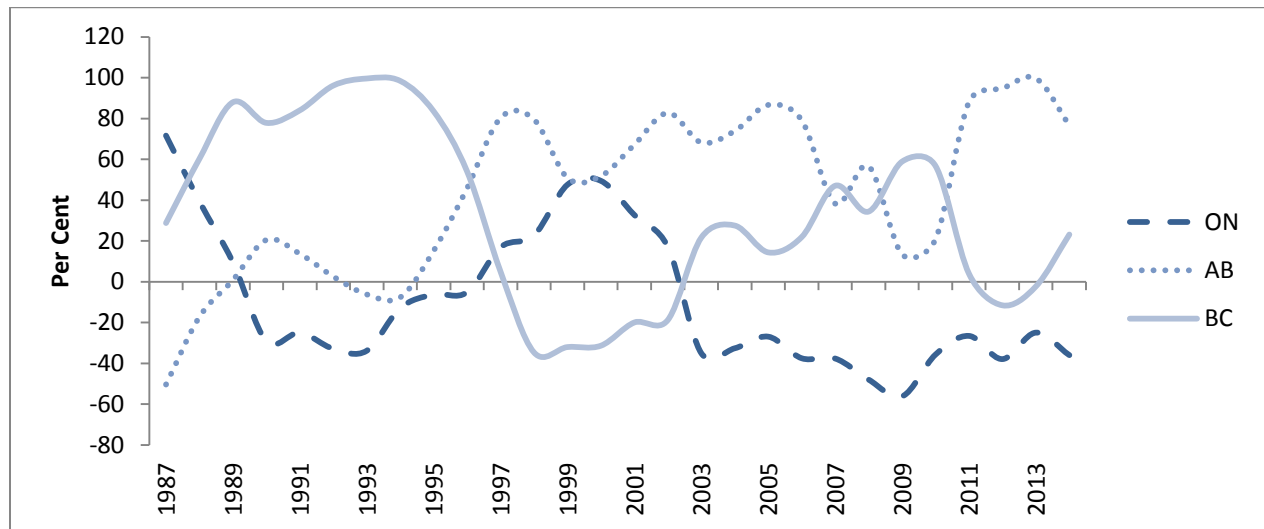


Source: Appendix Tables 1 and 2

## B. Migration Flows, 1987-2014

Alberta and British Columbia are the only provinces to gain population from net interprovincial migration over the 1987-2014 period. With the exception of short interludes in 1987, 1988, 1993, and 1994 when the province experience net negative migration, Alberta has consistently gained migrants at an average annual rate of 15,495 over the 28 years from 1987 to 2014 (Chart 2 and Chart 3), or a total of 433,851. British Columbia consistently gained a net average of approximately 27,966 migrants per year until 1998, when it began experiencing net losses until 2003, after which it returned to net gains with only a brief period of net out-migration in 2012 and 2013. It averaged net migration for the entire period of 11,824 annually or 331,083 migrants in total. British Columbia's loss of migrants appears to be Ontario and Alberta's gain, as net migrant numbers of the two provinces increased significantly in the late 1990s and early 2000s, due to the changing economic circumstances of the provinces.

**Chart 2: Provincial Shares of National Net Positive Annual Migration Flows, Ontario, Alberta, and British Columbia, 1987-2014**

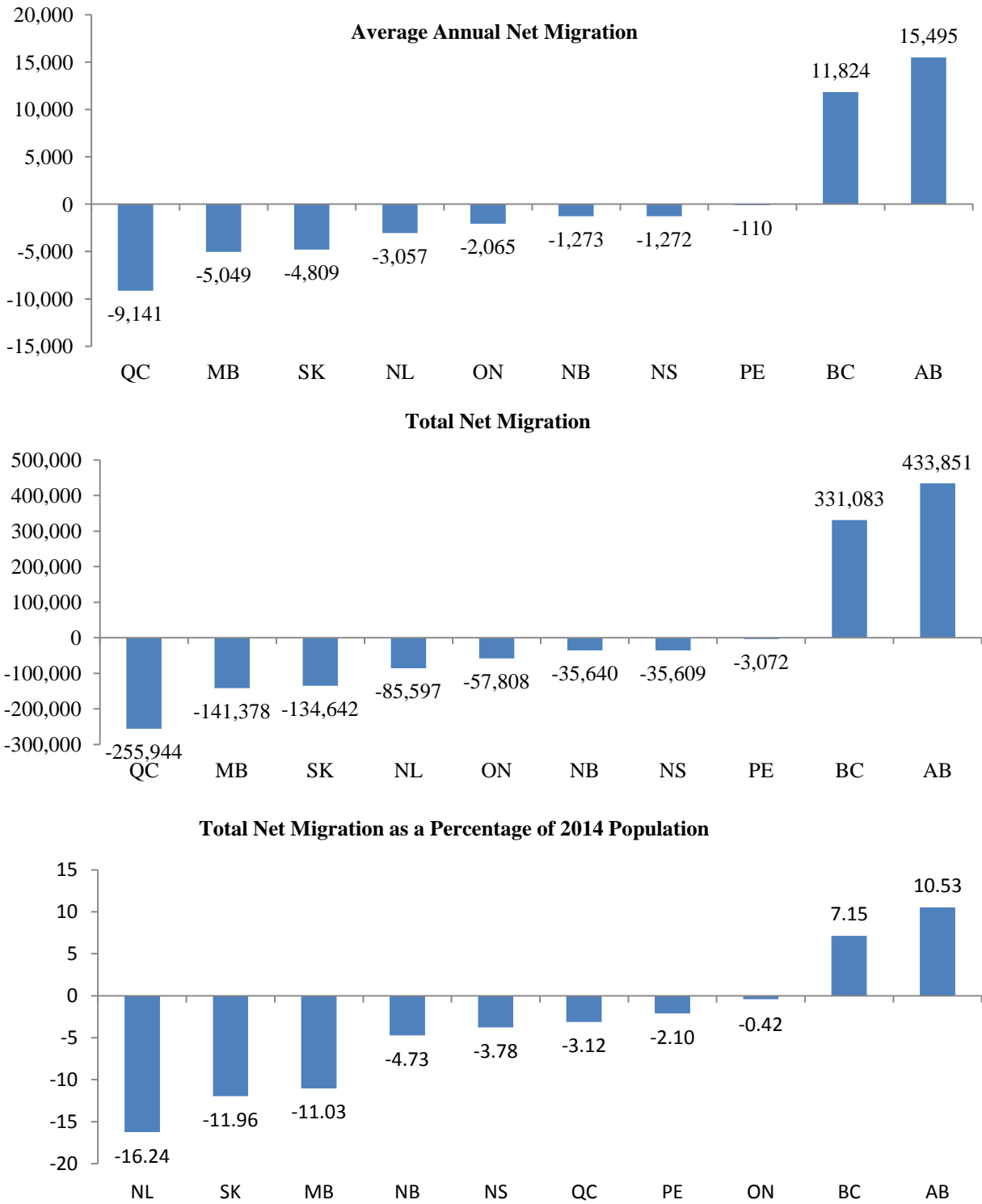


Source: CSLS calculations using data from Appendix Table 1

The province that lost the most people due to interprovincial migration over the 1987-2014 period in absolute terms was Quebec, losing on a net basis 9,141 per year or a total of 255,944. The second largest losses were in Manitoba, 5,049 per year or a total of 141,378. Saskatchewan was third (4,809 per year) and Newfoundland and Labrador fourth (3,057 per year).

Interestingly, Newfoundland and Labrador, which lost people every year from 1987 to 2008, actually experienced net migration gains from 2009 to 2012, as its economy improved with the robust oil and gas sector. Saskatchewan, another province with seemingly perennial negative net migration, has had positive net migration each year since 2007. On the other hand, Quebec and Manitoba lost people to other provinces every year during the entire 1987-2014 period.

**Chart 3: Net Interprovincial Migration by Province, 1987-2014 (persons)**



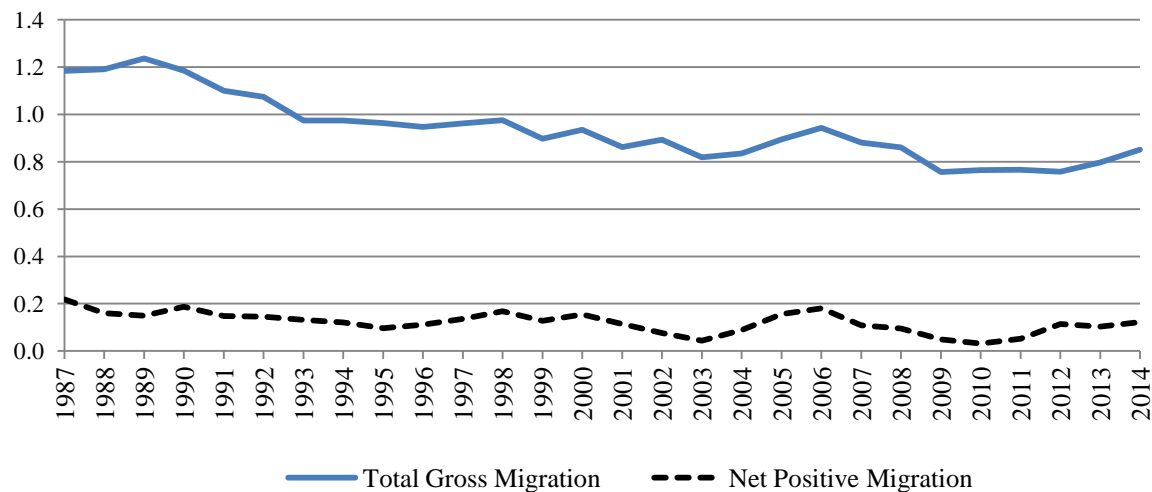
Source: Appendix Table 1

There were notable changes to migration levels for some provinces between the 1987-2006 period considered in previous CSLS research (Sharpe et al. 2007a, 2007b) and the 2007-2014. In particular, Ontario and Saskatchewan both experienced drastic changes in their average annual net migration (Appendix Table 1). Saskatchewan leapt from being the province with the second-greatest net negative migration over the earlier period to having the third highest positive net migration between 2007 and 2014. Conversely, Ontario, a province with the third highest net positive migration between 1987 and 2007, experienced the largest net out-migration of all provinces in the more recent period.

### C. Net Migration and Gross Migration Relative to Total Population

Gross migrants comprised 0.85 per cent of the Canadian population in 2014. This proportion has slowly declined over the years, from a peak of 1.24 per cent in 1989. The low numbers of migrants from 2009 to 2011 are likely part of the legacy of the Great Recession.

**Chart 4: Total Number of Interprovincial Migrants as a Percentage of Total Canadian Population, 1987-2014 (per cent)**



Source: Table 1

Net annual migration flows are relatively small compared to both the total population and gross migration flows. In 2014, total net positive interprovincial migration as a share of the total Canadian population was 0.12 per cent (Table 1). This is a moderate level compared to past highs and lows: 0.18 per cent as recently as 2006, and an all-time low of 0.03 in 2010.

The largest positive net flow for a province relative to its population in any year over the 1987 to 2014 period took place in Alberta in 1998, when net migration was equal to 1.38 per cent of the province's population (see Appendix Table 2). The largest negative net migration relative to a province's total population occurred in Saskatchewan in 1989, with net outflow representing 1.76 per cent of Saskatchewan's population.

Chart 2 presents the net interprovincial migration flows for each province between 1987 and 2014 as a percentage of the provincial population in 2014. Over this longer horizon, interprovincial migration can have a significant effect on the number of people living in a province. Newfoundland and Labrador's population is 16 per cent lower in 2014 than it would have been if there were no interprovincial migration since 1987. Similarly, Saskatchewan lost 12 per cent of its population to interprovincial migration and Manitoba 11 per cent. The net in-flows to Alberta and British Columbia have raised their populations in by 7 per cent and 11 per cent respectively.

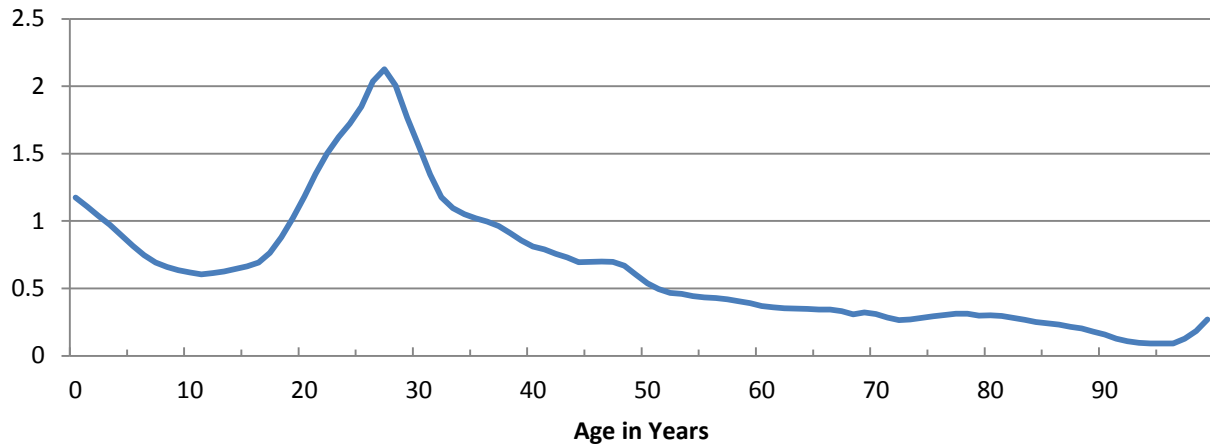
Table 1 contains information on total gross migration and total net positive migration for 1987-2014. Observing period averages of total net positive migration, we see significantly greater migration in the earlier 1987 to 1996 period than in subsequent periods. As a percentage of the total population, gross interprovincial migration has steadily declined, from an average of 1.08 for 1987-1996 to 0.80 for 2007-2014 (Chart 4). The more recent period's numbers reflect the drastic fall in migration from 2008 to 2011. Net interprovincial migration as a share of the population shows a similar decline; however, it is worth noting that the figure for 2014 is higher than the average for the full 2007 to 2014 period.

#### **D. Looking Further Back**

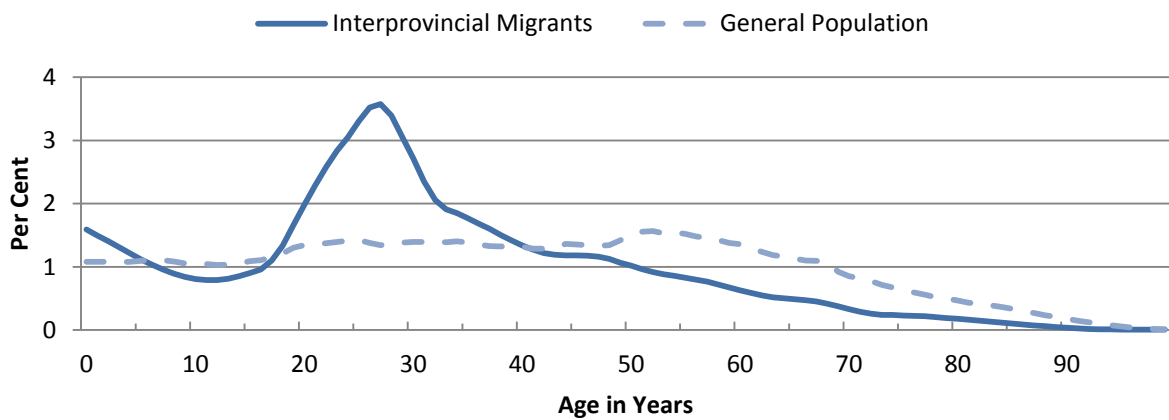
The number of interprovincial migrants as a proportion of Canada's population remains below the ratios attained in the late 1980s and early 1990s, as noted. From an even longer term perspective, the rate of (gross) interprovincial mobility has been falling as well: the rate was 1.78 per cent in 1972 (Sharpe et al., 2007b), compared to 0.94 in 2006 and 0.85 as of 2012. Canadian workers appear to be less willing to seek economic opportunities in other provinces than they were three decades ago. The much greater importance of dual-earner families reflecting increased female labour force participation is one factor that appears to have reduced geographical mobility. The aging of the population has also contributed somewhat, since older workers have lower mobility rates than younger workers (Chart 5 and Chart 6) and the share of the population aged 55 and above is rising.

**Chart 5: Population Age and Migration, One-Year Age Groups, Canada, 2014/15**

**Panel A: Incidence of Interprovincial Migration by Age (Migrants as a Percentage of the Population within Each Age Group)**



**Panel B: Age Distributions of General Population and Interprovincial Migrants (Age Group as a Percentage of Population)**



Source: CANSIM Tables 051-0001 and 051-0012, [Estimates of Population by Age and Sex for Canada, Provinces and Territories - 3604](#). Preliminary estimates of interprovincial migrants between July 1 2014 and June 30 2015.



### **III. Literature Review on Interprovincial Migration**

This section provides a selected review of the literature on interprovincial migration in Canada, looking at the drivers of interprovincial migration, barriers to migration and consequences of migration.

#### **A. Drivers of Interprovincial Migration**

Osberg et al. (1994), in a rigorous analysis of interregional labour mobility in Canada, point out that mobility decisions of individuals can be expected to vary over the business cycle, and that in any given year, interregional migration is a low probability event. Three of their conclusions are particularly relevant for this report. First, workers simultaneously evaluate the alternative economic rewards available to them if they stay where they are, if they move to a different industry but remain in the same region, or if they migrate to a new region of residence. Second, when workers evaluate alternatives elsewhere, estimated wage differentials are a statistically significant, but empirically small, determinant of the probability of interregional migration. Perceived employment opportunity is more important. Third, the authors find no evidence that the receipt of transfer payments by individuals diminishes their probability of interregional or inter-industry mobility.

Basher and Fachin (2008) provide an analysis of why interprovincial migration to Ontario became less important over the 1971-2004 period. Using a bootstrap panel cointegration test, they find that unemployment differentials and income in the sending provinces are the most important drivers of out-migration and that federal transfer differentials play only a minor role. They conclude that interprovincial migration has been significantly reduced by shrinking differentials in the labour market and income growth.

Coulombe (2006) points out that migration at the individual level is a structural adjustment since it carries with it very high costs: selling residential assets, relocating the children's education, and coordinating jobs for a married couple. He concludes that internal migration plays a very limited role in smoothing Canada's highly asymmetrical regional business cycles. He notes that one way to interpret this result is to argue that Canadians are not short-sighted and therefore do not make structural responses (migration) to solve short-run problems (at the business cycle horizon).

Coulombe (2006) shows that the decision to migrate from one province to another is driven mainly by three dynamic channels linked to structural differences across Canadian provinces:

- The search for better job opportunities appears to be the first key channel of interprovincial migration. The unemployment rate differential would seem to be an important observable economic variable that drives interprovincial migration for people less than 65 years of age.

- The tendency of those less than 65 years of age to migrate from low-productivity to high-productivity provinces in hopes of earning a higher income is the second channel.<sup>5</sup>
- The migration from rural to urban areas is the third channel. Some provinces such as Manitoba and Saskatchewan show a substantial outflow of net migration despite their relatively low unemployment rates. The authors suggest that it is the relatively large share of the population in rural areas and the relatively limited urban options in these provinces which are driving outmigration.

Day and Winer (2012) provide an extensive review of evidence on the effects of public policy on interprovincial migration and economic performance. They perform a series of simulation exercises which suggest that regional differences in public services, social assistance, and intergovernmental transfers have limited effects on migration decisions, although the evidence is not strong enough to draw firm conclusions. They find much stronger evidence that lower tax rates induce net in-migration and that differences in the generosity of employment insurance do not have a significant impact on migration or the relative performance of the provinces.

Amirault et al. (2013) make the case that, just as there is a border effect to international migration, there is a border effect that reduces interprovincial migration. They find that, on average, migration within the same province may be 10 to 98 per cent higher than migration across provinces, all else held constant. They also find that the negative effect of distance on migration may be decreasing over time. Recent advancements in communication-related technology and transportation may have lowered the costs associated with relocating, although these advances may have also reduced the need to move. They observe that such results are also consistent with a growing trend in long distance commuting<sup>6</sup>. Taken together, these trends suggest that understanding the extent to which commuting is a substitute for moving may be a fruitful direction for future research on migration.

---

<sup>5</sup> The author argues that differences in the migration response to productivity differentials across age groups suggest that migration is driven by agglomeration effects rather than by public rent-seeking. He observes that younger age groups, especially those aged 25-44, are more likely to move to higher productivity provinces while those aged 65 and above are not. This is interpreted as suggesting that migration related to productivity is the result of workers seeking higher wages generated by the agglomeration of human capital (or other factors) rather than seeking greater transfers from governments of economically prosperous regions. This is because only those of working age directly benefit from higher wages in high productivity jurisdictions, but those in the older age group would also have an incentive to move from public rent-seeking.

