

## Article

# The income of immigrants who pursue postsecondary education in Canada

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June 24, 2011



## Standard symbols for Statistics Canada

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0** true zero or a value rounded to zero
- 0<sup>s</sup>** value rounded to 0 (zero) where a meaningful distinction exists between true zero and the value rounded
- P** preliminary
- r** revised
- x** suppressed to meet the confidentiality requirements of the *Statistics Act*
- E** use with caution
- F** too unreliable to be published

# The income of immigrants who pursue postsecondary education in Canada

Anne-Marie Rollin

Immigrants admitted to Canada since the start of the 21st century are more educated on arrival than immigrants in earlier cohorts. They are also more educated than the Canadian-born. In the 2006 Census, 51% of immigrants age 25 to 64 who had been in Canada for five years or less had a university degree, compared to 28% of immigrants who arrived earlier and 20% of the Canadian-born (Statistics Canada 2008).

And yet, among university graduates age 25 to 54, the enrolment rate in postsecondary education is higher among recent immigrants than the Canadian-born (14% versus 6% in 2007) (Gilmore and Le Petit 2008). Moreover, immigrants who pursue postsecondary education (PSE) use the Canada Student Loans Program more often than the Canadian-born (Kapsalis 2006).

What motivates immigrants to invest time and money, and sometimes even to go into debt, to pursue PSE in Canada? While the motives differ from one individual to another, they are often not unrelated to problems associated with recent immigrants' integration into the labour market: partial or no recognition of experience and credentials acquired abroad, lack of local experience, language barrier, weak social networks and differences in the quality of education depending on country of origin (Statistics Canada 2005, Houle and Yssaad 2010, Sweetman 2004, and Anisef et al. 2010).

Despite the increase in their education level, a deterioration in recent immigrants' labour market outcomes has been observed in recent decades.<sup>1</sup> However, recent studies have indicated better outcomes for immigrants who pursue PSE in Canada. Immigrants who arrived more than five years ago and obtained their highest postsecondary degree in Canada have an employment rate comparable to the Canadian-born (Gilmore and Le Petit 2008). Moreover, labour market participation is higher for immigrants

*The author wishes to thank René Morissette for his assistance, especially in developing the regression models.*

who completed their postsecondary education in Canada rather than abroad (Mata 2008). Finally, a recent study compared the employment rate of immigrants six months after their arrival in Canada and then after four years. One finding of this study was that among those who already had a university degree on arrival, the group that pursued PSE in Canada saw its employment rate rise more rapidly than the group that did not (Anisef et al. 2010).<sup>2</sup> Up to now, no long-term longitudinal study has been conducted on how the employment income of immigrants pursuing PSE in Canada evolves over time.

This study uses Statistics Canada's Longitudinal Administrative Databank (LAD) (see *Data sources and definitions*) to compare the evolution, over an eight-year period, of the employment income of immigrants with and without PSE in Canada. The sample consists of immigrants who arrived in 1998 and 1999 when they were age 25 to 44. Immigrants who undertook no PSE in the eight years following their arrival are compared to those who began their PSE in the second or third year after their arrival.

First, the extent to which immigrants who pursue PSE in Canada experience different employment income trajectories compared to immigrants who do not is determined. It is then determined whether this difference remains after controlling for a set of individual characteristics observed at the time of settlement that are likely to influence how employment income evolves. This set of characteristics includes education level on arrival, prior knowledge of an official language, immigrant class and country of origin.