<sup>6</sup> Workers who commute across provincial borders are not included as migrants in our data. Long commutes across provincial boundaries have become increasingly common in recent years, particularly to work in the oil and gas industry. For example, a significant number of people were living in Newfoundland and Labrador and flying back and forth to Alberta for work. While the work is moving across provinces, the individuals are not recorded as interprovincial migrants.

## **B. Barriers to Interprovincial Migration**

Gomez and Gunderson (2007) provide a review of the barriers to interprovincial mobility in Canada. They note that there are numerous benefits to enhancing the interprovincial mobility of labour. Conversely, there are costs to barriers that inhibit mobility, as well as costs in fostering interprovincial mobility in the first place. One obvious benefit of enhanced mobility would be the reduction in labour and skill shortages.

They identify seven specific barriers:

- Occupational certification and licensing in the professions and trades, as provinces do not always recognise credentials obtained in other provinces;
- Income transfer programs like EI;
- Language differences as well as language regulations;
- Borders themselves, at least to the extent that people have more trust, networks and familiarity with the norms and institutions within their province;
- Preferential hiring and procurement practices on the part of provincial and municipal governments;
- Features of the education system emanating from such factors as curriculum differences, quotas and residency requirements with respect to financial aid;
- Potential substitutes for inter-provincial mobility, including immigration, temporary work permits and visas, and offshore or inshore outsourcing including that of business services.

Related to the first and, as is widely believed, most important barrier, Grady and Macmillan (2007:27), in a literature review on barriers to interprovincial migration conducted for Industry Canada, conclude that:

"No empirical studies were found that demonstrate that professional and occupational regulations constitute a substantial barrier to mobility. This suggests that either the barriers are not that important in practice or that for some unexplainable reason they have been overlooked by researchers."

## **C. Consequences of Interprovincial Migration**

Boadway and Tremblay (2010) provide a detailed analysis of the interaction between fiscal relations and internal migration in a federal system. Their key message is that mobility enhances the case for more centralized revenue raising in a federation, while it tends to mitigate the fiscal imbalances that arise in federations that may face uneven shocks or that have regions with different industrial structures. They note that in the Canadian case, the federation has in

recent years been subject to both substantial aggregate shocks and substantial asymmetric shocks, both of which have led to fiscal imbalances, and that interprovincial mobility has played an important role in mediating the consequences of the shocks for fiscal balance. Nonetheless, the sheer size of the resource boom in selected provinces, an asymmetric shock, means that while increased interprovincial mobility could do more to mediate the imbalance, it should not be considered the major means to address the issue.

Coulombe (2006) shows that interprovincial migration is a powerful mechanism of human capital redistribution across the Canadian provinces. Typically, a rich province with a positive net migration rate one standard deviation above the provincial average will end up in the long run with 10 percent more human capital than the average Canadian province. He notes that,

"From the viewpoint of the overall Canadian economy, the effect of interprovincial migration on the geographical distribution of production factors is substantial and clearly beneficial given its driving channels. Interprovincial migration clearly improves welfare for the migrants because young Canadians move from low-productivity and high-unemployment regions to provinces where they can be productively employed. Furthermore, the potential of interprovincial migration increases the expected return of investment in human capital in lower-productivity provinces and therefore should induce private investment in education. But from the regional point of view, interprovincial migration increases provincial differences in the standard of living, redistributing human capital from the relatively poor and rural provinces to the relatively rich and urban provinces. This is because the most mobile component of the population is the educated young."

Capeluck (2014) provides an examination of the extent to which economic performance across provinces has been converging through time. He finds that there remains significant variation across provinces in terms of labour productivity and, to a lesser degree, there are disparities in employment rates. These disparities suggest that reallocating Canada's labour force geographically may improve aggregate economic performance. Since 1990, there has been some convergence in employment rates across provinces, but real GDP per worker has been diverging.

The present study extends previous work by the Centre for the Study of Living Standards (Sharpe, Arsenault and Ershov, 2007a and 2007b) which estimated that the net output gains from interprovincial migration in Canada amounted to \$833.1 million (1997 constant dollars) in 2006, or 0.0704 per cent of GDP.<sup>7</sup> We are not aware of any other studies which have attempted to quantify the aggregate effects of interprovincial migration on output, employment, and productivity.

Finnie (2001) estimates the impact of interprovincial migration on wages compared to those who did not move using panel data from Statistics Canada's Longitudinal Administrative

---

<sup>7</sup> Productivity differentials between Canada and Alberta are much larger when measured in 2007 dollars, when oil prices were high, than in 1997 dollars. This means that the gains from workers moving to Alberta are greater in the present report than in the previous CSLS estimates (Sharpe et al., 2007a, 2007b) because of this change in the base year.

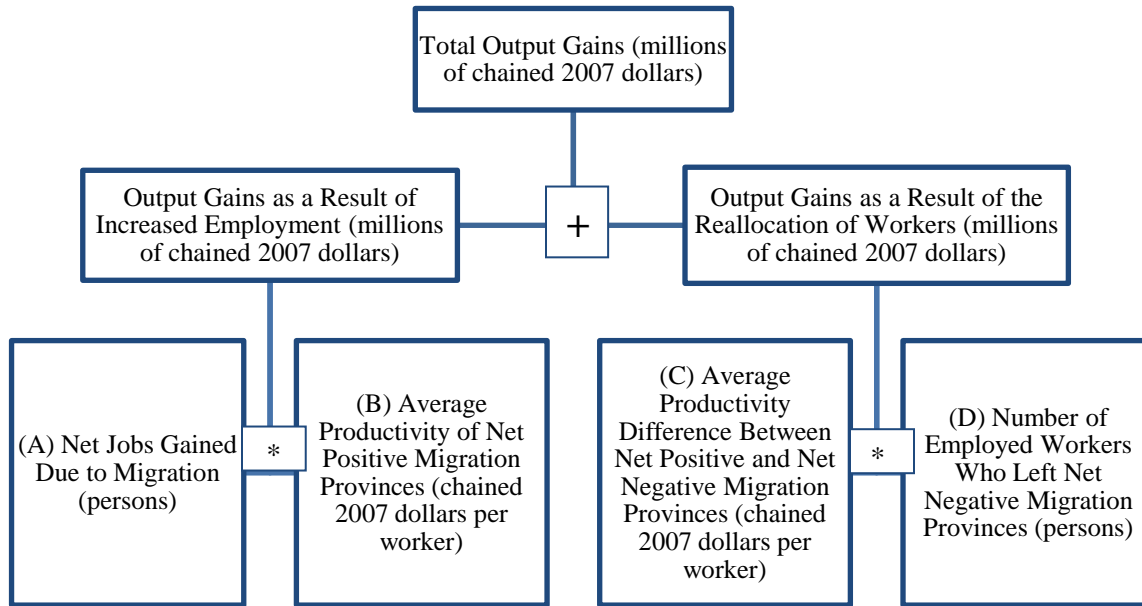
Database (LAD). Finnie’s estimates control for several observable characteristics which differ between movers and non-movers, addressing a significant limitation of the methodology used in this report. He finds that within two years of moving, the wages of those who change provinces increase 4.3 per cent compared to the wages of those who do not. We apply this estimate to our estimates of the gross migration flows of workers in order to perform a broad comparison of the contribution of interprovincial migration to Canadian GDP (see Table 16 of the CSLS Interprovincial Migration Database).

#### IV. Methodology of Estimating the Impact of Interprovincial Migration on Productivity

##### A. An Overview of the Methodology

Sharpe, Esshov and Arsenault (2007a and 2007b) developed a methodology to estimate the impact of interprovincial migration on aggregate output and productivity growth and estimated impacts for the 1987-2006 period for Canada. This report updates the estimates generated by this framework from 2006 to 2014 and extends the framework to take account of the cumulative effect of these impacts over time.

**Figure 1: A Framework for Estimating Total Output Gains Arising from Interprovincial Migration**



Note: Productivity measures can also be measured in current dollars. Average productivity of net positive and net negative migration provinces ((B) and (C)) are calculated by weighting labour productivity in each province based upon its share of net positive or net negative migration of workers.

Total output gains are the result of two separate effects: the employment gains as a result of interprovincial migration and the re-allocation of workers between provinces with different average labour productivity levels. The former is due to persons who are unemployed or out of

the labour force in the origin province and who find employment in another province. The employment gains are approximated using differences in provincial employment rates. The latter is caused by employed workers moving from provinces with low productivity levels to provinces with high productivity levels. Assuming that workers generate the average productivity level of their province of residence, their productivity will increase as a result of migrating to a higher productivity province. Total national output will increase by the difference in productivity between above and below average productivity provinces for every worker that moves (Figure 1).

In more concrete terms, gains in output due to employment changes are equal to the product of the number of new jobs gained as a result of migration between provinces with different employment rates (provinces with net gains tend to have higher employment rates) and the average productivity level of provinces with net migration gains (again, provinces with net gains tend to have above average productivity levels). The gains in output due to re-allocation are equal to the difference in average productivity between provinces with net migration gains and provinces with net migration losses, multiplied by the number of workers who leave provinces with net migration losses.<sup>8</sup> Total gains in output due to interprovincial migration are equal to the sum of these two factors.

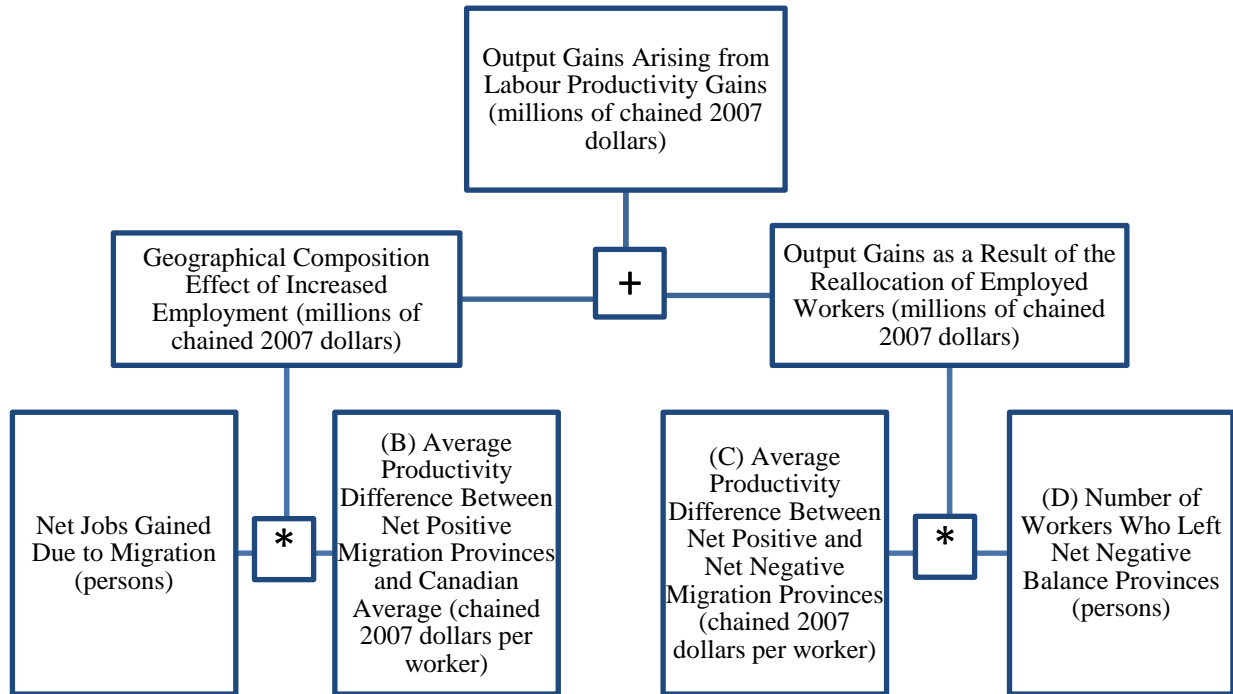
The effect of interprovincial migration on aggregate labour productivity is calculated by isolating output gains that directly arise from labour productivity gains. Clearly, output gains resulting from the re-allocation of workers across provinces can be attributed entirely to productivity gains since the re-allocated workers contribute to an increase in output without changing the level of national employment. The effect of new employment on productivity is not as readily perceived. If the productivity level of new employment is that of the national average, there is no effect on aggregate productivity. In this case, the positive effect on output is offset by the increase in employment. If, however, new employment is largely created in provinces with above average productivity, then new employment will raise the national labour productivity level. Intuitively, an increase in employment in high productivity industries or provinces will tend to increase productivity, even if employment in other provinces remains unchanged. We call this effect on productivity the “geographical composition effect” of new employment creation.

Figure 2 outlines how output gains that arise from labour productivity gains are computed. The geographical composition effect of new employment is obtained by multiplying the number of new jobs due to migration by the productivity difference between net positive provinces and the national average. The other component is simply output gains due to the re-allocation of employed workers computed in the same way as in Figure 1.

---

<sup>8</sup> Again, one needs to remember that the number of employed workers who left net negative migration provinces ((D) in Figure 1) is the number of workers who are re-allocated. The number of migrants who join net positive migration provinces is equivalent to the number of employed workers leaving net negative migration provinces (D) to which we add the number of unemployed workers (or persons outside of the labour force) which find new employment in the destination province (A). Thus, it is also possible to compute total output gains for Canada by multiplying, for each province, the number of workers gained or lost by the average productivity of the province and then summing up across provinces.

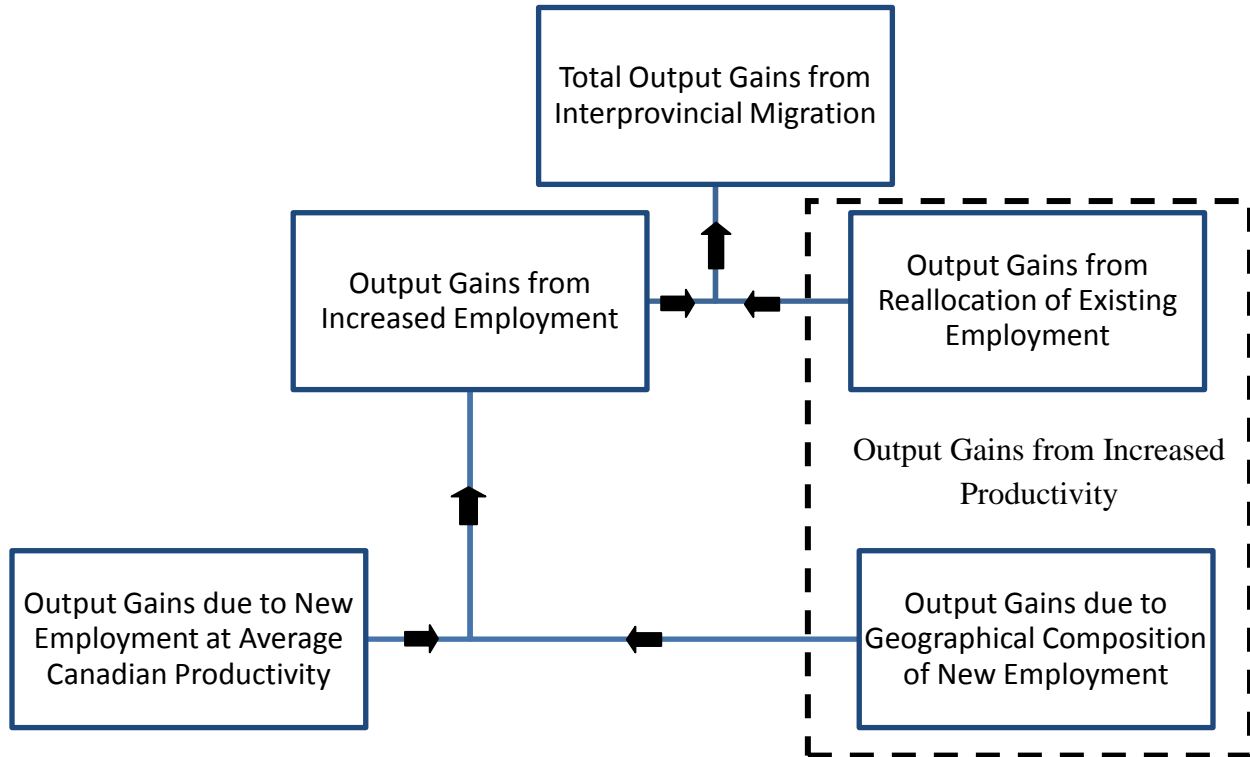
**Figure 2: A Framework for Estimating Productivity Gains Arising from Interprovincial Migration**



Note: Productivity measures can also be measured in current dollars. Average productivity of net positive and net negative migration provinces ((B) and (C)) are calculated by weighting labour productivity in each province based upon its share of net positive or net negative migration of workers.

It may be useful to clarify how Figure 1 relates to Figure 2, particularly regarding the geographical composition effect. The geographical composition effect represents an interaction between new employment and increased productivity as the result of interprovincial migration. In Figure 1, geographical composition falls under output gains as a result of increased employment. Figure 3 clarifies that the total gains to output from interprovincial migration can be broadly attributed to output gains from new employment and output gains from the reallocation of existing employment, just like in Figure 1, but explicitly shows where geographical composition and labour productivity fit in. While the reallocation effect is associated with increased labour productivity, the total gains linked to higher labour productivity also include the geographical composition effect. The total gains to output cannot be cleanly split into gains from increased employment and gains from increased labour productivity because of the geographical composition effect.

**Figure 3: The Relationship between Total Output Gains, Employment Gains, and Labour Productivity Gains**



### B. Applying the Methodology

There are a number of assumptions embedded in the methodology used in this report. In order to obtain estimates of output gains due to migration, it is assumed that:

- Migrating workers have, on average, the average productivity of their province of origin.
- Migrating workers, when they move, obtain jobs with the average productivity of the destination province.
- Migrants have, on average, the demographic structure of their province of origin.
- Productivity in this report refers to total output per worker (denoted primarily in chained dollars, but can also be denoted in current dollars) and therefore does not account for provincial differences in average hours worked, which in any case were small during the period covered.

These four assumptions do imply a number of other more specific assumptions. For example, they presume that differences in productivity levels across provinces are not worker-specific, that is they are not due, for example, to differences in educational attainment across



provinces.<sup>9</sup> A comprehensive review of the limitations related to the methodology and their impact on our estimates is included in Section 4 of this report. Despite limitations, we believe that there is value in this type of analysis, for it sheds light on the output and employment effects of interprovincial migration.

The methodology used to quantitatively measure the contribution of internal migration to overall output and productivity is as follows: gross in- and out-migration estimates were obtained for each province and out-migration was subtracted from in-migration to calculate the net provincial migration. These net migration estimates, however, were for the entire population, and it was necessary to estimate the number of workers that move and actually contribute to output and productivity (Statistics Canada only provided annual estimates of interprovincial migration for the total population). The following outlines the method used to calculate the net migration of workers for every province:

- Provincial gross outflows are multiplied by the ratio of the working age population (persons 15 years old and over) to the total population of each origin province.<sup>10</sup> This is done to reflect the slightly different provincial demographic structures, assuming that the demographic structure of the migrating population mirrors that of the total population of their origin province.
- To estimate the number of workers gained by the destination province the working age population migrant inflow estimate is multiplied by the employment rate of each destination province.
- To calculate the number of workers lost by the origin province, the working age population migrant outflow estimate for every province is multiplied by the employment rate of the origin province.
- As each origin province is also a destination province, by subtracting the total number of workers lost from the total number of workers gained it is possible to calculate the estimate of net migration of workers for every province (Appendix Table 3).<sup>11</sup>

---

<sup>9</sup> In turn, this would mean that productivity differences between provinces are mostly the result of differences in resource endowments, capital intensity, or industrial structure. Productivity differences could also be the result of differences in economies of scale or agglomeration economies achieved by respective provincial economics, with some provinces having larger cities and a larger proportion of persons in urban areas than others.

<sup>10</sup> Ratios of working age population to total population were quite similar across provinces. For example, in 2014, the ratios ranged from a low of 81.1 per cent in Saskatchewan to a high of 85.9 per cent in Nova Scotia (Table 7 in the CSLS Interprovincial Migration Database).

<sup>11</sup> Labour Force Survey estimates were used for total employment, the employment rate and the unemployment rate. LFS estimates did not historically include the territories (the Yukon, the Northwest Territories, and Nunavut) due to the difficulty of collecting information in remote locations. Estimates are now available, for these regions, but they are produced using a different methodology more suitable for remote locations and Statistics Canada does not include the territories in calculating national totals. The internal migration and output estimates in this report were calculated so as to not include the territories because of these methodological differences and lack of estimates back to 1987. For this reason, the total in-migration and out-migration estimates calculated in this report are slightly different than those given by Statistics Canada in its CANSIM database and do not sum exactly to zero when

To calculate the output effect of interprovincial migration, net migration of workers to a province is multiplied by the average output per worker of the province (Table 4 of the CSLS Interprovincial Migration Database). This calculation can be made in either constant or current dollars. It is important to note that, due to different provincial employment rates and demographic structures, the number of workers lost by the origin province does not necessarily equal the number of workers gained by the destination province. Indeed, if people migrate in search of employment opportunities, net migration should be from provinces with lower employment rates to provinces with higher employment rates, causing an increase in national employment as a result of unemployed or out of the labour force migrants who find employment in their destination province. This increase in employment will increase aggregate output, as more workers will produce more and add to GDP.<sup>12</sup>

The changes in employment mean that in addition to output gains due to the reallocation of workers, there are output gains due to increased employment as a result of migration. As discussed earlier, it is possible to decompose total output gains as a result of migration into the employment effect and the re-allocation effect. To calculate the output effect of increased employment we multiply the total number of jobs gained as a result of migration by a weighted average of output per worker of the provinces with positive net migration weighted by the provincial share of net migration (Appendix Table 5). This estimate is then subtracted from the total output gains as a result of migration in order to obtain the output gained as a result of re-allocation, which contributes to overall productivity changes (Appendix Table 6).

To obtain the total contribution of migration to productivity changes we add the geographical composition effect of new employment to the estimate of output gains from the re-allocation of workers. To obtain the geographical composition effect of new employment, we compute the difference between average productivity in Canada and average weighted productivity in provinces with positive net migration, and then multiply it by the number of jobs gained as a result of migration.

To illustrate how output gains are computed, a simple example is presented (Figure 4). Consider a single country with two provinces, Province A and Province B. In a given year, there is a net migration of 1,000 people (15 years old and over) from Province A to Province B. Province A has an employment rate of 50 per cent, meaning that it loses 500 workers as a result of migration. If Province A has an output per worker value of \$50,000 per worker, then the total effect on provincial output will be of a loss of 500 workers multiplied by \$50,000 per worker, a total loss of \$2.5 million. Province B, with output per worker value of \$60,000 per worker and a higher employment rate of 60 per cent, gains 600 workers from the migration of the same 1,000 people. This results in an output gain of \$3.6 million in Province B. The net national output gain

---

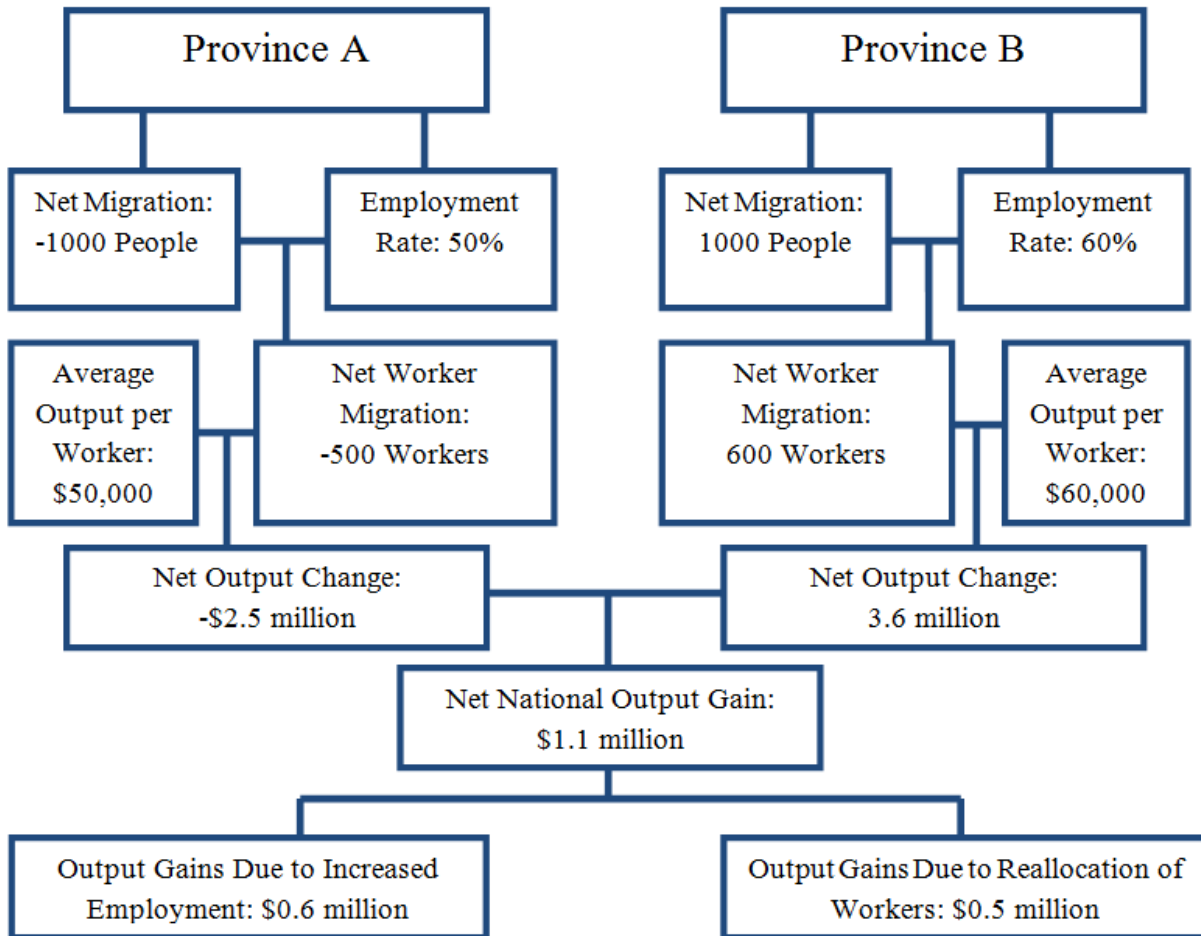
calculating net migration. These changes are not very significant, considering that the volume of migration to and from the territories is very small (5,171 gross in-migrants and 5,239 gross out-migrants for the three territories in 2014), ensuring that they only have a negligible impact on output and productivity. Notice that while these migration flows are very small relative to those at the national level (about 1.7 per cent), they are very large relative to the population of the territories, representing about 4.5 per cent of the population of 116,718 in 2014.

<sup>12</sup> Employment changes resulting from interprovincial migration cannot be captured through employment estimates, as employment surveys such as LFS and SEPH do not include information on the province of origin or the interprovincial migration history of workers.

due to migration is the sum of the output changes of the two provinces, \$1.1 million. However, part of this gain is due to 100 more migrants from Province A finding jobs in Province B. Their impact on output is equal to 100 workers multiplied by the average productivity of Province B, \$60,000. Therefore, \$0.6 million of the total \$1.1 million increase is due to the increased employment, and only the remainder, \$0.5 million is due to re-allocation of workers across provinces. The \$0.5 million due to re-allocation can be calculated by multiplying the 500 workers who move from Province A to Province B by the additional \$10,000 they earn working in Province B compared to working in Province A on average.

The geographical composition effect is part of the gains due to increased employment. In this case, it can be calculated by multiplying the 100 new employees resulting from interprovincial migration by the additional \$10,000 that each of these employees will earn. Thus the geographical composition effect in this example results in an additional \$0.1 million of output. Notice that this geographic composition effect captures improvements arising from both increased employment and higher productivity. The total gains in output associated with higher labour productivity are equal to \$0.6 million, the sum of the gains from the reallocation effect (\$0.5 million) and the geographical composition effect (\$0.1 million)

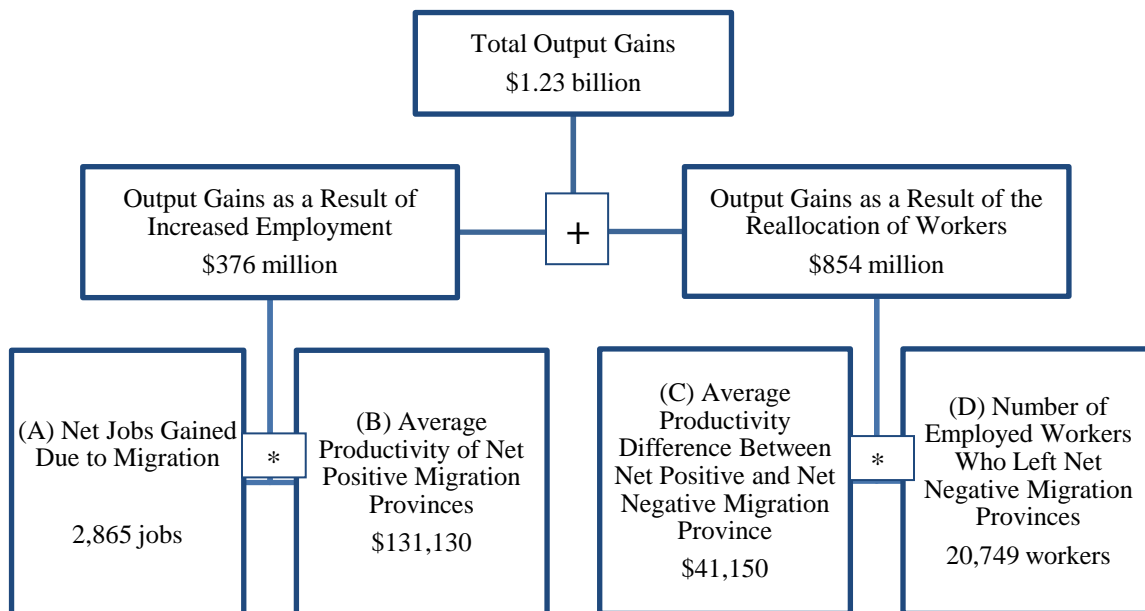
**Figure 4: An Illustration of the Methodology at Work**



## V. Results and Caveats

This section reviews the main results obtained using the methodology outlined in Section 3. It initially focuses on results using prices in chained 2007 dollars. Trends in total output gains due to interprovincial migration are first analysed, followed by a decomposition of these gains into gains from employment and from the reallocation of workers. An analysis of the output gains arising from labour productivity gains due to interprovincial migration follows. The final section reviews the limitations and potential biases related to the methodology adopted in this report.

**Figure 5: Example of Calculation of Total Output Gains Arising from Interprovincial Migration, 2014**



Source: Figure 1 and Table 11B of the CSLS Interprovincial Migration Database

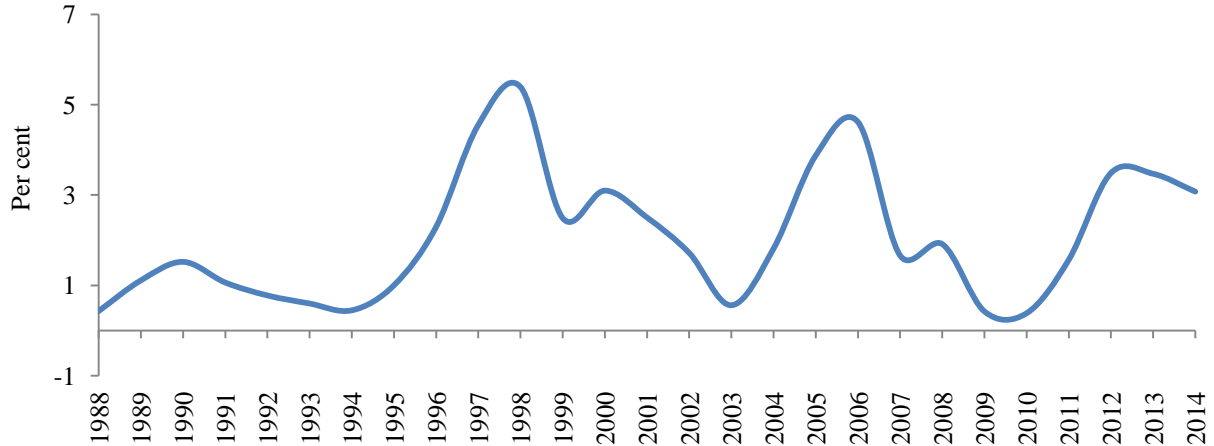
### A. Analysis of Output Gains

#### i. Output Gains, 1987-2014

This study finds that the total change in output as a result of interprovincial migration is the addition of \$1.23 billion chained 2007 dollars to GDP in 2014 (Appendix Table 4). This represents the third largest annual contribution of interprovincial migration to real trend output growth since 2006, equal to 0.072 percentage point growth in 2014 and 3.1 per cent of trend real

GDP growth (Chart 6 and Appendix Table 7).<sup>13</sup> Figure 5 summarizes how these total gains are calculated in 2014 using the same framework as Figure 1.

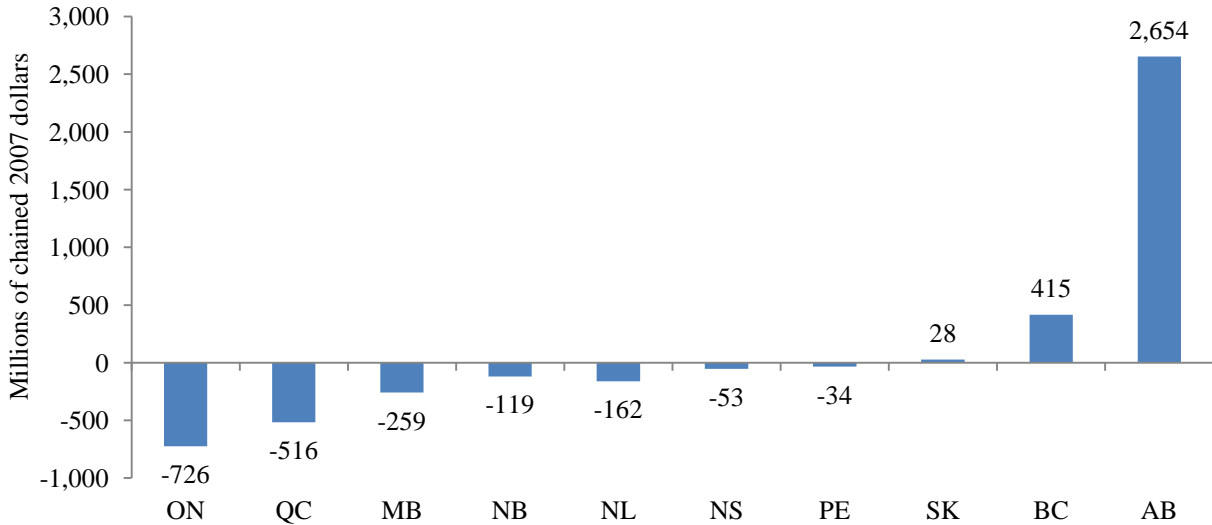
**Chart 6: Contribution of Interprovincial Migration to Real Output Growth in Canada, 1987-2014 (percentage of trend GDP growth)**



Source: Appendix Table 7

Over the 1987 to 2014 period, the net movement of workers between provinces had a positive, but relatively small effect on actual output, with the percentage point contribution of migration to real output growth ranging from 0.010 to 0.127 for a given year (Appendix Table 7). The relative importance of annual net interprovincial migration flows for economic growth varied considerably through time, contributing less than one per cent of GDP growth in several years, but as much as 5.4 per cent of GDP growth in 1998. The wide variation in the importance of interprovincial migration is related to the total size of net migration flows in any given year, variations in the relative economic performance of provinces with net in- and out-flows through time, or variation in other factors which impact output such as commodity price shocks.

<sup>13</sup> Trend real GDP growth is equal to the compound average annual growth rate for the full period, as opposed to the actual growth rate for a given year. Trend real GDP growth is 2.36 per cent annually for 1987-2014. Note that trend real GDP growth has been falling over time, so that the contribution of interprovincial migration to trend GDP growth over this period underestimates the importance of interprovincial migration for GDP growth in recent years.

**Chart 7: Contribution of Interprovincial Migration to Real GDP by Province, 2014**

Source: Appendix Table 4

In 2014, the contribution of interprovincial migration to real output was largest in Alberta, at \$2.7 billion chained 2007 dollars, with British Columbia coming a distant second place at just \$415 million (Chart 7). Ontario had the largest negative contribution of interprovincial migration to real output, at -\$726 million dollars. This has not always been the case; from 1987 to 1995, British Columbia was the dominant positive contributor, with output gains from interprovincial migration reaching over one billion dollars per year for six of these nine years (Appendix Table 4). In 1998, British Columbia's contributions became negative, while Ontario and Alberta became the main positive contributors, with Alberta leaping from \$366 million chained 2007 dollars in 1995 to \$1.03 billion chained 2007 dollars in 1996, and Ontario rising from -\$84 million in 1996 to \$236 million a year later, eventually reaching a peak of approximately \$1 billion in 2000. In 2003, Ontario returned to output losses and British Columbia returned to positive output gains, with Alberta continuing to receive a large number of migrants.

Alberta is especially important for understanding trends in how migration impacted output growth through time (Chart 6). Not only did it receive the most net migrants from 1987 to 2014 by a wide margin, it also consistently outperformed almost every province in almost every year in terms of both employment and labour productivity (see Tables 4 and 8 in the CSLS Interprovincial Migration Database). The only exceptions are that Ontario had a slightly higher employment rate in 1987 and Newfoundland and Labrador had higher labour productivity levels in 2007 and 2008 due to the high productivity of the offshore oil industry. Therefore, interprovincial migration tends to have the greatest impact on national output in years when a large number of people are migrating to Alberta on net. Given the recent fall in oil prices and the resulting slowdown in Alberta, the contribution of net interprovincial migration flows to output growth will likely fall in 2015.

Table 2 shows the total number of years between 1987 and 2014 in which interprovincial migration made a positive or negative contribution to GDP for each province. Consistent with

the previous discussion, British Columbia and Alberta have been fairly consistent beneficiaries of interprovincial migration. The Atlantic provinces (particularly Prince Edward Island), Saskatchewan, and Ontario have occasionally benefited from interprovincial migration, although it generally has a negative effect on them. Quebec and Manitoba are notable for having lost GDP as a result of interprovincial migration in all 28 years under consideration (Table 2).

**Table 2: Years of Positive and Negative Effects of Interprovincial Migration on GDP, Provinces, 1987-2014**

Province	Positive	Negative
AB	25	3
BC	20	8
PE	11	17
ON	9	19
SK	8	20
NS	6	22
NL	3	25
NB	3	25
QC	0	28
MB	0	28

Source: Appendix Table 4

Our results can be compared to those implied by Finnie (2001), which finds that within two years of moving the wages of those who change provinces increase 4.3 per cent compared to the wages of those who do not. Our study only considers net migration flows, so we would expect the results based on Finnie's estimates to be somewhat larger than those from our study. It turns out that the estimated gains to output from migration in 2014 based on Finnie (2001) are about 80 per cent of the most comparable estimates from our study, despite the fact that our estimates only consider net flows. One possible explanation for this is that the returns to migration have been unusually high in recent years compared to the time period considered by Finnie (2001), perhaps related to the oil boom in Alberta. In most years, the estimates based upon Finnie (2001) are considerably larger than those in this report (see Table 16 of the CSLS Interprovincial Migration Database for the full comparison from 1987 to 2014).

## ii. Decomposition of Output Gains

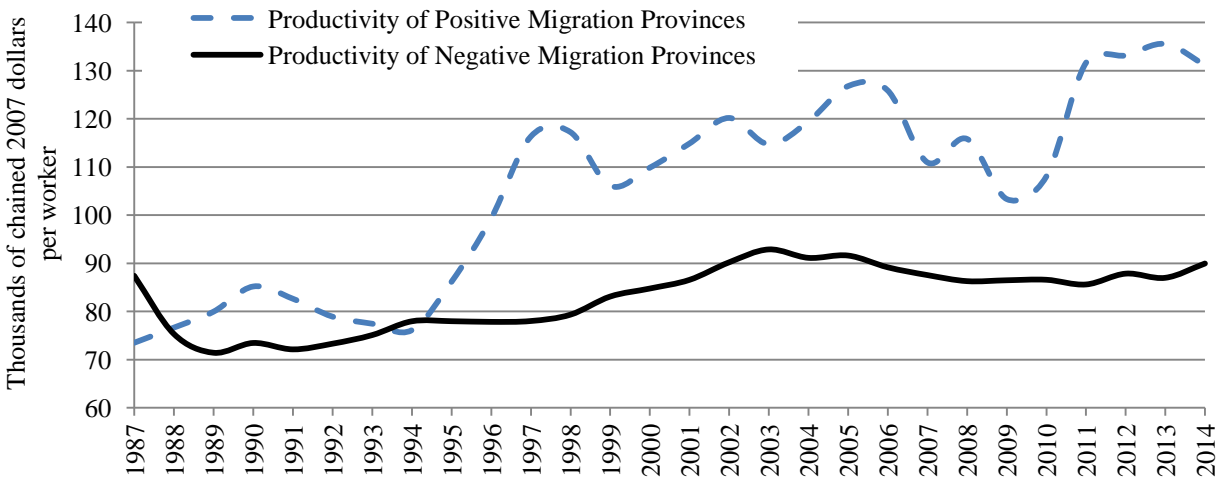
### a. Weighted Labour Productivity

In order to decompose the overall output gains as a result of interprovincial migration into output gains arising from employment increases and output gains resulting from employed worker reallocation across provinces, weighted average labour productivity estimates (weighted by the number of net migrating workers) were calculated for provinces with net losses of workers and provinces with net gains of workers for the 1987 to 2014 period (Appendix Table 5). In 2014, average labour productivity for provinces with net gains of workers was \$131,130

(2007 chained dollars); the average productivity for provinces with net losses of workers was \$89,979, making for a difference of \$41,150 in output per worker between the two types of provinces. This is the fourth highest absolute disparity in productivity levels for the entire period examined, with only the three immediately preceding years exhibiting greater productivity gaps between in-migration and out-migration provinces.