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### Men are more likely than women to belong to the skilled-worker category

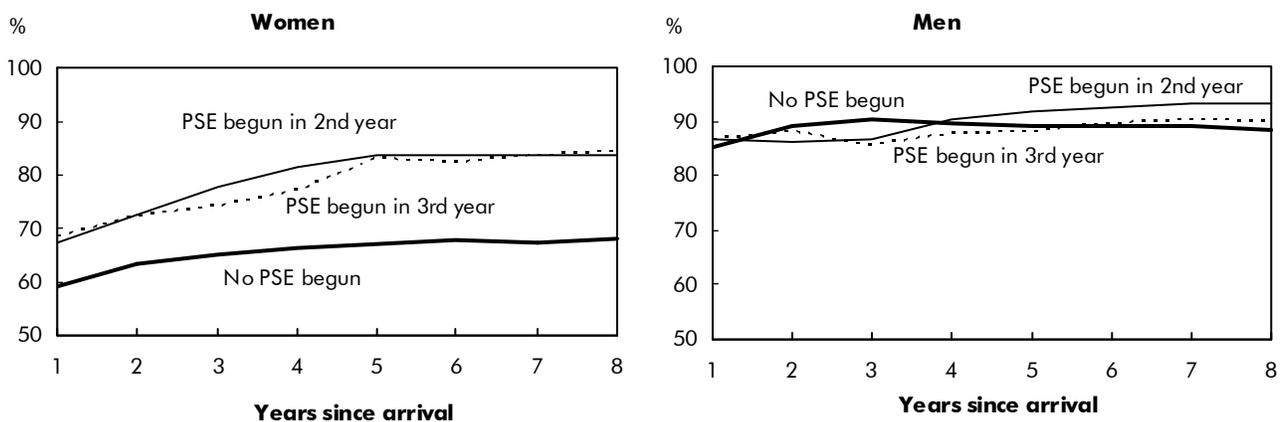
Of the male and female immigrants who arrived in 1998 and 1999 included in this study, 52% had a university degree at the time of immigration and 72% knew an official language when they arrived (Table 1). Immigrants from the four leading regions—Eastern Asia, Southern Asia, Eastern and Southern Europe and Southeast Asia—accounted for more than two-thirds of the total.

The main difference between men and women was the much larger proportion of principal applicants for immigration in the skilled-worker category for men (57%) than women (19%), who mainly belong to the skilled-worker spouse and dependent category or the family reunification category. Since only the principal applicant in the skilled-worker category is evaluated according to a point system, labour market characteristics were more favourable for male than female immigrants. Men who arrived in 1998 and 1999 tended to be slightly older than their female counterparts and have more years of work experience. They were also more educated and proportionally more likely to know English or French.

### Immigrants who begin PSE are different from those who do not pursue PSE

There are differences between the characteristics of immigrants who begin PSE during the second or third year following their arrival and those who do not pursue PSE in Canada. Immigrants who begin PSE tend to be younger and more educated when they arrive, and a larger proportion of them know an official language. For example, 70% of male immigrants who undertook PSE had a university degree when they arrived, while 50% of men who did not undertake PSE had such a degree at the time of immigration. Also, immigrants who pursue PSE are more likely to belong to the skilled-worker category, whether as the principal applicant or as a spouse or dependent of the principal applicant. The distribution of newcomers by country of origin is also different for the sub-groups who do and do not undertake PSE in Canada. For example, immigrants of both sexes who begin PSE are more likely to come from Eastern Asia, and female immigrants who begin PSE are more likely to come from Eastern or Southern Europe.

**Chart A Proportion of immigrants with employment income**



Note: PSE = postsecondary education  
 Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

**Table 1 Characteristics of immigrants who came to Canada in 1998 and 1999, age 25 to 44, with at least 10 years of education on arrival**