The productivity gap fluctuated greatly between 1987 and 2014. In 1987 and 1994, the productivity gap actually became negative. In these two years, Alberta experienced net outflows of workers. Since Alberta has the highest labour productivity and usually has large net positive migration, these temporary shifts in its status significantly lowered the productivity of positive migration provinces while raising that of negative migration provinces. In a similar fashion, a peak gap of \$48,531 chained 2007 dollars per worker was reached in 2013 (Chart 8), a year when Alberta had an extremely large share of the net positive interprovincial migration of workers (98.5 per cent) and productivity in Alberta was very high due to the high price of oil.

**Chart 8: Weighted Labour Productivity for Provinces with Negative Net Worker Migration and Provinces with Positive Net Worker Migration, 1987-2014**



Source: Appendix Table 5.

## b. Weighted Employment Rates

Provinces with net positive interprovincial migration had, on average, more employment opportunities, as exhibited by the employment rate, than provinces which had net negative migration. In 2014, the weighted average employment rate of provinces with net migration gains was 66.0 per cent (Appendix Table 9, Chart 9).<sup>14</sup> It was 8.0 percentage points higher than the employment rate for provinces with net migration losses, 58.0 per cent. Between 1987 and 2014,

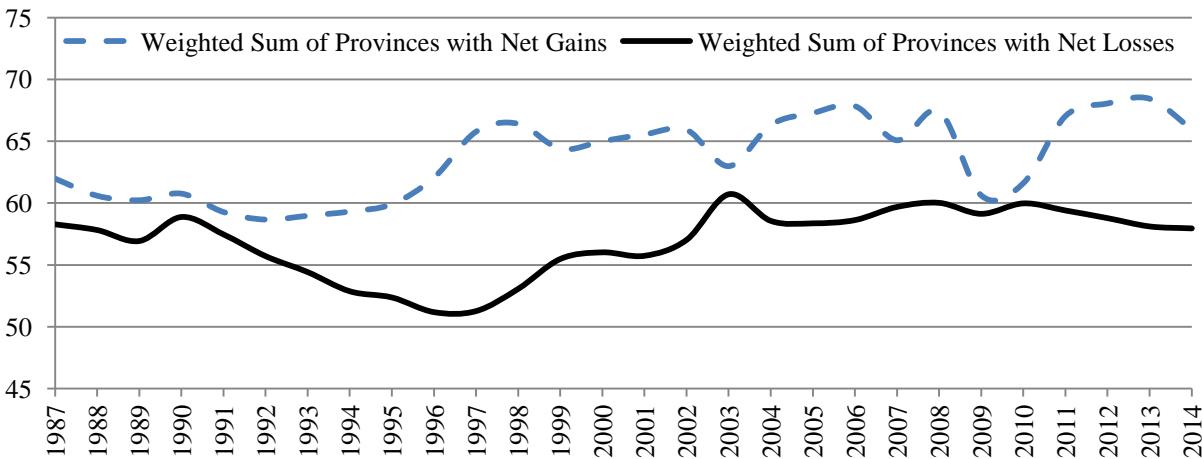
<sup>14</sup> The employment rates were weighted by the shares of net outflow of working age population migrants (15+) for provinces with net negative migration estimates and net inflow of working age population migrants (15+) for provinces with net positive migration estimates (Table 8A in the CSLS Interprovincial Migration Database).



the gap in employment rates between positive and negative net migration provinces ranged from a low of 1.5 percentage points in 2009 to a high of 14.5 percentage points in 1997.

Unlike the sum of net provincial population changes due to interprovincial migration, which is zero, net employment changes due to migration may total to a value greater than zero. This reflects the number of migrants who were unemployed or out of the labour force in their province of origin, but who found work in their province of destination. It is estimated that a net of 2,865 new jobs were gained in 2014 as a result of the difference in employment rates between the provinces with net gains of migrants and the provinces with net losses of migrants (Appendix Table 3). From 1987 to 2014, it is estimated that a total of 59,259 jobs were added in Canada as a result of interprovincial migration.

**Chart 9: Weighted Employment Rates of Provinces with Positive Net Migration and Provinces with Negative Net Migration, 1987-2014 (per cent)**



Source: Appendix Table 9.

Note: The number and set of provinces that gain workers and provinces that lose workers is differs by year.

### c. Output Gains Arising from Employment Increases and Reallocation of Workers

The product of the average weighted labour productivity of provinces with positive net migration and the number of new jobs gained due to net migration gives an estimate of the absolute contribution of increased employment to total output gains as a result of migration. The difference between total output gains and the gains due to increased employment, is the absolute contribution to output gains from the re-allocation of workers among provinces with different average productivity levels. Output gains due to re-allocation are a function of the difference in

**Table 3: Decomposition of Output Gains Due to Interprovincial Migration, 1987-2014**  
(millions of 2007 chained dollars)

	Output Gains due to Employment Increases	As a Percentage of GDP	Output Gains due to Re- allocation	As a Percentage of GDP	Total Output Gains due to Migration	As a Percentage of GDP
	A	B	C	D	E = A + C	F = B + D
1987	117.8	0.013	-354.1	-0.038	-236.2	-0.026
1988	69.0	0.007	24.1	0.002	93.0	0.010
1989	88.8	0.009	163.5	0.017	252.3	0.025
1990	66.6	0.007	287.4	0.029	354.0	0.036
1991	49.0	0.005	198.5	0.020	247.6	0.026
1992	75.7	0.008	101.2	0.010	176.9	0.018
1993	101.0	0.010	36.2	0.004	137.3	0.014
1994	131.7	0.013	-26.7	-0.003	105.0	0.010
1995	149.2	0.014	97.8	0.009	247.0	0.023
1996	289.1	0.026	293.5	0.027	582.6	0.053
1997	543.7	0.048	632.1	0.055	1,175.8	0.103
1998	635.9	0.053	816.8	0.069	1,452.7	0.122
1999	297.0	0.024	400.9	0.032	697.9	0.056
2000	376.5	0.029	535.5	0.041	912.0	0.069
2001	322.9	0.024	451.4	0.034	774.2	0.058
2002	207.8	0.015	332.5	0.024	540.3	0.039
2003	29.5	0.002	150.7	0.011	180.2	0.013
2004	214.1	0.015	382.9	0.027	596.9	0.041
2005	468.1	0.031	849.2	0.057	1,317.2	0.088
2006	567.1	0.037	1,053.0	0.069	1,620.1	0.106
2007	179.0	0.011	418.7	0.027	597.7	0.038
2008	228.8	0.015	473.2	0.030	702.0	0.045
2009	20.7	0.001	135.7	0.009	156.4	0.010
2010	16.5	0.001	120.9	0.008	137.4	0.009
2011	157.2	0.010	427.4	0.026	584.5	0.036
2012	424.8	0.026	916.7	0.055	1,341.5	0.081
2013	450.9	0.027	909.7	0.054	1,360.6	0.080
2014	375.7	0.022	853.8	0.049	1,229.5	0.071
<b>Period Totals</b>						
1987-1996	1,138	0.111	821	0.077	1,959	0.19
1997-2006	3,662	0.278	5,605	0.418	9,267	0.70
2007-2014	1,854	0.112	4,256	0.257	6,110	0.37
1987-2014	6,654	0.501	10,682	0.753	17,336	1.25
<b>Period Averages</b>						
1987-1996	113.8	0.011	82.1	0.008	196	0.019
1997-2006	240.0	0.019	321.3	0.025	561	0.044
2007-2014	366.2	0.028	560.5	0.042	927	0.070
1987-2014	231.7	0.014	532.0	0.032	764	0.046

Source: Appendix Table 6.

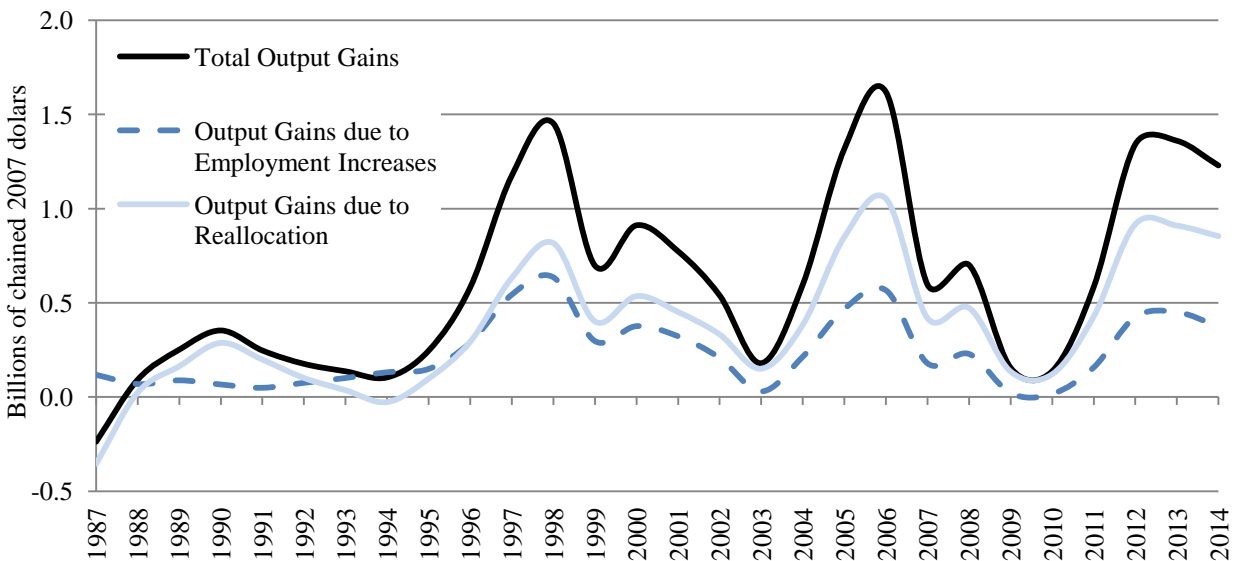
average productivity between provinces with net migration gains and provinces with net migration losses, and the number of workers leaving net losing provinces.<sup>15</sup>

In 2014, \$376 million (chained 2007 dollars) was gained as a result of an increase in employment and \$854 million dollars was gained as a result of re-allocation, constituting a total of \$1,229 million dollars of total output gains resulting from migration (Table 3).

The largest absolute contribution of employment over the 1987-2014 period occurred in 1998, worth \$636 million (Chart 10). The greatest contribution from reallocation was \$1.05 billion in 2006, which was also the year in which total gains to output from net interprovincial migration were greatest at \$1.62 billion. The \$376 million in gains from employment in 2014 was the third highest since 2006, which saw gains of \$567 million, and the eighth largest of the 28 years considered.

The years 2003 and 2010 represent troughs for total output gains from migration, with the lowest total gains actually occurring at the very beginning of our time period. Unsurprisingly, the lowest gains from employment increases occurred in 2010 (\$17 million), while the worst year for reallocation effects is 1987 (-\$354 million).<sup>16</sup>

**Chart 10: Decomposition of Total Output Gains Due to Interprovincial Migration between Employment and Reallocation effects, 1987-2014**



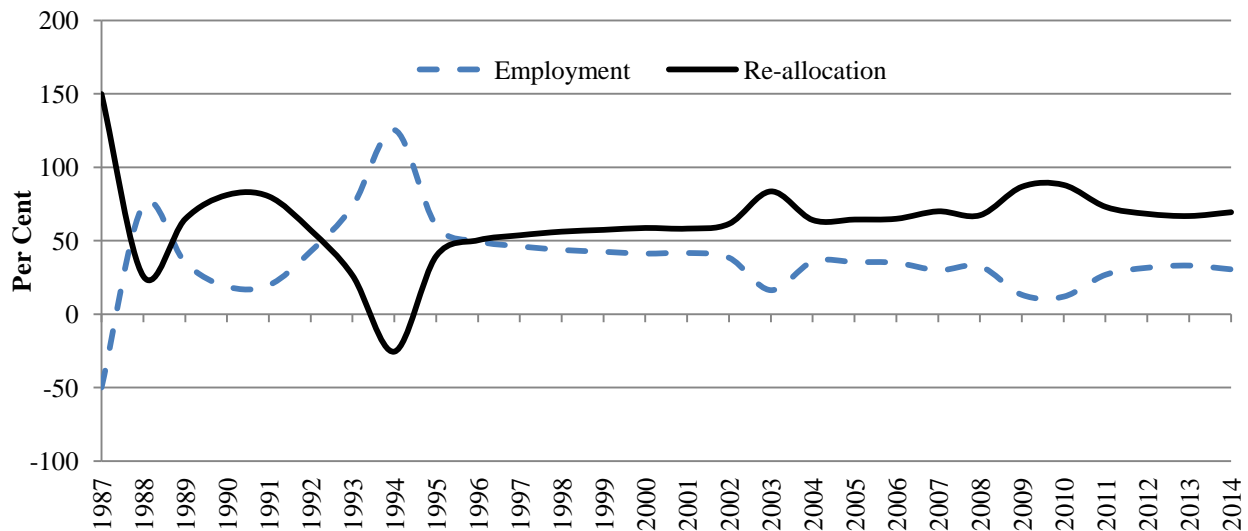
Source: Table 3.

<sup>15</sup> Remember that that the number of workers leaving net negative migration provinces is not the same as the number entering positive net migration provinces because of differing employment rates. The difference between the two produces the gains from new employment.

<sup>16</sup> Interestingly, the employment effects were positive for this year (\$118 million), yet outweighed by the losses due to reallocation of \$354 million (Table 3), leading to the only year in the 1987-2014 period in which the total effect of net interprovincial migration on GDP was negative.

In terms of shares of total output gains from interprovincial migration, increased employment accounted for 30.6 per cent in 2014 while gains from reallocation constituted the remaining 69.4 per cent (Chart 11). The relative importance of the two factors varied greatly during the 1987-2014 period, but on average employment contributed 31 per cent of the total output gains and reallocation 69 per cent. Output gains from reallocation exceeded those from increased employment in 23 of the 28 years under consideration<sup>17</sup> and in every year since 1996. Unsurprisingly, Alberta is particularly important for understanding how the relative contributions of employment and allocation vary through time. While Alberta has a higher employment rate than the other provinces, the difference is relatively small compared to the difference in productivity so that reallocation responds more strongly than employment to changes in net migration to Alberta.

**Chart 11: Percentage Composition of Total Gains in Output Due to Interprovincial Migration in Canada, 1987-2014**



Source: CSLS Interprovincial Migration Database, Table 11A.

#### d. Cumulative Impacts of Interprovincial Migration

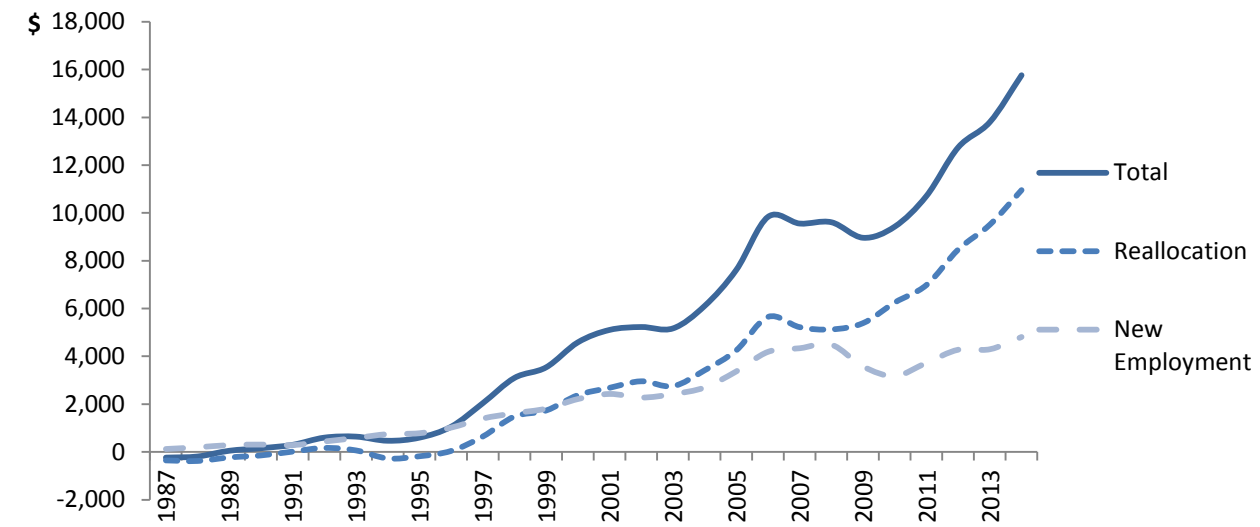
Only considering the annual effects of migration rather than the cumulative effect of migration significantly underestimates the impact of interprovincial migration on the Canadian economy. Because migration is partly an adjustment mechanism to market conditions, it provides the necessary labour market flexibility to facilitate and encourage beneficial structural shifts in the economy. When a worker moves from a less productive to a more productive province, it not only increases its productivity for that year, but also for every following year in which that worker is employed in that province. The effect of migration on the level of output persists over the long-term.

<sup>17</sup> The exceptions are 1987, 1988, 1993, 1994, and 1995

In this context, if there had been no net interprovincial migration during the entire period covered in this report, output and productivity levels would have been significantly lower in 2014 than their current level. In fact, the cumulated effect of migration between 1987 and 2014 on GDP in 2014 is estimated to be about \$15.8 billion dollars (chained 2007), or about 0.9 per cent of GDP in 2014. In other words, if the entire impact of net interprovincial migration estimated in this report was of a long-term nature,<sup>18</sup> output in 2014 was 0.9 per cent higher than it would have been without interprovincial migration since 1987.

Chart 12 illustrates how the impact of net migration in Canada since 1987 has accumulated over time. The figures for each year represent the increased output estimated to have been generated by the net interprovincial migration between 1987 and that year. The cumulative gains to GDP over the entire 1987-2014 period due to net migration since 1987 are estimated at \$146 billion. Notice that these improvements grew quite slowly up to 1996, but expanded rapidly on average since then. The cumulative reallocation of labour from interprovincial migration had almost no impact on GDP between 1987 and 1996. The strongest increases occur over periods in which oil prices were rising rapidly.

**Chart 12: Annual Contribution to GDP of Cumulative Net Interprovincial Migration since 1987, Canada, 1987-2014, Millions of Chained 2007 Dollars**



Source: Appendix Table 10, columns 2, 3, and 5

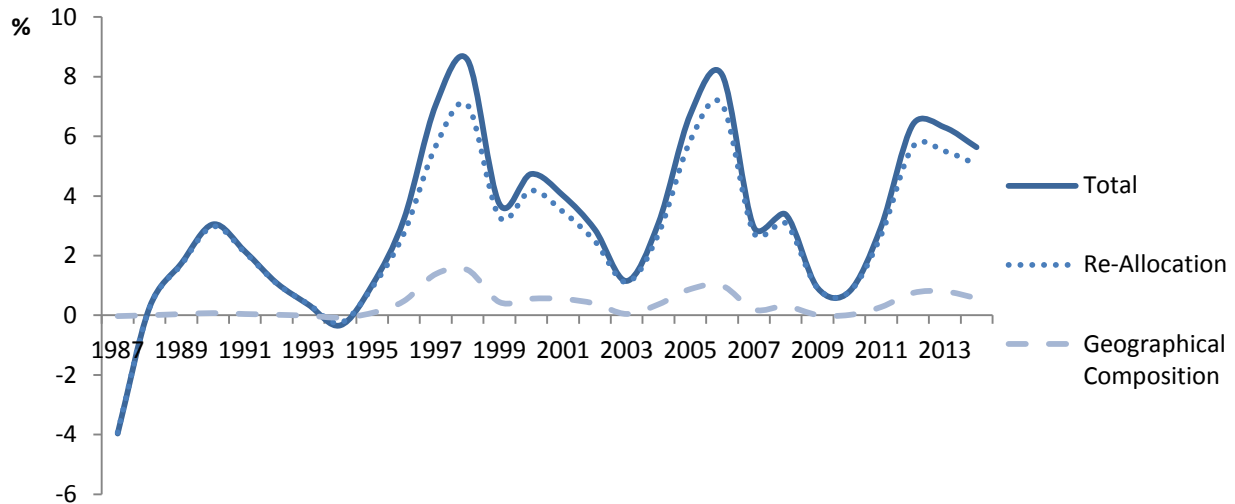
### e. The Impact of Interprovincial Migration on Labour Productivity Growth

The total per cent contribution of interprovincial migration to trend aggregate labour productivity growth is calculated by dividing the net output change due to re-allocation and

<sup>18</sup> This assumes that all those who migrated since 1987 continue to achieve the provincial average employment rates and labour productivities in 2014. These estimates also exclude those who were below working age at the time of migration who may have reached working age by 2014.

geographical composition of new employment as a percentage of total national output<sup>19</sup> by the trend average annual growth rate of output per worker in the economy. In this study, the trend growth rate of output per worker in Canada for the period 1987-2014 is estimated to be about 0.98 per cent per year (see Appendix Table 8). The contribution of output gains from interprovincial migration to trend labour productivity growth in 2014 was 0.055 percentage points of the 0.98 per cent trend labour productivity growth or 5.63 per cent of 0.98 per cent (Appendix Table 8, Chart 13).<sup>20</sup> Over the entire period, from 1987 to 2014, output gains due to increased productivity from were responsible for 3.14 per cent of total labour productivity growth each year on average.