	Women				Men			
	All	No PSE begun	PSE begun in 2nd year	PSE begun in 3rd year	All	No PSE begun	PSE begun in 2nd year	PSE begun in 3rd year
<b>Total</b>	<b>56,195</b>	<b>33,165</b>	<b>4,945</b>	<b>3,185</b>	<b>51,985</b>	<b>31,975</b>	<b>4,365</b>	<b>2,455</b>
	%							
<b>Age on arrival</b>								
25 to 29	30.0	27.6	31.3	27.2	24.7	23.2	26.4	25.2
30 to 34	31.6	29.7	32.6	39.4	30.3	28.0	34.8	33.7
35 to 39	24.5	26.1	24.1	23.8	26.0	26.6	26.4	25.1
40 to 44	13.9	16.6	12.0	9.6	18.9	22.2	12.3	16.0
<b>Education level on arrival</b>								
10 to 12 years of schooling	19.7	26.4	9.3	13.9	13.5	18.3	5.6	7.0
13 or more years of schooling, without diploma/degree/certificate	9.3	9.4	9.2	6.9	8.1	8.6	8.1	6.0
Qualification certificate	10.4	11.1	8.8	10.0	9.5	11.4	6.7	6.6
Non-university diploma	13.9	13.7	16.0	14.2	11.0	11.4	10.0	8.7
Bachelor's	38.2	32.0	47.4	45.3	42.7	37.0	54.9	52.0
Master's	7.6	6.3	8.1	8.9	12.2	10.3	13.1	15.3
Doctorate	1.0	1.1	1.3	0.8	3.1	3.0	1.6	4.5
<b>Knowledge of an official language on arrival</b>								
Yes	67.1	63.9	72.3	64.7	77.7	75.0	80.9	82.3
No	32.9	36.1	27.7	35.3	22.3	25.0	19.1	17.7
<b>Immigrant class</b>								
Skilled worker, principal applicant	18.9	14.7	25.2	18.1	56.6	50.7	67.2	62.4
Skilled worker, spouse and dependants	37.5	35.2	42.2	44.8	8.3	7.1	10.9	9.4
Family reunification	21.9	24.7	15.9	17.1	16.9	20.0	10.6	13.3
Businessperson	4.8	6.5	2.1	3.6	3.8	5.4	1.6	1.9
Refugee	4.9	5.4	4.6	6.5	6.3	7.1	5.1	6.5
Other	12.0	13.5	10.0	9.9	8.0	9.6	4.6	6.5
<b>Country of origin<sup>1</sup></b>								
Eastern Asia	28.9	25.5	33.5	30.1	24.9	22.4	27.8	27.7
Southern Asia	13.2	16.5	6.7	9.4	16.9	18.3	15.0	13.2
Southeast Asia	9.4	10.0	8.5	8.1	6.3	6.8	4.6	6.4
West Central Asia and the Middle East	11.4	11.8	12.3	12.8	10.9	10.6	13.3	12.0
Eastern and Southern Europe	15.1	13.2	19.2	22.2	15.4	16.1	14.8	15.3
Western and Northern Europe	6.3	7.0	3.9	5.0	9.1	10.5	7.1	8.4
Africa	8.6	7.7	8.0	7.0	8.6	7.2	9.0	9.4
Latin America	5.5	5.4	6.6	3.8	5.6	5.3	6.9	5.4
North America	1.7	2.1	0.9	1.3	1.5	1.9	0.9	1.2
Oceania and other	0.6	0.6	0.4	0.4	0.9	1.0	0.5	1.1

1. The classification of countries of origin is the same as the classification of places of birth used in the 2006 Census (Statistics Canada 2010, Appendix J). However, some regions in the census classification were combined. Africa includes Western, Eastern, Northern, Central and Southern Africa. Latin America includes Central America, South America, the Caribbean and Bermuda. The 'other' category contains a limited number of immigrants for whom the region of origin is unknown.

Notes: For women, 16% began PSE in the 1st year and 11% began between the 4th and 8th years. For men, the corresponding proportions are 17% and 8%.

PSE = postsecondary education

Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

## Data sources and definitions

Statistics Canada's **Longitudinal Administrative Databank (LAD)** is a longitudinal sample representing approximately 20% of Canadian tax filers (T1 income tax returns). LAD also contains variables from the **Longitudinal Immigration Database (IMDB)**. It is therefore possible to identify immigrants and know some of their characteristics at the time they obtained their landed immigrant status, in particular their education level, their knowledge of the official languages, their immigrant class and their country of origin.

The target population consists of immigrants age 25 to 44 who arrived in 1998 and 1999 and had 10 or more years of education at that time.<sup>3</sup> Since information on postsecondary education is available in LAD only for individuals who complete their tax returns, the sample that was used contains only immigrants who completed their annual tax return during the eight years following their arrival. Therefore, immigrants who left Canada are not included.