**Chart 13: Annual Contribution of Interprovincial Migration to Labour Productivity Growth in Canada, Per Cent of Trend Labour Productivity Growth, 1987-2014**



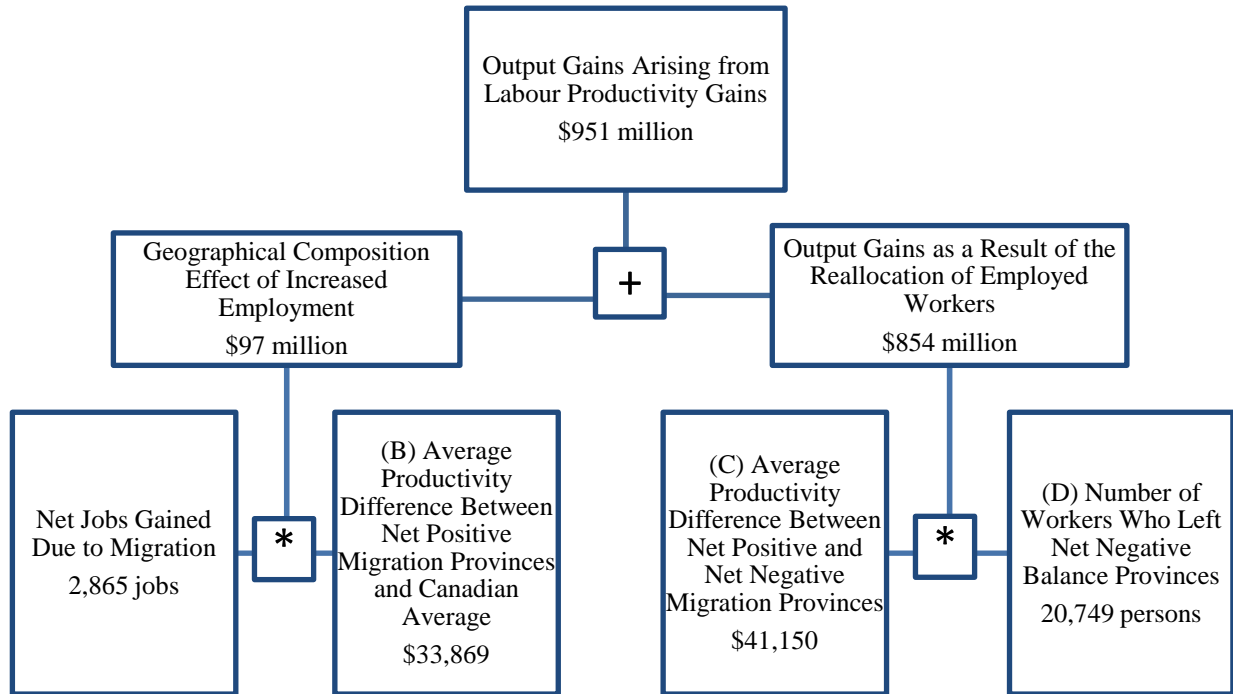
Source: Appendix Table 8, Column K, and authors' calculations based on the CSLS Interprovincial Migration Database, Table 11B and Table 14A

Note: The trend labour productivity growth, measured as output per worker growth, from 1987-2014, was 0.98 per cent per year.

<sup>19</sup> Notice that we do not consider the impact of migration on the total number of workers in assessing the impact on labour productivity. Under our assumption that all workers in a province have the labour productivity of that province on average, only changes to the distribution of workers across provinces matter for determining national labour productivity. While migration does increase the number of workers, this only affects labour productivity via the geographical composition effect.

<sup>20</sup> The contribution of migration to actual labour productivity growth in 2014 (which at 1.59 per cent was higher than trend labour productivity growth of 0.98 per cent between 1987 and 2014) was 3.52 per cent. Calculating the contribution of interprovincial migration to actual labour productivity growth can be misleading because annual labour productivity growth rates vary significantly from year to year. Note that trend labour productivity growth has been falling over time, so that the contribution of interprovincial migration to trend labour productivity growth over the 1987 to 2014 period underestimates the importance of interprovincial migration for labour productivity growth in recent years.

**Figure 6: Example of Calculating Productivity Gains Arising from Interprovincial Migration, 2014**



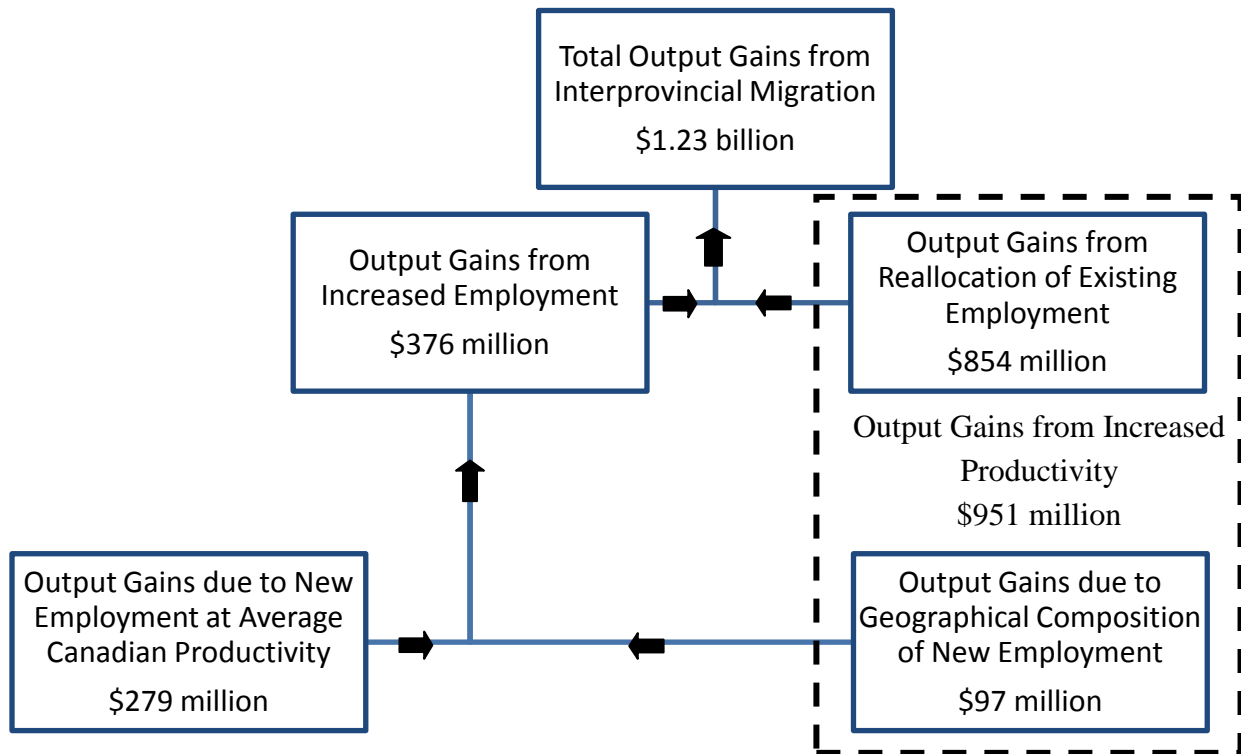
Source: Figure 2 and Table 11B of the CSLS Interprovincial Migration Database

The contribution of interprovincial migration to aggregate labour productivity growth stems from two sources: the re-allocation of workers between provinces of different average productivity levels and the geographical composition effect of new employment (Table 11B in the CSLS Interprovincial Migration Database). Figures 6 and 7 reiterate how growth in labour productivity from interprovincial migration translates into growth in output and how this relates to new employment using 2014 as an example.

If new employment from migration is disproportionately created in above-average productivity provinces, it will tend to increase aggregate productivity at the national level, while if it is created mostly in below-average productivity regions it will have the opposite effect. This is the geographical composition effect. It has been relatively small in Canada over the time period under consideration, accounting for only 0.0037 percentage points on average of trend labour productivity growth of 0.98 per cent each year (or of 0.38 per cent trend labour productivity growth). The re-allocation effect is over 7 times as important, explaining 0.027 percentage points of trend annual labour productivity growth over the period (2.76 per cent of trend labour productivity growth).

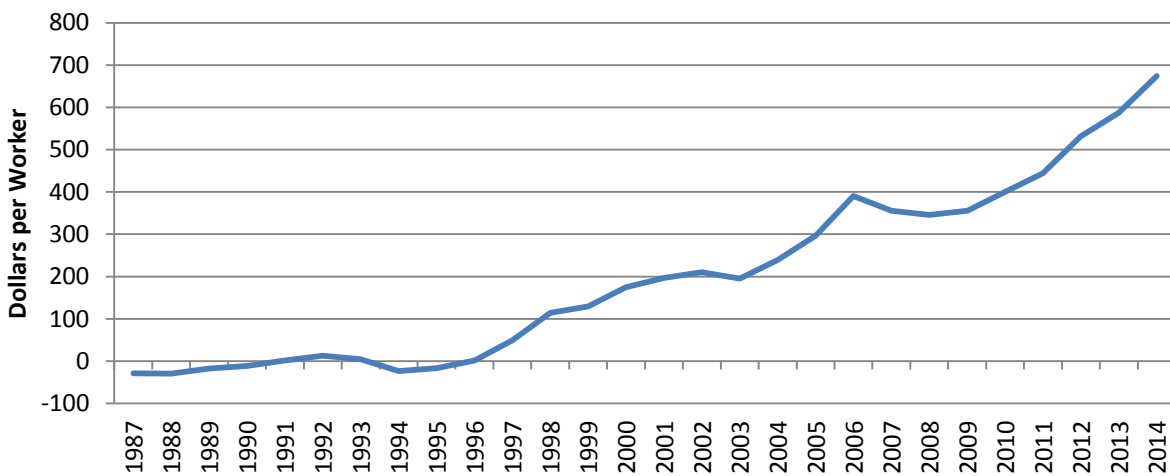
Over long horizons, interprovincial migration can lead to notable increases in labour productivity. Chart 14 shows the estimated difference between the actual level of labour productivity observed in Canada and counterfactual levels of labour productivity which we estimate would have prevailed had there been no net interprovincial migration since 1987. One can see that while the cumulative effects of interprovincial migration were virtually zero from

**Figure 7: Example of Relationship between Total Output Gains, Employment Gains, and Labour Productivity Gains, 2014**



Source: Figure 3 and Table 11B of the CSLS Interprovincial Migration Database

**Chart 14: Cumulative Gains to Labour Productivity from Interprovincial Migration between 1987 and 2014, Canada, 2007 Chained Dollars per Worker**



Source: Authors' calculations based on Appendix Table 8 (columns A, B, D, and G) of and Appendix Table 10, Column 6



1987 to 1996, migration since 1996 and 2014 has led to notable increases in productivity. We estimate that net interprovincial migration since 1987 raised Canadian labour productivity in 2014 by about \$674 per worker.

## **B. Limitations of the Analysis**

The analysis in this report is constructed to focus on the effect of net interprovincial migration rather than gross interprovincial migration. Clearly, it is not intended to be a comprehensive account of the effects of migration on the economy as it ignores better labour market matching resulting from gross migration. There are several reasons why the methodology used in this report may lead to either upward or downward biases in the estimation of the effect of interprovincial migration to aggregate output and output per worker. In this section, we begin by outlining the methodological choices leading to upward or downward biases. We follow with a discussion of ambiguous biases, that is, those which could have an effect in either direction.

### **i. Downward Biases**

There exist a variety of omissions or methodological choices in this report that may underestimate the effect of interprovincial migration on output and productivity.

First, the estimates in this report are based only on net interprovincial migration. They do not take into account the gains associated with gross migration. Positive gains from gross migration can arise because of better matching between workers and employers, even if there is no net migration. Since workers generally move in search of better employment opportunities, it is most likely that migrants are better off after migrating, even when a worker moves from a high productivity province to a low productivity province. In this context, if a pair of provinces has zero net migration but large gross flows of migrants, the real gains to interprovincial migration are likely not zero, as implied by our methodology, as migrants are potentially improving their situation and that of the destination province. This is, by far, the largest potential downward bias associated with the methodology used in this report.

Second, the incidence of migration is higher among unemployed workers than among already employed workers. This follows naturally from the fact that unemployed workers face stronger incentives to migrate to regions with higher employment rates than do other workers because. If a larger share of migrants were previously unemployed than considered in this report, the output gains might have been considerably larger. Thus, by not explicitly considering the ratio of unemployed to employed migrants, we likely underestimate the contribution of interprovincial migration to output.

Third, bias may be introduced with the use of average employment and working age to total population rates when converting total population migration into worker migration. Those who migrate between provinces tend to have, on average, higher employment rates. As well, families with children are less likely to migrate, resulting in the working age population to total population proportion among migrants to be larger than it is for the population as a whole. As a result of these facts, an estimate of worker migration obtained by assuming that the ratio of

working age migrants to migrants is the same as the ratio of the working age population to the total population may underestimate the number of workers migrating, and therefore the output generated by these workers.

A fourth reason for underestimation is that migrants self-select and likely have non-observable characteristics such as drive that distinguish them from non-migrants and hence have above average productivity. This effect on national outcomes, however, would likely be small since migrants would possess these non-observable characteristics both while in their origin and destination province. While these characteristics may lead them to have above average productivity in their destination province, it might also mean that they had above average productivity in their origin province before migrating. Still, on average, we would expect a small underestimation due to migrants' non-observable characteristics because they can likely make better use of their drive and talent in the receiving provinces where there are greater opportunities available. At the provincial level (Chart 7), this bias may be more substantial.

Fifth, observable characteristics between migrants and non-migrants which our analysis does not control for can also lead to biases. It is noted above that differences in human capital levels across provinces can lead to an overestimation of the gains from migration if average persons from low productivity and low human capital jurisdictions are moving to high productivity and high human capital ones. However, at the national level, migrants tend to have higher levels of educational attainment compared to the general working age population (Sharpe et al., 2007b). For example, in 2001 only 3.2 per cent of working age migrants had an educational attainment of less than grade 8 compared to 9.8 per cent of the general working age population. Therefore, migrants might have higher levels of human capital than the population average in the areas they move to, even if moving from provinces with relatively low education levels on average.

Sixth, migration flows and, hence, benefits of interprovincial migration may also have been underestimated due to the existence of temporary migrants, who are not captured through the methods used to estimate migration flows. There are, for example, many Newfoundland residents who go to Alberta to work for large portions of the year though they still return to Newfoundland several times each year. In the Labour Force Survey, the source of the provincial employment and labour productivity data used in this report, they are considered to be both working and living in Newfoundland, although their output contribution is actually attributed to Alberta. Employment in Newfoundland is therefore overestimated and employment in Alberta is underestimated, with the overall impact of migration on output per worker being underestimated as well.<sup>21</sup>

Seventh, our estimates of the contribution of interprovincial migration to trend labour productivity and output growth are biased downwards in recent years. This is because we are using the compound annual growth rate from 1987-2014 as the trend, but growth in both variables has been trending downwards over time. For example, the compound annual growth only 1.52 per cent from 2007-2014 compared to the trend of 2.36 per cent from 1987-2014.

---

<sup>21</sup> This will be offset to a degree by the related overestimation of labour productivity in Alberta and underestimation of labour productivity in Newfoundland.

Similarly, labour productivity grew at an average rate of 0.98 per cent from 1987-2014, but only 0.69 per cent from 2007-2014. The downward trend in GDP growth is related to declining labour supply as the population ages and is likely to continue. Future work may consider employing a 5 or 10 year rolling average of growth rates to produce more relevant estimates of trend growth.

Finally, the choice of restricting the analysis to interprovincial migration rather than focusing on intra-provincial migration also diminishes the estimated impact of migration on output. The inclusion of intra-provincial migration, nearly three times that of interprovincial migration, would have greatly increased the gains to aggregate output and productivity due to migration.

## ii. Upward Biases

By adopting productivity averages for both origin and destination provinces, we implicitly assume that productivity differences across provinces are not due to differences in human capital across provinces. When a worker moves from a low productivity province to a high productivity province, he is assumed to achieve his destination province's average productivity. The fact that he may be from a province with below average human capital is not taken into account. Yet, this assumption is not completely out of line since productivity differences between provinces can largely be explained by other factors such as differences in capital intensity, industrial structure, resource endowments, job characteristics and economies of scale due to differences in population density.

If we were to take into account the fact that part of the productivity gap between provinces is due to human capital, our estimated gains from interprovincial migration would be lower. However, differences in educational attainment across provinces tend to be relatively small, so we expect that this upward bias is not too large. For example, Calver (2015, Appendix Table 8) estimates that the average years of educational attainment of the non-Aboriginal population aged 25 to 64<sup>22</sup> in Canada in 2011 was 13.4 years. He reports that Ontario had the highest educational attainment among this group of all the provinces at 13.5 years (1.5 per cent above the national level), while Newfoundland and Labrador had the lowest at 12.8 years (4.3 per cent below the national level).<sup>23</sup>

---

<sup>22</sup> Note that the Aboriginal population is very low in most provinces so that the educational attainment of the non-Aboriginal population is a very good approximation of the educational attainment of the total population. Also the 15+ age group is more relevant for our study, but the educational attainment of those aged 25-64 should be generally indicative of how educational attainment compares across the provinces.

<sup>23</sup> Other measures of human capital suggest greater variation. For example, it may be that differences in advanced levels of education are more relevant. The educational attainment metric from Calver (2015) downplays differences at these higher levels by assigning a value of at least 9 years on average, even to those in the bottom educational attainment category (less than high school). This is reasonable if we think that all years of education are equally valuable. Data from the 2011 National Household Survey indicates that the percentage of the population aged 15 and older with a university degree at the bachelor's level or above ranged from a low of 13.3 per cent in Newfoundland and Labrador to a high of 23.4 per cent in Ontario. Most provinces are still fairly close to the national share of university graduates of 20.9 per cent.

It is also important to consider those who move from unemployment or from out of the labour force in their province of origin, to employment when migrating to their destination province. Some of these migrants may have possessed personal characteristics that made them unemployed in the market conditions prevalent in their origin province. While migration can lead to a better match between the skills supplied and those demanded, it cannot completely rectify personal characteristics inhibiting the labour market performance of some workers. Thus, these migrants will generally have below average productivity and employment prospects in their destination province. Since we know that the unemployed have a greater likelihood of migrating, it seems reasonable to think that those with these "undesirable" labour market characteristics which raise the probability of unemployment are over-represented in total migrants. Our analysis assumes that new workers adopt their destination province's average employment and productivity, an assumption that may lead to a small overestimation of the impact of migration on employment, productivity, and output in the destination province. At the national level, we expect much of this to be offset by the fact that the same assumption applies to the province of origin – we may be overestimating the economic benefits from migration in the destination province, but we would also be overestimating the economic loss from migration in the province of origin.

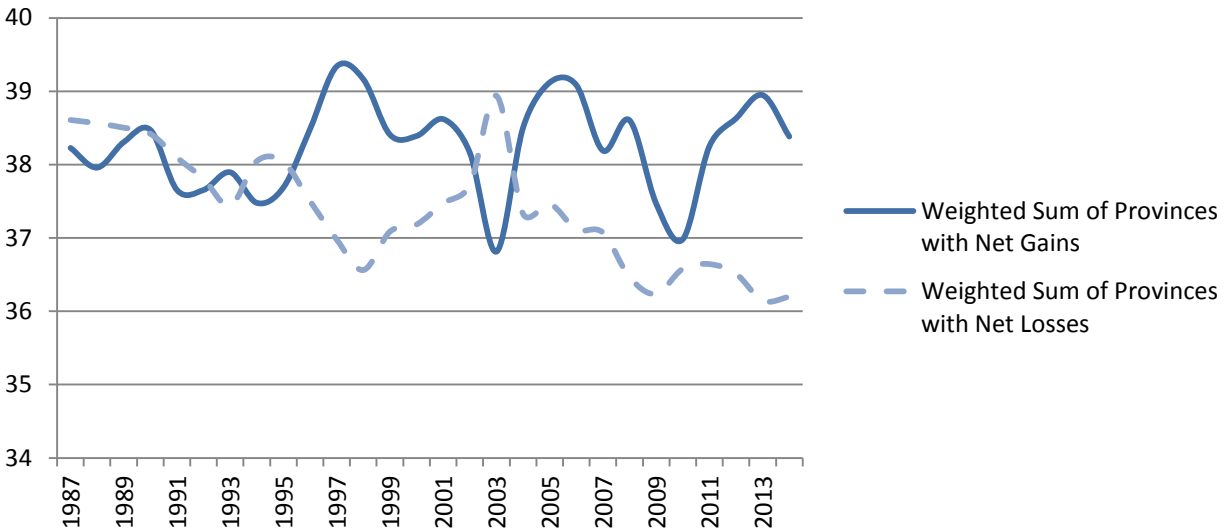
### **iii. Ambiguous Biases**

Two important simplifying assumptions may result in either an upward or downward bias to the results.