Deductions for the amount relating to full-time and part-time education have been available in LAD since the 1983 and 1999 taxation years, respectively. Canadian filers who attend a recognized postsecondary educational institution and are enrolled in an eligible program can benefit by claiming this deduction, since it constitutes a non-refundable tax credit that can be claimed in the current year by the filer or a family member or can be carried forward to be claimed in a subsequent year.

In this study, **immigrants who did not begin any PSE** did not claim an education deduction from the first to the eighth year after their arrival. **Immigrants who began PSE during the second year** claimed, for the first time, a deduction for an amount relating to full-time or part-time education in the second year after their arrival. Finally, **immigrants who began PSE in the third year** claimed a deduction for the first time three years after their arrival.

As noted by Ashenfelter (1978), adults who take training sometimes experience a decrease in income in the year preceding the start of training. Therefore an analysis that considered only employment income in the year preceding the start of PSE might be biased. To guard against this possibility, this study focuses not only on immigrants who begin PSE during the second year, but also on those who do so in the third year following their arrival. Focusing on these two groups of immigrants who begin PSE also helps

to ensure that our findings are robust. Thus, to conclude that the change over time in employment income and the employment rate is different for immigrants who begin PSE in Canada compared to immigrants who do not, this study's results apply to both those who begin their education in the second year and those who do so in the third year.<sup>4</sup> Immigrants who began PSE in the first year following their arrival are not examined since it is essential to know employment income before the start of PSE.

LAD is beneficial for this analysis because of the large size of its longitudinal sample, its long period, the detailed income information that it contains and the richness of the characteristics regarding immigrants at the time of their settlement. However, this databank has some limitations, often inherent in the use of administrative data. Some immigrants who attend a postsecondary institution in the years after their arrival may not know about the education deduction. There is therefore a risk that some immigrants will be wrongly identified as non-students. Moreover, certain variables that could enhance this study are not available in LAD. The field of study of individuals pursuing PSE and whether they obtain a degree are unknown. For filers who report employment income, the number of hours worked during the year is unknown. Whether filers who report no employment income actively looked for work is unknown.

In this study, **employment income** is equal to the sum of income from employment entered on T4 slips, other income obtained from paid employment that does not appear on T4 slips, like tips and net income from self-employment (this net income can be negative). Newcomers **with employment income** in a given year are individuals who reported positive employment income that year.

Employment income is used to measure different facets of immigrants' economic integration. The extent to which immigrants have employment income at different times, which indicates that they have paid employment or are self-employed, is determined. The rate of growth of employment income between the first and eighth years is also studied. Since two individuals with the same growth rate can have a very different nominal increase in employment income, the dollar increase in employment income between the first and eighth years is also examined.

All amounts are expressed in 2007 constant dollars.

## Immigrants who undertake PSE in Canada are more likely to have employment income eight years after their arrival

The proportion of individuals with employment income is an indicator of their presence in the labour market. This proportion increases during immigrants' first years in Canada and then stabilizes as the newcomers integrate into the labour market.

After eight years in Canada, male and female immigrants who began PSE during the second or third year are more likely to have employment income than their counterparts who did not (Chart A). However, the gap between immigrants with and without PSE undertaken in Canada is much greater for women (more than 15 percentage points) than men (from 1 to 5 percentage points) after eight years.

### Effects of non-observable variables

In this study, characteristics observable at the time of immigration were taken into account by means of multivariate analyses. However, it is not possible to take non-observable characteristics generally valued on the labour market into account, such as motivation, talent, problem-solving ability, ability to synthesize and communication skills.<sup>9</sup> Immigrants who pursue postsecondary education (PSE) in Canada likely have more highly rewarded non-observable characteristics than immigrants who do not pursue PSE, which could explain in part why their employment income trajectories differed over time.<sup>10</sup>

Also, it is possible that immigrants who undertake PSE in Canada are more inclined to be in the labour market. For example, it may be that women who pursue PSE in Canada are more likely to have come to Canada with career plans

in mind, while women who do not are more likely to want to play a more traditional family role, either staying at home or holding an unspecialized job with little prospect of income growth.

To ensure that the results of this study are robust in relation to this specific phenomenon, an additional control variable was included in our models, namely the immigrant's intended occupation. This variable serves to distinguish between those who plan to work and others, in addition to providing the occupation code under the 1992 National Occupational Classification (NOC) for workers. The inclusion of this variable produces results similar to those in appearing tables 2, 3 and 4 and do not alter the findings of this study.

There was a gap of 10 percentage points among female immigrants starting in the first year, which may indicate that women who do not begin PSE generally tend to be less present in the labour market than women who do begin PSE. This situation might be due in part to the effects of non-observable characteristics (see *Effects of non-observable variables*). This said, the increase in the proportion of women with employment income between the first and eighth years is much greater for those who undertook PSE (16 percentage points) than those who did not do so (9 percentage points).

The proportion of men with positive employment income in the first year was approximately 85%, for both those with and those without PSE begun in Canada. After the third year, an upward trend appeared for groups that began PSE, while the group that did not begin PSE exhibited a downward trend. After eight years, the proportion of PSE-pursuing men with employment income is similar to or slightly higher than the corresponding proportion of those who did not pursue PSE.

### Immigrant women who pursue PSE are more likely to transition from not having employment income to having employment income

The probabilities of transitioning from having no employment income in the first year after arrival to having such earnings in the eighth year, and vice versa, were estimated using logistic regressions (see *Regression*

*models*). This methodology serves to determine whether immigrants who pursue PSE in Canada have different probabilities of transitioning compared to those who do not, and, if so, to determine whether the discrepancy in probabilities is due to differences in immigrants' characteristics at the time of their settlement.

Table 2 shows the probability of having employment income in the eighth year after arrival for immigrants without employment income in the first year. Even with controls in place for individual characteristics, this probability is significantly greater for women who begin PSE (from 69% to 78%) than those who do not (49%). In contrast, the probability gap for men is significant only for those who begin PSE in the third year.

Table 3 shows the probability of immigrants with employment income in the first year no longer having such income in the eighth year.<sup>5</sup> For women who begin PSE in the second or third year, the probability of experiencing such a transition is 10% and 13%, respectively. These percentages are significantly lower than the 19% probability for women with no PSE. For men, there is a significant probability gap between those who began PSE in the second year and those who did not undertake PSE. However, no significant difference is observed between men who began PSE in the third year and those who did not begin PSE.

It can therefore be concluded that a correlation exists only for women between beginning PSE in Canada and an increased presence in the labour market. This increased presence of women in the labour market

**Regression models**

Regression models were used to evaluate the probability of individuals with no employment income in the first year having such income in the eighth year, and conversely the probability of individuals with employment income in the first year not having such income in the eighth year. The model used is as follows:

$$Prob(\gamma_{i8}) = \alpha + \beta_1 PSE_{i2} + \beta_2 PSE_{i3} + \beta_3 C_i + \varepsilon_i.$$

The dependent variable  $\gamma_{i8}$  a binary variable that takes the value of 1 when individual  $i$  has employment income in the eighth year and 0 otherwise. The model was estimated separately for individuals with and without employment income in the first year. The term  $PSE_{i2}$  represents a binary variable that takes the value of 1 if individual  $i$  began postsecondary education (PSE) in the second year and 0 otherwise. In turn, the binary variable  $PSE_{i3}$  identifies immigrants who began PSE in the third year. Immigrants who did not pursue PSE comprise the reference group. The term  $C_i$  consists of individual characteristics on arrival in Canada: age, age squared (to take the decreasing marginal return on years of experience into account), education level, knowledge of an official language, immigrant class and country of origin. Apart from age and age squared, the other characteristics appear as binary variables and represent the different values appearing in Table 1. The probability in tables 2 and 3 correspond to the mean of the probabilities predicted by the model for the whole of the study sample (with or without employment income in the first year).