First, the productivity measure used in this report is output per worker, as opposed to the more generally accepted output per hour. Differences in output per worker among provinces may, therefore, overestimate or underestimate differences in output per hour, which may have consequences concerning the effect of interprovincial migration on total net gains in output and productivity. In principle, the gains to output should not be affected provided that we assume individuals will work the average hours worked of their current province of residence on average. However, there may be some effect on our estimates of how migration affects labour productivity.

Differences in average hours worked across provinces tend to be small, so we do not expect the choice of labour productivity measure to have much of an impact. Using data on average usual hours worked in all jobs by province from the Labour Force Survey, we can calculate the weighted average hours worked of those in net in-migration provinces and those in net out-migration provinces analogously to how we calculated weighted employment rates in the previous section. The results are presented in Chart 15. The difference tends to be small and varies from one year to another. Average hours worked have been higher in the provinces experiencing in-migration in almost every year since 1996, which may be related to greater opportunities to work overtime in provinces where economic performance is relatively strong. The relative size of these differences has been largest in recent years, reaching a maximum of 7.7 per cent of average hours worked in out-migration provinces in 2013. This suggests that the contribution of interprovincial migration to labour productivity growth in most years since 1996 would be slightly lower if we considered labour productivity on a per hour basis.

**Chart 15: Weighted Average Usual Hours Worked in All Jobs of Provinces with Positive Net Migration and Provinces with Negative Net Migration, 1987-2014**



Source: Authors' calculations using CANSIM Table 282-0016 and Table 5C of the CSLS Interprovincial Migration Database

Second, the productivity measures used in this report are provincial averages. As such, they fail to capture the actual productivity of workers who migrate, if workers have, on average, above or below average productivity at the margin. This may result in either over or under estimation of the output and productivity impacts of migration, as the type of workers that migrate and the type of jobs the workers find may vary from the average. If a below average productivity worker leaves Newfoundland, then the negative contribution on output of the worker leaving will be overestimated.<sup>24</sup> Similarly, if a worker finds an above average productivity job in Alberta, the contribution of the worker to overall output is underestimated.

A third ambiguous bias relates to the overwhelming gains attributable to Alberta's high productivity level. Clearly, Alberta's productivity level is mostly fuelled by high productivity in the booming mining and oil and gas sector. Yet the mining and oil and gas sector is very capital intensive and enjoys large economic rents when energy prices are high, while relatively few of Alberta's workers are actually in that sector; 7.7 per cent as of 2014, according to the Labour Force Survey. If in-migrants are disadvantaged compared to native Albertans in finding positions in this sector, then they may achieve a productivity level below Alberta's average productivity level. On the other hand, perhaps it is specifically job opportunities in the oil and gas sector which are attracting migrants to the province. If a disproportionate number of migrants to

<sup>24</sup> Newfoundland appears to have a very high productivity level, measured as GDP per worker. This is mainly due to oil revenues and does not reflect the average productivity of workers outside the oil sector, which is below the national average.

Alberta end up in the oil and gas sector, then our methodology underestimates their productivity.<sup>25</sup>

## VI. Conclusion

Interprovincial migration played an increasingly prominent role in Canada's economy over the 2011-2014 period.<sup>26</sup> This report estimated the number of workers moving in and out of each province, and in turn estimated the total output gains due to interprovincial migration. It divided output gains into two sources: gains due to increased employment and gains due to reallocation of workers from provinces with lower productivity to provinces with higher productivity.

Interprovincial migration has been on the decline in Canada since 1987. There has been a gradual reduction in the gross number of interprovincial migrants in Canada since 1987, from an average of 302,426 between 1987 and 1996 to an average of 286,251 between 2007 and 2014. As a percentage of the total population, interprovincial migration has steadily declined, from a high of 1.24 per cent in 1989 to its lowest-ever level of 0.76 per cent in 2009. It remained at this level for the next three years before rebounding to 0.80 per cent in 2013 and 0.85 per cent in 2014.

Similarly, net interprovincial migration has also fallen, from an average of 40,855 net positive migrants between 1987 and 1996 (or 0.15 per cent of Canada's population) to an average of 28,975 net positive migrants between 2007 and 2014 (0.08 per cent of Canada's population). Despite this decline in net interprovincial migration, net flows have continued to generate significant economic benefits for Canadians. We estimate that the net output gains arising from interprovincial migration were about \$1.23 billion (measured in chained 2007 dollars) in 2014, equivalent to 0.071 per cent of real GDP. These gains can be broken down into increased employment and reallocation of existing employment:

- Higher employment rates in provinces experiencing a net positive balance of interprovincial migrants, resulting in 2,865 new jobs in 2014, were responsible for \$376 million (chained 2007 dollars) of total output gains in 2014.

---

<sup>25</sup> In principle, one might be able to use data on employment by industry in each province to determine which sectors are responsible for employment growth in each province. If immigrants are assumed to be employed primarily in the sectors where employment is growing, it may be possible to generate more accurate estimates of the average productivity of migrant workers.

<sup>26</sup> Net positive interprovincial migration in Canada in the first two quarters of 2015 has slowed to 23,211 persons compared to the 26,544 observed in the first two quarters of 2014. The biggest changes occurred in Ontario, where net migration rose to -5,238 migrants compared to -11,156 in the first two quarters of 2015, and Alberta, where net migration fell to 16,546 persons in 2015 from 19,661 in the first two quarters of 2014. Interestingly, Alberta remained the major net beneficiary of interprovincial migration despite very low oil prices in the first two quarters of 2015. The number of out-migrants from Alberta in the first two quarters of 2015 has risen by 13 per cent compared to the first two quarters of 2014 while the number of in-migrants increased by 2 per cent.

- Reallocation of workers to provinces with higher average levels of labour productivity was responsible for \$854 million (chained 2007 dollars) of total output gains in 2014.

When migration over a longer period of time is considered, these gains become much larger. For example, cumulative net migration since 1987 resulted in net gains of nearly \$15.8 billion in 2014, about 0.9 per cent of GDP. From this long run perspective, interprovincial migration can have long-lasting and significant effects on GDP and productivity. Interprovincial migration was responsible for 0.031 percentage points of the 0.98 per cent trend labour productivity growth in Canada on average over the 1987-2014 period (3.14 per cent) and 0.049 percentage points of the 2.36 per cent trend output growth in 2014 (2.07 per cent). Since trend output and labour productivity growth have been falling over the period, these figures understate the relative importance of interprovincial migration in recent years.

It is important to note that while re-allocation of labour across provinces contributes to aggregate productivity growth at the national level, it does not in itself produce productivity growth within a province. Within-province productivity growth stems from factors such as increased human capital, technological advancement, and capital investment that create potential productivity gains within sectors and more efficient allocation of labour across sectors and firms within the province. The estimates of the effect of interprovincial re-allocation of labour on productivity growth in this report represent only a portion of the impact that the re-allocation of labour within Canada ultimately has on productivity growth because they do not capture reallocations of labour across sectors or firms within provinces.

It is generally understood by policymakers that interprovincial migration represents an important channel through which to improve Canada's aggregate economic performance. The estimates in this study suggest that net interprovincial migration has a significant effect on aggregate GDP and productivity growth, particularly when migration accumulates over extended periods of time. There remain several barriers to interprovincial migration, the elimination of which would amplify these benefits. Sharpe (2007) identified several possible policy options to enhance interprovincial migration. These include avoiding policies and programs which encourage persons with human capital to settle in low productivity regions, improving the quality and dissemination of labour market information on job opportunities in all regions of the country, offering a tax credit for expenses associated with interprovincial job search, and eliminating remaining barriers to the recognition of out-of-province credentials.

Future research is needed to address some of the limitations of our methodology and provide more accurate estimates of the impact of interprovincial migration on output and productivity growth in Canada. Several avenues for future research exist. The most promising one relates to the development of microeconomic estimates which could adjust our estimates to account for migrants personal characteristics. The long-form census and National Household Survey (NHS) contain information on place of residence both one year and five years prior to the census which could be used to construct profiles of migrants at five-year intervals. These data could allow for an assessment of several of the assumptions underlying the estimates in this report. There already exist a few studies that carry out a microeconomic examination of migration in relation to wages and skill levels, but they either do not focus on interprovincial migration or fail to measure the macroeconomic impacts of such migration.

## References

- Amirault, D., de Munnik, D., and Miller, S. (2013). "Explaining Canada's Regional Migration Patterns," *Bank of Canada Review*, Spring, 16-28.
- Basher, Syed and Stefano Fachin (2008). "The Long-Term Decline of Internal Migration in Canada: The Case of Ontario," *Letters in Spatial and International Economics*, Vol. 1, No. 2, pp.171-81.
- Boadway, Robin and Jean-Francois Tremblay (2010). "Mobility and Fiscal Imbalance," *National Tax Journal*, Vol 63, No. 4, Part 2, pp. 1023-54.
- Calver, Matthew (2015). "Closing the Aboriginal Educational Attainment Gap in Canada: Assessing Progress and Estimating the Economic Benefits," *CSLS Research Report 2015-03*.
- Capeluck, Evan (2014). "Convergence across Provincial Economies in Canada: Trends, Drivers, and Implications." *CSLS Research Report 2014-03*.
- Collins, Kirk (2008). "The 'Taxing' Issue of Interprovincial and Cross-Border Migration," *Canadian Public Policy*, Vol. 34, No. 4, pp.481-99.
- Coulombe, Serge (2006). "Internal Migration, Asymmetric Shocks, and Interprovincial Economic Adjustments in Canada," *International Regional Science Review*, Vol. 29, No. 2, pp. 199-223.
- Day, Kathleen and Stanley Winer (2012). "Interregional Migration and Public Policy in Canada". (Montreal: McGill-Queen's University Press).
- Finnie, Ross (2001). "The Effects of Inter-Provincial Mobility on Individuals' Earnings: Panel Model Estimates for Canada," *Research Paper No. 163, Cat 11F0019MIE No. 163, Business and Labour Market Analysis, Statistics Canada, October*.
- Gomez, R. and M. Gunderson (2007). "Barriers to the Inter-Provincial Mobility of Labour." *Industry Canada Working Paper No. 2007-09*.
- Grady, Patrick and Kathleen Macmillan (2007). "Inter-Provincial Barriers to Labour Mobility in Canada: Policy, Knowledge Gaps and Research Issues," paper submitted to Human Resources and Social Development Canada and Industry Canada.
- Harberger, A. (1998). "A Vision of the Growth Process" *The American Economic Review*, Vol 99 (1), pp.1-32.
- Osberg, L, D. Gordon and Z. Lin. (1994). "Interregional Migration and Interindustry Labour Mobility in Canada: A Simultaneous Approach." *Canadian Journal of Economics*, 27 (1): 58-80.



- Sharpe, Andrew (2007). "Three Policies to Increase Productivity Growth in Canada," *A Canadian Priorities Agenda: Policy Choices to Improve Economic and Social Well-Being*, eds. Jeremy Leonard, Christopher Ragan, and France St-Hilaire, Institute for Research on Public Policy.
- Sharpe, Andrew, Jean-Francois Arsenault and Daniel Ershov (2007a). "The Impact of Interprovincial Migration on Aggregate Output and Labour Productivity in Canada, 1987-2006," *International Productivity Monitor*, Fall, pp. 25-40.
- Sharpe, Andrew, Jean-Francois Arsenault and Daniel Ershov (2007b). "The Impact of Interprovincial Migration on Aggregate Output and Labour Productivity in Canada, 1987-2006," CSLS Research Report 2007-02, November.

## Appendix

Appendix Table 1: Net Interprovincial Migration in the Provinces, 1987-2014 (persons)

	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Sum of Net Positive Migrants
<b>1987</b>	-4,424	286	-2,260	-1,709	-6,448	41,293	-4,681	-8,583	-29,062	16,588	57,667
<b>1988</b>	-2,131	406	-205	-1,172	-6,878	16,820	-8,681	-16,163	-7,383	25,829	42,834
<b>1989</b>	-2,855	-73	966	-42	-9,209	3,853	-10,176	-17,952	320	35,711	40,579
<b>1990</b>	-1,770	-322	-320	1,009	-9,029	-14,980	-8,709	-16,196	10,525	40,088	51,474
<b>1991</b>	-1,154	-322	737	-78	-12,300	-10,288	-7,545	-9,680	5,635	34,600	41,170
<b>1992</b>	-2,563	232	355	-1,087	-9,785	-13,530	-6,417	-7,727	1,030	39,578	41,152
<b>1993</b>	-3,397	532	-1,143	-492	-7,426	-12,771	-5,206	-4,543	-2,355	37,595	37,730
<b>1994</b>	-6,204	694	-2,694	-505	-10,252	-4,527	-4,010	-3,958	-2,684	34,449	34,989
<b>1995</b>	-6,566	368	-1,972	-931	-10,248	-1,764	-3,344	-3,190	4,251	23,414	28,024
<b>1996</b>	-7,945	401	-1,064	-910	-15,358	-1,706	-3,738	-1,871	15,069	17,798	32,930
<b>1997</b>	-8,522	-241	-2,074	-1,812	-17,559	6,823	-6,717	-2,669	32,459	1,980	40,428
<b>1998</b>	-7,971	-15	-1,571	-2,935	-14,512	11,466	-3,097	-1,786	40,125	-17,521	50,500
<b>1999</b>	-3,916	212	947	-638	-11,712	18,424	-2,387	-7,146	19,692	-12,413	38,744
<b>2000</b>	-4,884	-62	-1,393	-1,748	-11,233	23,292	-4,188	-8,301	24,397	-14,783	47,141
<b>2001</b>	-3,720	321	-2,021	-1,915	-7,089	11,500	-4,633	-8,519	23,633	-7,028	35,190
<b>2002</b>	-3,232	86	-984	-437	-3,095	4,038	-4,120	-7,367	19,596	-4,445	23,700
<b>2003</b>	-1,254	139	953	-999	-221	-4,902	-2,189	-4,735	9,529	3,025	13,973
<b>2004</b>	-2,484	-224	-2,038	-880	-2,972	-9,229	-3,823	-6,241	20,877	7,785	28,277
<b>2005</b>	-4,680	-252	-3,243	-2,697	-7,156	-13,513	-8,602	-9,521	43,418	7,212	50,147
<b>2006</b>	-4,198	-752	-4,071	-4,077	-11,828	-21,941	-7,277	-3,731	46,239	12,799	58,457
<b>2007</b>	-2,054	-699	-2,574	-780	-12,675	-13,426	-3,449	5,245	13,642	16,776	35,660
<b>2008</b>	-57	-294	-1,189	-867	-9,707	-15,141	-3,931	3,209	17,845	10,849	31,545
<b>2009</b>	2,456	-271	399	202	-4,247	-9,233	-2,514	1,658	2,194	9,672	16,423
<b>2010</b>	149	-133	71	495	-4,348	-3,909	-2,590	1,702	2,280	6,212	10,945
<b>2011</b>	594	-349	-1,957	-826	-5,825	-4,742	-4,181	798	15,708	699	17,840
<b>2012</b>	-902	-2,981	-3,291	-8,682	-8,277	-15,056	4,101	1,597	37,570	-4,596	43,526
<b>2013</b>	-813	-899	-2,913	-3,313	-13,086	-9,029	-4,880	531	36,018	-832	36,157
<b>2014</b>	-2,588	-939	-1,370	-3,205	-13,064	-15,630	-6,192	497	33,283	10,042	43,405
<b>Total Net Migration</b>											
<b>1987-1996</b>	-39,009	2,202	-7,600	-5,917	-96,933	2,400	-62,507	-89,863	-4,654	305,650	308,368
<b>1987-2006</b>	-83,870	1,414	-23,095	-24,055	-184,310	28,358	-109,540	-149,879	275,311	282,261	581,046
<b>1997-2006</b>	-44,861	-788	-15,495	-18,138	-87,377	25,958	-47,033	-60,016	279,965	-23,389	301,510
<b>2007-2014</b>	1,727	-4,486	-12,514	-11,585	-71,634	-86,166	-31,838	15,237	158,540	48,822	221,275
<b>1987-2014</b>	-85,597	-3,072	-35,609	-35,640	-255,944	-57,808	-141,378	-134,642	433,851	331,083	757,312
<b>Average Annual Net Migration</b>											
<b>1987-1996</b>	-3,901	220	-760	-592	-9,693	240	-6,251	-8,986	-465	30,565	40,855
<b>1987-2006</b>	-4,194	71	-1,155	-1,203	-9,216	1,418	-5,477	-7,494	13,766	14,113	39,755
<b>1997-2006</b>	-4,486	-79	-1,550	-1,814	-8,738	2,596	-4,703	-6,002	27,997	-2,339	38,655
<b>2007-2014</b>	-216	-561	-1,564	-1,448	-8,954	-10,771	-3,980	1,905	19,818	6,103	26,893
<b>1987-2014</b>	-3,057	-110	-1,272	-1,273	-9,141	-2,065	-5,049	-4,809	15,495	11,824	36,420

Source: CSLS Interprovincial Migration Database, Table 5.

Note: The “sum of net positive migrants” reported in this table are actually the average of net negative and net positive migration. The two would be equal if not for the exclusion of the territories.

**Appendix Table 2: Net Interprovincial Migration as a Percentage of the Total Population  
by Province, 1987-2014 (per cent)**

	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Total Net Positive Migration as a Percentage of the Total Population
<b>1987</b>	-0.77	0.22	-0.25	-0.23	-0.10	0.43	-0.43	-0.83	-1.19	0.54	0.22
<b>1988</b>	-0.37	0.31	-0.02	-0.16	-0.10	0.17	-0.79	-1.57	-0.30	0.83	0.16
<b>1989</b>	-0.50	-0.06	0.11	-0.01	-0.13	0.04	-0.92	-1.76	0.01	1.12	0.15
<b>1990</b>	-0.31	-0.25	-0.04	0.14	-0.13	-0.15	-0.79	-1.61	0.41	1.22	0.19
<b>1991</b>	-0.20	-0.25	0.08	-0.01	-0.17	-0.10	-0.68	-0.97	0.22	1.03	0.15
<b>1992</b>	-0.44	0.18	0.04	-0.15	-0.14	-0.13	-0.58	-0.77	0.04	1.14	0.15
<b>1993</b>	-0.59	0.40	-0.12	-0.07	-0.10	-0.12	-0.47	-0.45	-0.09	1.05	0.13
<b>1994</b>	-1.08	0.52	-0.29	-0.07	-0.14	-0.04	-0.36	-0.39	-0.10	0.94	0.12
<b>1995</b>	-1.16	0.27	-0.21	-0.12	-0.14	-0.02	-0.30	-0.31	0.16	0.62	0.10
<b>1996</b>	-1.42	0.30	-0.11	-0.12	-0.21	-0.02	-0.33	-0.18	0.54	0.46	0.11
<b>1997</b>	-1.55	-0.18	-0.22	-0.24	-0.24	0.06	-0.59	-0.26	1.15	0.05	0.14
<b>1998</b>	-1.48	-0.01	-0.17	-0.39	-0.20	0.10	-0.27	-0.18	1.38	-0.44	0.17
<b>1999</b>	-0.73	0.16	0.10	-0.08	-0.16	0.16	-0.21	-0.70	0.67	-0.31	0.13
<b>2000</b>	-0.93	-0.05	-0.15	-0.23	-0.15	0.20	-0.37	-0.82	0.81	-0.37	0.15
<b>2001</b>	-0.71	0.23	-0.22	-0.26	-0.10	0.10	-0.40	-0.85	0.77	-0.17	0.11
<b>2002</b>	-0.62	0.06	-0.11	-0.06	-0.04	0.03	-0.36	-0.74	0.63	-0.11	0.08
<b>2003</b>	-0.24	0.10	0.10	-0.13	0.00	-0.04	-0.19	-0.48	0.30	0.07	0.04
<b>2004</b>	-0.48	-0.16	-0.22	-0.12	-0.04	-0.07	-0.33	-0.63	0.64	0.19	0.09
<b>2005</b>	-0.91	-0.18	-0.35	-0.36	-0.09	-0.11	-0.73	-0.96	1.31	0.17	0.16
<b>2006</b>	-0.82	-0.55	-0.43	-0.55	-0.15	-0.17	-0.61	-0.38	1.35	0.30	0.18
<b>2007</b>	-0.40	-0.51	-0.28	-0.10	-0.16	-0.11	-0.29	0.52	0.39	0.39	0.11
<b>2008</b>	-0.01	-0.21	-0.13	-0.12	-0.13	-0.12	-0.33	0.32	0.50	0.25	0.10
<b>2009</b>	0.48	-0.19	0.04	0.03	-0.05	-0.07	-0.21	0.16	0.06	0.22	0.05
<b>2010</b>	0.03	-0.09	0.01	0.07	-0.05	-0.03	-0.21	0.16	0.06	0.14	0.03
<b>2011</b>	0.11	-0.24	-0.21	-0.11	-0.07	-0.04	-0.34	0.07	0.41	0.02	0.05
<b>2012</b>	0.11	-0.62	-0.32	-0.43	-0.11	-0.11	-0.33	0.15	0.97	-0.10	0.14
<b>2013</b>	-0.15	-0.62	-0.31	-0.44	-0.16	-0.07	-0.39	0.05	0.90	-0.02	0.10
<b>2014</b>	-0.49	-0.64	-0.15	-0.43	-0.16	-0.11	-0.48	0.04	0.81	0.22	0.12
<b>Average Annual Net Migration as a Percentage of Total Population</b>											
<b>1987-1996</b>	-0.68	0.17	-0.08	-0.08	-0.14	0.01	-0.56	-0.88	-0.03	0.89	0.15
<b>1987-2006</b>	-0.76	0.05	-0.12	-0.16	-0.13	0.02	-0.48	-0.74	0.44	0.42	0.14
<b>1997-2006</b>	-0.85	-0.06	-0.17	-0.24	-0.12	0.03	-0.41	-0.60	0.90	-0.06	0.12
<b>2007-2014</b>	-0.04	-0.39	-0.17	-0.19	-0.11	-0.08	-0.32	0.18	0.51	0.14	0.08
<b>1987-2014</b>	-0.56	-0.07	-0.14	-0.17	-0.12	-0.01	-0.44	-0.48	0.46	0.34	0.12

Source: CSLS Interprovincial Migration Database, Table 6.