The descriptive analysis suggests greater income growth for immigrants who pursue PSE. To separate out the effect of PSE pursued in Canada from the effect of immigrants' individual characteristics on arrival in Canada, two linear regression models were specified which were estimated according to the ordinary least squares method:

$$\begin{aligned} \gamma_{i8} - \gamma_{i1} &= \alpha + \beta_1 PSE_{i2} + \beta_2 PSE_{i3} + \beta_3 C_i + \varepsilon_i \\ &\text{and} \\ \log(\gamma_{i8}) - \log(\gamma_{i1}) &= \alpha + \beta_1 PSE_{i2} + \beta_2 PSE_{i3} + \beta_3 C_i + \varepsilon_i. \end{aligned}$$

In the first model, the dependent variable represents the difference in employment income between the eighth and first years. In the second model, the dependent variable corresponds to the difference between the logarithms for employment income in the eighth and first years. For low growth rates, the logarithmic difference is approximately equal to the growth rate. However, the descriptive analysis revealed that the growth rates for immigrants' employment income are high (Chart B). Therefore, in this study, the logarithmic difference underestimates the growth rate for employment income. The terms  $PSE_{i2}$ ,  $PSE_{i3}$  and  $C_i$  are exactly the same as in the logistic regression model.

All the regression models were evaluated separately for men and women. In addition to being evaluated as described above, the models were also evaluated without individual characteristics  $C_i$ . When the results are presented, there is a notation as to whether the model is with or without individual characteristics.

may reflect greater employability, a greater degree of labour force participation or a combination of the two. However, the probability of going from a

situation without employment income in the first year to a situation with employment income in the eighth year is lower for women than men in all cases. Simi-

**Table 2 Probability for individuals with no employment income in the first year of having employment income in the eighth year**

	Women		Men	
	Model excluding individual characteristics	Model including individual characteristics	Model excluding individual characteristics	Model including individual characteristics
	%			
No PSE begun (ref.)	48.3	48.5	67.4	68.4
PSE begun in 2nd year	71.0*	68.8*	80.0*	75.5
PSE begun in 3rd year	79.1*	77.5*	90.2*	87.5*

\* significant difference in relation to reference group (ref.) at the 0.05 level  
 Notes: Includes only immigrants with no employment income in the first year.  
 PSE = postsecondary education  
 Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

larly, the probability of going from a situation with employment income in the first year to a situation without employment income in the eighth year is higher for women than men. This is largely a reflection of the differences in characteristics between male and female immigrants described previously. In particular, since women are much less likely to belong to the skilled-worker category, they are less likely to have positive labour market outcomes.

### Both male and female immigrants who pursue PSE experience greater growth in their employment income

This paper's focus will now shift to the increase in immigrants' employment income between the first and eighth years, using only immigrants with employment income at both these times.<sup>6</sup>

Although women who begin PSE have a lower average income in the first year than those who do not begin PSE, by the eighth year the women who began PSE have the higher average income (Chart B). Men who pursue PSE in Canada also start out with a lower average income but after eight years they are close behind men who did not pursue PSE. Consequently, both women and men who pursue PSE see both stronger growth and a larger nominal increase in their employment income. The employment income growth

rate for women who do not begin PSE is 61%, compared to more than 125% for women who do. The employment income of men who do not pursue PSE increases by 50%, while that of men who do increases by more than 80%.<sup>7</sup>

Gaps between immigrants with and without PSE in Canada are still present in the majority of cases with controls in place for the effect of individual characteristics at the time of arrival, using linear regression models (see *Regression models*). However, the gaps are reduced by adding these variables to the models (Table 4). The decrease in the gaps is small for employment income growth.<sup>8</sup>

With regard to the nominal increase in employment income, more than three-quarters of the gap observed for women (without controls for individual characteristics) remains when differences in these characteristics among immigrants are taken into account. Immigrant women who begin PSE in the second or third year experience a greater increase in their employment income than those who do not begin PSE, at \$8,900 and \$5,500, respectively. For men who begin PSE in the second year, 60% of the difference remains when individual characteristics are taken into account, at \$3,800. However, for men who begin PSE in the third year, the gap in relation to the reference group with no PSE in Canada is not significant.