**Appendix Table 3: Changes in Total Employment as a Result of Interprovincial Migration in the Provinces, 1987-2014 (persons)**

	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Sum of Positive Workers (A)	Sum of Negative Workers (B)	Difference (A-abs(B))
<b>1987</b>	-1,819	39	-1,018	-661	-3,480	20,289	-1,954	-3,639	-12,828	6,673	27,001	-25,398	1,603
<b>1988</b>	-1,115	77	-165	-502	-3,745	8,621	-3,782	-7,064	-2,480	11,056	19,754	-18,854	900
<b>1989</b>	-1,454	-105	324	-101	-4,930	2,381	-4,637	-8,008	1,578	16,062	20,345	-19,235	1,110
<b>1990</b>	-999	-162	-220	357	-4,717	-7,232	-3,934	-7,310	6,851	18,148	25,356	-24,573	782
<b>1991</b>	-626	-112	254	-24	-5,784	-4,896	-3,238	-4,275	3,996	15,298	19,548	-18,954	593
<b>1992</b>	-979	82	162	-367	-4,328	-6,461	-2,650	-3,359	1,487	17,373	19,104	-18,145	959
<b>1993</b>	-1,247	179	-373	-196	-3,084	-6,427	-2,151	-2,112	11	16,705	16,895	-15,590	1,305
<b>1994</b>	-2,226	246	-1,020	-223	-4,216	-2,721	-1,669	-1,900	-216	15,675	15,921	-14,191	1,730
<b>1995</b>	-2,403	108	-786	-393	-4,323	-1,109	-1,421	-1,581	3,027	10,615	13,749	-12,017	1,732
<b>1996</b>	-2,746	160	-408	-391	-6,430	-1,053	-1,643	-1,019	8,603	7,839	16,602	-13,690	2,912
<b>1997</b>	-2,979	-103	-782	-777	-7,452	2,897	-3,029	-1,398	17,479	819	21,195	-16,520	4,675
<b>1998</b>	-2,999	-25	-657	-1,289	-6,335	5,298	-1,415	-922	21,698	-7,928	26,995	-21,571	5,425
<b>1999</b>	-1,660	78	400	-359	-5,188	8,842	-1,085	-3,370	10,923	-5,782	20,243	-17,444	2,799
<b>2000</b>	-2,005	-35	-569	-834	-5,087	11,469	-1,941	-4,016	13,337	-6,891	24,806	-21,378	3,428
<b>2001</b>	-1,651	129	-850	-902	-3,206	5,597	-2,107	-4,014	13,049	-3,235	18,776	-15,965	2,811
<b>2002</b>	-1,565	18	-407	-259	-1,396	1,960	-1,868	-3,467	10,856	-2,143	12,835	-11,106	1,729
<b>2003</b>	-760	65	469	-522	-79	-2,427	-934	-2,190	5,363	1,272	7,170	-6,912	257
<b>2004</b>	-1,275	-134	-894	-465	-1,406	-4,675	-1,716	-2,975	11,773	3,559	15,332	-13,539	1,793
<b>2005</b>	-2,232	-170	-1,514	-1,281	-3,442	-6,692	-4,110	-4,724	24,674	3,183	27,856	-24,164	3,692
<b>2006</b>	-2,089	-425	-2,066	-1,993	-5,624	-10,871	-3,539	-2,102	27,616	5,599	33,215	-28,710	4,505
<b>2007</b>	-1,198	-390	-1,435	-494	-6,012	-6,722	-1,669	2,393	9,516	7,625	19,533	-17,920	1,614
<b>2008</b>	-314	-179	-760	-508	-4,642	-7,749	-1,894	1,539	11,617	4,865	18,021	-16,045	1,975
<b>2009</b>	830	-154	53	12	-1,967	-4,811	-1,127	861	2,338	4,165	8,259	-8,059	200
<b>2010</b>	-99	-79	-76	189	-2,002	-2,260	-1,131	942	2,307	2,361	5,800	-5,647	153
<b>2011</b>	71	-215	-971	-440	-2,693	-2,658	-1,906	570	9,848	-412	10,489	-9,295	1,194
<b>2012</b>	52	-526	-1,415	-1,594	-4,004	-7,904	-1,828	1,053	22,331	-2,975	23,436	-20,245	3,191
<b>2013</b>	-588	-539	-1,402	-1,640	-6,093	-5,170	-2,185	482	21,589	-1,127	22,071	-18,745	3,327
<b>2014</b>	-1,343	-499	-646	-1,487	-6,228	-7,711	-2,836	250	19,079	4,285	23,614	-20,749	2,865
<b>Total Net Migration</b>													
<b>1987-1996</b>	-15,615	512	-3,250	-2,501	-45,039	1,391	-27,078	-40,267	10,029	135,444	194,275	-180,648	13,627
<b>1987-2006</b>	-34,829	-89	-10,119	-11,182	-84,255	12,788	-48,823	-69,445	166,797	123,898	402,698	-357,957	44,741
<b>1997-2006</b>	-19,215	-601	-6,869	-8,681	-39,216	11,397	-21,745	-29,178	156,768	-11,546	208,423	-177,309	31,114
<b>2007-2014</b>	-2,588	-2,580	-6,651	-5,961	-33,642	-44,986	-14,577	8,091	98,625	18,787	131,225	-116,706	14,518
<b>1987-2014</b>	-37,417	-2,669	-16,770	-17,143	-117,897	-32,197	-63,400	-61,354	265,422	142,685	533,923	-474,663	59,259
<b>Average Annual Net Migration</b>													
<b>1987-1996</b>	-1,561	51	-325	-250	-4,504	139	-2,708	-4,027	1,003	13,544	19,852	-18,464	1,388
<b>1987-2006</b>	-1,741	-4	-506	-559	-4,213	639	-2,441	-3,472	8,340	6,195	20,485	-18,289	2,196
<b>1997-2006</b>	-1,921	-60	-687	-868	-3,922	1,140	-2,175	-2,918	15,677	-1,155	21,119	-18,114	3,004
<b>2007-2014</b>	-324	-323	-831	-745	-4,205	-5,623	-1,822	1,011	12,328	2,348	16,149	-14,397	1,752
<b>1987-2014</b>	-1,336	-95	-599	-612	-4,211	-1,150	-2,264	-2,191	9,479	5,096	19,361	-17,280	2,081

Source: CSLS Interprovincial Migration Database, Table 10.

**Appendix Table 4: Changes in Output as a Result of Interprovincial Migration in Canada and the Provinces, 1987-2014**  
(millions of chained 2007 dollars)

	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Net Change	Total GDP Canada	Percentage Point Contribution to GDP Growth
<b>1987</b>	-144.2	2.0	-69.0	-45.8	-232.2	1458.2	-129.9	-274.7	-1324.6	524.2	-236.2	923,150	-
<b>1988</b>	-89.5	4.0	-10.9	-33.7	-255.8	625.7	-249.1	-512.5	-269.3	884.1	93.0	966,716	0.010
<b>1989</b>	-117.5	-5.5	21.5	-6.7	-333.1	174.6	-309.6	-601.8	169.7	1,260.8	252.3	989,625	0.026
<b>1990</b>	-80.9	-8.6	-14.4	23.1	-318.8	-522.2	-269.2	-591.5	738.4	1,398.2	354.0	990,837	0.036
<b>1991</b>	-51.5	-6.1	16.6	-1.6	-387.9	-353.3	-217.1	-350.2	430.8	1,167.8	247.6	969,810	0.025
<b>1992</b>	-83.0	4.6	11.0	-24.3	-295.6	-479.6	-181.6	-266.5	162.4	1,329.4	176.9	977,957	0.018
<b>1993</b>	-107.7	9.9	-25.8	-13.2	-215.9	-483.1	-146.8	-178.7	1.3	1,297.2	137.3	1,003,707	0.014
<b>1994</b>	-199.7	14.1	-69.3	-15.4	-301.5	-212.6	-117.2	-165.1	-26.0	1,197.5	105.0	1,049,633	0.010
<b>1995</b>	-220.7	6.4	-53.8	-27.1	-311.3	-88.0	-98.3	-138.1	365.8	812.1	247.0	1,078,334	0.024
<b>1996</b>	-247.6	9.6	-27.9	-27.3	-470.0	-83.8	-116.8	-92.5	1,033.2	605.7	582.6	1,096,308	0.054
<b>1997</b>	-270.3	-6.2	-54.8	-54.1	-553.1	236.2	-221.0	-129.5	2,165.2	63.6	1,175.8	1,143,042	0.107
<b>1998</b>	-281.5	-1.6	-46.2	-91.0	-474.1	439.5	-105.8	-88.2	2,725.1	-623.5	1,452.7	1,190,510	0.127
<b>1999</b>	-157.8	5.0	28.9	-26.1	-403.0	757.9	-81.2	-321.8	1,355.9	-460.0	697.9	1,249,956	0.059
<b>2000</b>	-203.9	-2.2	-41.6	-60.6	-403.1	1,012.3	-148.7	-390.3	1,712.3	-562.2	912.0	1,313,964	0.073
<b>2001</b>	-167.3	7.9	-63.5	-67.1	-254.9	493.8	-163.7	-398.8	1,654.9	-266.9	774.2	1,335,516	0.059
<b>2002</b>	-181.7	1.1	-31.1	-19.4	-110.1	175.1	-143.9	-335.6	1,366.0	-180.2	540.3	1,372,858	0.040
<b>2003</b>	-92.1	4.1	35.6	-40.2	-6.2	-213.3	-72.5	-217.8	675.7	107.0	180.2	1,398,959	0.013
<b>2004</b>	-151.7	-8.6	-66.9	-36.1	-111.7	-416.1	-134.7	-308.4	1,524.8	306.3	596.9	1,442,841	0.043
<b>2005</b>	-274.4	-10.9	-114.3	-100.6	-275.5	-607.7	-329.2	-501.8	3,252.5	279.1	1,317.2	1,488,719	0.091
<b>2006</b>	-265.0	-28.3	-156.8	-157.8	-451.6	-994.6	-290.5	-216.3	3,681.2	499.8	1,620.1	1,527,827	0.109
<b>2007</b>	-164.1	-26.3	-108.7	-38.5	-479.0	-613.9	-138.8	247.6	1,238.3	681.2	597.7	1,558,117	0.039
<b>2008</b>	-41.8	-12.1	-58.2	-39.6	-372.6	-699.7	-161.1	164.1	1,490.5	432.4	702.0	1,576,649	0.045
<b>2009</b>	102.1	-10.6	4.1	0.9	-158.0	-432.7	-95.8	86.1	291.2	369.0	156.4	1,534,216	0.010
<b>2010</b>	-12.4	-5.4	-6.0	15.0	-161.1	-206.8	-97.3	97.2	301.2	213.1	137.4	1,585,749	0.009
<b>2011</b>	8.9	-14.5	-77.3	-35.3	-218.9	-245.0	-166.6	61.7	1,309.9	-38.2	584.5	1,633,041	0.037
<b>2012</b>	5.9	-35.3	-111.1	-128.3	-327.9	-736.3	-162.5	114.7	2,999.9	-277.6	1,341.5	1,664,430	0.082
<b>2013</b>	-71.6	-36.4	-111.7	-130.8	-497.0	-479.2	-197.2	53.5	2,938.1	-107.0	1,360.6	1,697,622	0.082
<b>2014</b>	-161.7	-34.2	-52.8	-118.7	-515.5	-725.5	-258.6	27.8	2,653.6	415.1	1,229.5	1,731,448	0.072
<b>Average Annual Period Output Changes</b>													
<b>1987-1996</b>	-134.2	3.0	-22.2	-17.2	-312.2	3.6	-183.6	-317.2	128.2	1,047.7	195.9	1,004,608	0.019
<b>1987-2006</b>	-169.4	-0.5	-36.6	-41.2	-308.3	45.9	-176.3	-304.0	1,069.8	482.0	561.3	1,175,513	0.044
<b>1997-2006</b>	-204.6	-4.0	-51.1	-65.3	-304.3	88.3	-169.1	-290.9	2,011.3	-83.7	926.7	1,346,419	0.070
<b>2007-2014</b>	-41.8	-21.9	-65.2	-59.4	-341.3	-517.4	-159.7	106.6	1,652.8	211.0	763.7	1,622,659	0.046
<b>1987-2014</b>	-133.0	-6.6	-44.8	-46.4	-317.7	-115.0	-171.6	-186.7	1,236.4	404.6	619.2	1,303,269	0.045

Source: CSLS Interprovincial Migration Database, Table 11.

Appendix Table 5: Summary of Average Weighted Labour Productivity, 1987-2014 (chained 2007 dollars)

	Weighted Labour Productivity of Positive Net Migration Provinces	Weighted Productivity of Negative Net Migration Provinces	Difference Between Positive Province Productivity and Negative Province Productivity	Weighted Net Positive Provinces Labour Productivity as a Percentage of the Average	Weighted Net Negative Provinces Labour Productivity as a Percentage of the Average	Difference as a Percentage of Average Productivity of the Two Types of Provinces
	A	B	A-B	$A/((A+B)/2)$	$B/((A+B)/2)$	$(A-B)/((A+B)/2)$
1987	73,490	87,430	-13,940	91.34	108.66	-17.33
1988	76,635	75,359	1,276	100.84	99.16	1.68
1989	79,947	71,446	8,501	105.62	94.38	11.23
1990	85,175	73,481	11,695	107.37	92.63	14.74
1991	82,629	72,155	10,475	106.77	93.23	13.53
1992	78,909	73,331	5,578	103.66	96.34	7.33
1993	77,442	75,118	2,324	101.52	98.48	3.05
1994	76,103	77,985	-1,883	98.78	101.22	-2.44
1995	86,138	78,001	8,137	104.96	95.04	9.91
1996	99,299	77,862	21,437	112.10	87.90	24.20
1997	116,299	78,036	38,263	119.69	80.31	39.38
1998	117,226	79,361	37,865	119.26	80.74	38.52
1999	106,099	83,116	22,983	112.15	87.85	24.29
2000	109,835	84,784	25,051	112.87	87.13	25.74
2001	114,855	86,582	28,273	114.04	85.96	28.07
2002	120,167	90,228	29,940	114.23	85.77	28.46
2003	114,706	92,905	21,801	110.50	89.50	21.00
2004	119,433	91,156	28,277	113.43	86.57	26.86
2005	126,777	91,634	35,142	116.09	83.91	32.18
2006	125,874	89,197	36,677	117.05	82.95	34.11
2007	110,942	87,577	23,366	111.77	88.23	23.54
2008	115,809	86,318	29,490	114.59	85.41	29.18
2009	103,336	86,499	16,837	108.87	91.13	17.74
2010	108,007	86,602	21,405	111.00	89.00	22.00
2011	131,610	85,632	45,978	121.16	78.84	42.33
2012	133,155	87,878	45,277	120.48	79.52	40.97
2013	135,542	87,011	48,531	121.81	78.19	43.61
2014	131,130	89,979	41,150	118.61	81.39	37.22
<b>Compound Annual Growth Rate</b>						
1987-1996	3.40	-1.28	n.a.	2.30	-2.33	n.a.
1987-2006	2.87	0.11	n.a.	1.31	-1.41	n.a.
1997-2006	0.88	1.50	-0.47	-0.25	0.36	-1.58
2007-2014	2.42	0.39	8.42	0.85	-1.15	6.76
1987-2014	2.17	0.11	-204.09	0.97	-1.06	n.a.

Note: The compound annual growth rate cannot be calculated if the start and end values are not both either positive or negative ("n.a."). Weights are shares of each province in total changes in net positive and net negative migration of workers. Productivity defined as average GDP per worker expressed in 2007 chained dollars

Source: CSLS Interprovincial Migration Database, Table 4C.

**Appendix Table 6: Decomposition of Total Output Gains Due to Migration into Gains Due to Re-Allocation of Workers and Gains Due to Employment Increases, 1987-2014**  
(millions of chained 2007 dollars)

	Total Output Gains	Output Gains due to Employment Increases	Output Gains due to Re-allocation	As a Percentage of Total Output Gains		As a Percentage of GDP	
				Employment	Re-allocation	Employment	Re-allocation
1987	-236.2	117.8	-354.1	-49.9	149.9	0.013	-0.038
1988	93.0	69.0	24.1	74.1	25.9	0.007	0.002
1989	252.3	88.8	163.5	35.2	64.8	0.009	0.017
1990	354.0	66.6	287.4	18.8	81.2	0.007	0.029
1991	247.6	49.0	198.5	19.8	80.2	0.005	0.020
1992	176.9	75.7	101.2	42.8	57.2	0.008	0.010
1993	137.3	101.0	36.2	73.6	26.4	0.010	0.004
1994	105.0	131.7	-26.7	125.5	-25.5	0.013	-0.003
1995	247.0	149.2	97.8	60.4	39.6	0.014	0.009
1996	582.6	289.1	293.5	49.6	50.4	0.026	0.027
1997	1175.8	543.7	632.1	46.2	53.8	0.048	0.055
1998	1452.7	635.9	816.8	43.8	56.2	0.053	0.069
1999	697.9	297.0	400.9	42.6	57.4	0.024	0.032
2000	912.0	376.5	535.5	41.3	58.7	0.029	0.041
2001	774.2	322.9	451.4	41.7	58.3	0.024	0.034
2002	540.3	207.8	332.5	38.5	61.5	0.015	0.024
2003	180.2	29.5	150.7	16.4	83.6	0.002	0.011
2004	596.9	214.1	382.9	35.9	64.1	0.015	0.027
2005	1317.2	468.1	849.2	35.5	64.5	0.031	0.057
2006	1620.1	567.1	1053.0	35.0	65.0	0.037	0.069
2007	597.7	179.0	418.7	30.0	70.0	0.011	0.027
2008	702.0	228.8	473.2	32.6	67.4	0.015	0.030
2009	156.4	20.7	135.7	13.2	86.8	0.001	0.009
2010	137.4	16.5	120.9	12.0	88.0	0.001	0.008
2011	584.5	157.2	427.4	26.9	73.1	0.010	0.026
2012	1341.5	424.8	916.7	31.7	68.3	0.026	0.055
2013	1360.6	450.9	909.7	33.1	66.9	0.027	0.054
2014	1229.5	375.7	853.8	30.6	69.4	0.022	0.049
<b>Average Annual Output</b>							
1987-1996	195.9	113.8	82.1	45.0	55.0	0.011	0.008
1987-2006	561.3	240.0	321.3	41.3	58.7	0.019	0.025
1997-2006	926.7	366.2	560.5	37.7	62.3	0.028	0.042
2007-2014	763.7	231.7	532.0	26.3	73.7	0.014	0.032
1987-2014	619.2	237.6	381.5	37.0	63.0	0.018	0.027

Source: CSLS Interprovincial Migration Database, Table 11A.

**Appendix Table 7: Contribution of Annual Migration to GDP, 1987-2014**  
(chained 2007 dollars)

	Real Gross Domestic Product (GDP) in Canada (millions)	Growth of Real Gross Domestic Product (GDP) in Canada (millions)	Migration Output Gains due to Reallocation of Workers (millions)	Migration Output Gains due to Migrant Driven Employment (millions)	Total Output Gains due to Migration (millions)	Percentage Point Contribution of the Reallocation of Workers to Output Growth	Percentage Point Contribution of Migrant Driven Employment to Output Growth	Percentage Point Contribution of Migration to Output Growth	Share of GDP Growth due to Reallocation of Workers	Share of GDP Growth due to Migrant Driven Employment	Share of GDP Growth due to Migration	Relative Contribution of Interprovincial Migration to Trend GDP Growth
	A	B	C	D	E = C + D	F = C/A <sup>t-1</sup> *100	G = D/A <sup>t-1</sup> *100	H = F + G	I = C/B*100	J = D/B*100	K = I + J	L=H/2.36
1987	923,150	-	-354	118	-236	-	-	-	-	-	-	-
1988	966,716	43,566	24	69	93	0.003	0.007	0.010	0.06	0.16	0.21	0.43
1989	989,625	22,909	164	89	252	0.017	0.009	0.026	0.71	0.39	1.10	1.11
1990	990,837	1,212	287	67	354	0.029	0.007	0.036	23.71	5.50	29.21	1.52
1991	969,810	-21,027	199	49	248	0.020	0.005	0.025	-	-	-	1.06
1992	977,957	8,147	101	76	177	0.010	0.008	0.018	1.24	0.93	2.17	0.77
1993	1,003,707	25,750	36	101	137	0.004	0.010	0.014	0.14	0.39	0.53	0.60
1994	1,049,633	45,926	-27	132	105	-0.003	0.013	0.010	-0.06	0.29	0.23	0.44
1995	1,078,334	28,701	98	149	247	0.009	0.014	0.024	0.34	0.52	0.86	1.00
1996	1,096,308	17,974	294	289	583	0.027	0.027	0.054	1.63	1.61	3.24	2.29
1997	1,143,042	46,734	632	544	1176	0.058	0.050	0.107	1.35	1.16	2.52	4.55
1998	1,190,510	47,468	817	636	1453	0.071	0.056	0.127	1.72	1.34	3.06	5.39
1999	1,249,956	59,446	401	297	698	0.034	0.025	0.059	0.67	0.50	1.17	2.49
2000	1,313,964	64,008	536	377	912	0.043	0.030	0.073	0.84	0.59	1.42	3.10
2001	1,335,516	21,552	451	323	774	0.034	0.025	0.059	2.09	1.50	3.59	2.50
2002	1,372,858	37,342	333	208	540	0.025	0.016	0.040	0.89	0.56	1.45	1.72
2003	1,398,959	26,101	151	30	180	0.011	0.002	0.013	0.58	0.11	0.69	0.56
2004	1,442,841	43,882	383	214	597	0.027	0.015	0.043	0.87	0.49	1.36	1.81
2005	1,488,719	45,878	849	468	1317	0.059	0.032	0.091	1.85	1.02	2.87	3.87
2006	1,527,827	39,108	1053	567	1620	0.071	0.038	0.109	2.69	1.45	4.14	4.62
2007	1,558,117	30,290	419	179	598	0.027	0.012	0.039	1.38	0.59	1.97	1.66
2008	1,576,649	18,532	473	229	702	0.030	0.015	0.045	2.55	1.23	3.79	1.91
2009	1,534,216	-42,433	136	21	156	0.009	0.001	0.010	-0.32	-0.05	-0.37	0.42
2010	1,585,749	51,533	121	17	137	0.008	0.001	0.009	0.23	0.03	0.27	0.38
2011	1,633,041	47,292	427	157	585	0.027	0.010	0.037	0.90	0.33	1.24	1.56
2012	1,664,430	31,389	917	425	1342	0.056	0.026	0.082	2.92	1.35	4.27	3.49
2013	1,697,622	33,192	910	451	1361	0.055	0.027	0.082	2.74	1.36	4.10	3.47
2014	1,731,448	33,826	854	376	1230	0.050	0.022	0.072	2.52	1.11	3.63	3.07
<b>Average</b>												
1987-1996	1,004,608	19,240	82	114	196	0.013	0.011	0.024	3.47	1.22	4.69	1.02
1987-2006	1,175,513	31,825	321	240	561	0.029	0.020	0.049	2.30	1.03	3.32	2.10
1997-2006	1,346,419	43,152	561	366	927	0.043	0.029	0.072	1.36	0.87	2.23	3.06
2007-2014	1,622,659	25,453	532	232	764	0.033	0.014	0.047	1.62	0.75	2.36	2.00
1987-2014	1,303,269	29,937	382	238	619	0.030	0.019	0.049	2.09	0.94	3.03	2.07
<b>Compound Annual Growth Rate</b>												
1987-1996	1.93	..	n.a.	10.49	n.a.	..	..	..	..	..	..	..
1987-2006	2.69	..	n.a.	8.62	n.a.	..	..	..	..	..	..	..
1997-2006	3.28	..	5.83	0.47	3.63	..	..	..	..	..	..	0.16
2007-2014	1.52	..	10.72	11.17	10.85	..	..	..	..	..	..	9.20
1987-2014	2.36	..	n.a.	4.39	n.a.	..	..	..	..	..	..	..

Source: CSLS Interprovincial Migration Database, Table 14.



Appendix Table 8: Contribution of Annual Migration to Labour Productivity, 1987-2014 (chained 2007 dollars)

	Real Gross Domestic Product (GDP) in Canada (millions)	Real GDP per Worker in Canada	Labour Productivity Growth (per cent)	Employment (thousand persons)	GDP without Labour Productivity Growth (millions)	GDP Growth due to productivity growth (millions)	Migration Output Gains due to Reallocation of Workers (millions)	Migration Output Gains due to Geographical Composition (millions)	Migration Output Gains Contributing to Productivity Growth	Contribution of Migration to Actual Labour Productivity Growth (per cent)	Migration Output Gains Contributing to Productivity Growth as a share of GDP (per cent)	Contribution of Migration to Trend Labour Productivity Growth (per cent)
	A	B	C	D	E = A*(1+D/100)	F = A - E	G	H	I	J = 100*I/F	L=100*I/A	K=I/(A*0.0098)
1987	923,150	74,852	-	12,333	-	-	-354	-2	-356	-	-0.039	-3.96
1988	966,716	76,062	1.62	12,710	951,339	15,377	24	1	25	0.16	0.003	0.26
1989	989,625	76,147	0.11	12,996	988,515	1,110	164	4	168	15.12	0.017	1.74
1990	990,837	75,715	-0.57	13,086	996,493	-5,656	287	7	295	-5.21	0.030	3.05
1991	969,810	75,428	-0.38	12,857	973,498	-3,688	199	4	203	-5.50	0.021	2.15
1992	977,957	76,818	1.84	12,731	960,268	17,689	101	2	103	0.58	0.011	1.08
1993	1,003,707	78,459	2.14	12,793	982,704	21,003	36	-1	35	0.17	0.003	0.36
1994	1,049,633	80,378	2.45	13,059	1,024,577	25,056	-27	-7	-34	-0.14	-0.003	-0.33
1995	1,078,334	81,106	0.91	13,295	1,068,658	9,676	98	9	106	1.10	0.010	1.01
1996	1,096,308	81,691	0.72	13,420	1,088,448	7,860	293	51	345	4.39	0.031	3.23
1997	1,143,042	83,384	2.07	13,708	1,119,843	23,199	632	154	786	3.39	0.069	7.06
1998	1,190,510	84,752	1.64	14,047	1,171,292	19,218	817	176	993	5.17	0.083	8.56
1999	1,249,956	86,790	2.41	14,402	1,220,597	29,359	401	54	455	1.55	0.036	3.73
2000	1,313,964	89,021	2.57	14,760	1,281,036	32,928	536	71	607	1.84	0.046	4.74
2001	1,335,516	89,387	0.41	14,941	1,330,059	5,457	451	72	523	9.58	0.039	4.02
2002	1,372,858	89,742	0.40	15,298	1,367,427	5,431	333	53	385	7.09	0.028	2.88
2003	1,398,959	89,317	-0.47	15,663	1,405,614	-6,655	151	7	157	-2.36	0.011	1.15
2004	1,442,841	90,620	1.46	15,922	1,422,083	20,758	383	52	435	2.09	0.030	3.09
2005	1,488,719	92,325	1.88	16,125	1,461,228	27,491	849	127	976	3.55	0.066	6.73
2006	1,527,827	93,102	0.84	16,410	1,515,078	12,749	1053	148	1201	9.42	0.079	8.06
2007	1,558,117	92,714	-0.42	16,806	1,564,640	-6,523	419	29	448	-6.87	0.029	2.95
2008	1,576,649	92,270	-0.48	17,087	1,584,244	-7,595	473	47	520	-6.84	0.033	3.38
2009	1,534,216	91,251	-1.10	16,813	1,551,339	-17,123	136	2	138	-0.81	0.009	0.92
2010	1,585,749	93,055	1.98	17,041	1,555,012	30,737	121	2	123	0.40	0.008	0.80
2011	1,633,041	94,362	1.40	17,306	1,610,427	22,614	427	44	472	2.09	0.029	2.96
2012	1,664,430	95,068	0.75	17,508	1,652,055	12,375	917	122	1038	8.39	0.062	6.40
2013	1,697,622	95,742	0.71	17,731	1,685,678	11,944	910	132	1042	8.72	0.061	6.30
2014	1,731,448	97,260	1.59	17,802	1,704,420	27,028	854	97	951	3.52	0.055	5.63
<b>Average</b>												
1987-1996	1,004,608	77,666	0.98	12,928	1,003,834	9,825	82.1	6.7	88.9	1.19	0.008	0.86
1987-2006	1,175,513	83,255	1.16	14,028	1,175,198	13,598	321.3	49.0	370.3	2.74	0.029	2.93
1997-2006	1,346,419	88,844	1.32	15,128	1,329,426	16,994	560.5	91.3	651.8	4.13	0.049	5.00
2007-2014	1,622,659	93,965	0.55	17,262	1,613,477	9,182	532.0	59.5	591.5	1.07	0.036	3.67
1987-2014	1,303,269	86,315	0.98	14,952	1,305,058	12,290	381.5	52.0	433.5	2.24	0.031	3.14
<b>Compound Annual Growth Rate</b>												
1987-1996	1.93	0.98	..	0.94	..	..	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1987-2006	2.69	1.15	..	1.51	..	..	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1997-2006	3.28	1.23	..	2.02	..	..	5.83	-0.46	4.82	12.03	1.49	1.49
2007-2014	1.52	0.69	..	0.83	..	..	10.72	18.59	11.35	n.a.	9.68	9.68
1987-2014	2.36	0.97	..	1.35	..	..	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: CSLS Interprovincial Migration Database, Table 14A. and Table 11B

**Appendix Table 9: Summary of Weighted Average Employment Rates for Provinces  
Sorted by Net Migration, 1987-2014**

	<b>Employment Rate of Provinces with Net Gains</b>	<b>Employment Rate of Provinces with Net Losses</b>	<b>Percentage Point Difference</b>	<b>Difference as a Per Cent of the Average National Employment Rate</b>
1987	62.0	58.3	3.7	6.1
1988	60.6	57.8	2.8	4.7
1989	60.2	56.9	3.3	5.6
1990	60.8	58.9	1.9	3.1
1991	59.3	57.5	1.8	3.1
1992	58.7	55.7	2.9	5.2
1993	59.0	54.4	4.6	8.0
1994	59.3	52.9	6.4	11.5
1995	59.9	52.4	7.5	13.4
1996	62.1	51.2	10.9	19.2
1997	65.8	51.3	14.5	24.8
1998	66.4	53.1	13.3	22.3
1999	64.4	55.5	8.9	14.9
2000	65.0	56.0	9.0	14.8
2001	65.6	55.7	9.8	16.2
2002	65.9	57.0	8.9	14.4
2003	63.0	60.7	2.3	3.7
2004	66.3	58.6	7.8	12.4
2005	67.3	58.4	8.9	14.2
2006	67.8	58.6	9.2	14.6
2007	65.1	59.7	5.4	8.6
2008	67.4	60.0	7.4	11.6
2009	60.6	59.1	1.5	2.5
2010	61.6	60.0	1.6	2.7
2011	67.0	59.4	7.6	12.1
2012	68.1	58.8	9.3	14.6
2013	68.4	58.1	10.3	16.3
2014	66.0	58.0	8.0	12.9
<b>Average Employment Rate</b>				
1987-1996	60.0	55.5	4.5	7.8
1987-2006	62.8	56.1	6.7	11.3
1997-2006	65.6	56.7	9.0	14.7
2007-2014	65.4	59.6	5.8	9.2
1987-2014	63.5	57.0	6.5	10.7
<b>Absolute Change in the Employment Rate</b>				
1987-1996	2.69	-6.68	9.36	16.45
1987-2006	5.44	0.77	4.68	7.21
1997-2006	0.32	7.11	-6.80	-12.32
2007-2014	2.00	-1.51	3.51	5.53
1987-2014	6.66	0.31	6.34	9.78

Source: CSLS Interprovincial Migration Database, Table 8B.

Note: Weights are the shares of each province in net positive (negative) migration of the working age population.

**Appendix Table 10: Contribution of Cumulative Migration since 1987 to GDP and Labour Productivity, 1987-2014 (millions of chained 2007 dollars)**

	Net Positive Migrants Aged 15+ Since 1987	Total Output Gains due to Migration (millions of dollars)	Output Gains due to Reallocation of Workers (millions)	Net New Employment due to Migration	Output Gains due to Migration Driven Employment (millions)	Migration Output Gains Contributing to Productivity Growth Since 1987
	1	2	3	4	5	6
1987	43,573	-236	-354	1,603	118	-356
1988	76,177	-189	-378	2,505	189	-379
1989	106,747	51	-230	3,698	281	-231
1990	125,860	157	-145	3,997	302	-146
1991	144,062	298	14	3,751	283	15
1992	162,780	600	168	5,658	432	165
1993	180,004	642	63	7,463	579	56
1994	202,173	469	-272	9,700	741	-311
1995	220,274	599	-180	10,126	778	-223
1996	246,368	1,055	42	12,654	1,013	22
1997	277,257	2,039	644	16,359	1,394	675
1998	304,071	3,098	1,483	17,667	1,615	1,601
1999	324,777	3,540	1,734	19,306	1,806	1,865
2000	351,079	4,585	2,375	22,488	2,209	2,583
2001	374,075	5,104	2,682	24,227	2,422	2,938
2002	389,831	5,226	2,955	22,347	2,271	3,221
2003	396,484	5,168	2,752	23,670	2,415	3,053
2004	411,897	6,108	3,416	25,461	2,692	3,801
2005	442,254	7,617	4,251	30,650	3,366	4,787
2006	473,031	9,833	5,649	36,808	4,184	6,406
2007	488,394	9,553	5,219	38,587	4,335	5,976
2008	505,320	9,608	5,125	40,135	4,484	5,905
2009	515,761	8,959	5,389	32,666	3,570	5,979
2010	523,322	9,425	6,250	28,048	3,176	6,815
2011	537,202	10,707	6,983	31,989	3,725	7,689
2012	564,767	12,737	8,464	35,969	4,273	9,317
2013	594,311	13,798	9,506	35,323	4,292	10,416
2014	629,710	15,756	10,951	38,593	4,806	12,003
<b>Total 1987-2014</b>	...	146,307	84,557	...	61,751	...

Source: Calculations using data from the CSLS Interprovincial Migration Database. The database is modified to calculate the results in Tables 14 and 14A using cumulative migration since 1987 instead of migration since the previous year.

Note: All calculations follow those in Appendix Tables 7 and 8, but use output gains based on cumulative migration flows since 1987 instead of the annual migration flows.

**List of Tables in the CSLS Interprovincial Migration Database**

**Population and Employment Data**

- Table 1: Total Population in Canada and the Provinces, 1987-2014 (persons)  
 Table 1A: Total Working-Age (15+) Population in Canada and the Provinces, 1987-2014 (persons)  
 Table 1B: Total Labour Force for Canada and the Provinces, 1987-2014 (thousands)  
 Table 1C: Labour Force Survey: Working-Age Population 1987-2014 (thousands)  
 Table 2: Total Employment in Canada and the Provinces, 1987-2014 (thousands)  
 Table 2A: Total Unemployment in Canada and the Provinces, 1987-2014 (thousands)

**GDP Data**

- Table 3: Real Gross Domestic Product by Expenditure at Market Prices, Canada and the Provinces, 1987-2014 (millions of 2007 chained dollars)  
 Table 3A: Nominal Gross Domestic Product in Canada and the Provinces, 1987-2014 (millions of current dollars)

**Real Productivity Data**

- Table 4: Real GDP per Worker in Canada and the Provinces, 1987-2014 (chained 2007 dollars)  
 Table 4A: Real GDP per Worker for the Provinces as a Percentage of Total Canadian GDP per Worker, 1987-2014  
 Table 4B: Weighted Average Productivity for Provinces that Gained Net Workers and Provinces that Lost Net Workers, 1987-2014  
 Table 4C: Summary of Average Weighted Labour Productivity, 1987-2014 (chained 2007 dollars)

**Nominal Productivity Data**

- Table 4D: Nominal GDP per Worker in Canada and the Provinces, 1987-2014  
 Table 4E: Nominal GDP per Worker for the Provinces as a Share of Total Canadian GDP per Worker, 1987-2014  
 Table 4F: Weighted Average Nominal Output per Worker for Provinces that Gained Net Workers and Provinces that Lost Net Workers, 1987-2014  
 Table 4G: Summary of Average Weighted Nominal Output per Worker, 1987-2014 (current dollars)

**Migration Data - Levels**

- Table 5: Net Interprovincial Migration in the Provinces, 1987-2014 (persons)  
 Table 5A: Gross Flows of Interprovincial Migration by Province, 1987-2014 - In-Migration (persons)  
 Table 5B: Gross Flows of Interprovincial Migration by Province, 1987-2014 - Out-Migration (persons)  
 Table 5C: In-Migration in the Provinces, Working Age Population (15+), 1987-2014 (persons)  
 Table 5D: Out-Migration in the Provinces, Working Age Population (15+), 1987-2014 (persons)  
 Table 5E: Ratio of In-Migrants 15+ to Total Number of In-Migrants and Ratio of Out-Migrants 15+ to Total Number of Out-Migrants  
 Table 5F: Net Interprovincial Migration in the Provinces, Working Age Population (15+), 1987-2014 (persons)

**Migration As Share of Population**

- Table 6: Net Migration as a Percentage of Total Population by Province, 1987-2014 (per cent)  
 Table 6A: Total Gross In-Migration as a Percentage of Total Population for Canada and the Provinces, 1987-2014 (%)  
 Table 6B: Total Gross Out-Migration as a Percentage of Total Population for Canada and the Provinces, 1987-2014 (%)

**Employment Data**

- Table 7: Working Age Population (15+) as a Percentage of Total Population in Canada and the Provinces, 1987-2014 (%)  
 Table 8: Employment Rate in Canada and the Provinces, 1987-2014  
 Table 8A: Weighted Employment Rates of Provinces with Positive Net Migration and Provinces with Negative Net Migration, 1987-2014  
 Table 8B: Summary of Weighted Average Employment Rates for Provinces Sorted by Net Migration, 1987-2014  
 Table 9: Unemployment Rate in Canada and the Provinces, 1987-2014, Per cent  
 Table 10: Changes in Total Employment as a Result of Interprovincial Migration in the Provinces, 1987-2014 (persons)

**Output Data**

- Table 11: Changes in Output as a Result of Interprovincial Migration in Canada and the Provinces, 1987-2014 (millions of chained 2007 dollars)  
 Table 11A: Decomposition of Total Output Gains due to Migration into Output Gains due to Re-allocation of Workers and Output Gains due to Employment Increases, 1987-2014 (million of chained 2007 dollars)  
 Table 11B: Decomposition of Output Gains due to Re-allocation and Employment into their Components, 1987-2014

**Nominal Output Data**

- Table 11C: Changes in Nominal Output as a Result of Interprovincial Migration in Canada and the Provinces, 1987-2014 (millions of dollars)  
 Table 11D: Decomposition of Total Nominal Output Gains due to Migration into Output Gains due to Re-allocation of Workers and Output Gains due to Employment Increases, 1987-2014 (millions of \$)  
 Table 11E: Decomposition of Nominal Output Gains due to Re-allocation and Employment into their Components, 1987-2014

**Alberta Data**

- Table 12: Net Interprovincial Migration to Alberta, Arranged by Province, 1987-2014 (persons)  
 Table 12A: Gross Interprovincial Migration to Alberta, Arranged by Province of Origin, 1987-2014 (persons):  
 Table 12B: Gross Interprovincial Migration from Alberta, Arranged by Province of Destination, 1987-2014 (persons):

## Age-Group Examination of Migrants

Table 13: Incidence of Interprovincial Migrants in Total Population by Age Group in Canada, 1972-2014, per 100 persons

Table 13A: In-Migrants by Age Group

Table 13B: Total Population by Age Group

## Migration Contributions

Table 14: Contribution of Migration to GDP, chained 2007 dollars, 1987-2014

Table 14A: Contribution of Migration to Labour Productivity, chained 2007 dollars, 1987-2014

Table 14B: Contribution of Migration to Nominal GDP, 1987-2014

## Deflators

Table 15: Gross Domestic Product Deflators for Canada and the Provinces, 1987-2014

Table 15A: Provincial Deflators (2007 = 100) for GDP at Market Prices (Expenditure-based)

## Comparison with Finnie Estimates

Table 16: Comparison of CSLS Estimates and Estimates Based on Findings from Finnie (2001), 1987-2014