**Table 3 Probability for individuals with employment income in the first year of not having employment income in the eighth year**

	Women		Men	
	Model excluding individual characteristics	Model including individual characteristics	Model excluding individual characteristics	Model including individual characteristics
	%			
No PSE begun (ref.)	18.2	18.6	7.8	8.3
PSE begun in 2nd year	10.1*	10.3*	4.6*	5.2*
PSE begun in 3rd year	12.9*	12.9*	10.2	10.4

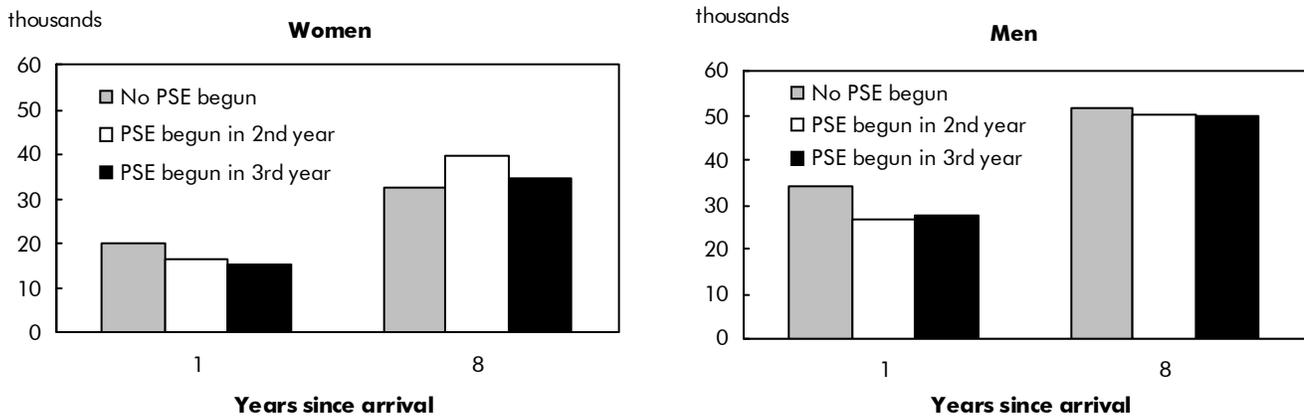
\* significant difference in relation to reference group (ref.) at the 0.05 level

Notes: Includes only immigrants with employment income in the first year.

PSE = postsecondary education

Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

**Chart B Average employment income in the first and eighth years**



Notes: Includes only individuals with positive employment income in the 1st and 8th years.  
PSE = postsecondary education  
Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

Thus, pursuing PSE in Canada seems to be correlated with stronger growth of employment income for both women and men, as well as with a larger nominal increase in employment income for women.

**Are the outcomes different for immigrants who arrived with and without a university degree?**

The evolution of employment income in relation to pursuing PSE in Canada does not appear to be different for immigrants who arrived with and

**Table 4 Growth and nominal increase in employment income**

Group compared to group with no PSE begun	Dependent variable	Women		Men	
		Model excluding individual characteristics	Model including individual characteristics	Model excluding individual characteristics	Model including individual characteristics
Value of coefficient of interest [and its standard error]					
PSE begun in 2nd year	$\log(Y_8)-\log(Y_1)$	0.56* [0.06]	0.51* [0.06]	0.36* [0.04]	0.32* [0.04]
PSE begun in 3rd year	$\log(Y_8)-\log(Y_1)$	0.46* [0.07]	0.38* [0.07]	0.27* [0.06]	0.23* [0.06]
PSE begun in 2nd year	$Y_8-Y_1$	10,800* [1,200]	8,900* [1,200]	6,400* [1,700]	3,800* [1,700]
PSE begun in 3rd year	$Y_8-Y_1$	7,200* [1,500]	5,500* [1,500]	5,000* [2,200]	2,400* [2,200]

\* significant difference in relation to reference group (no PSE begun) at the 0.05 level  
Notes: Includes only individuals with positive employment income in the 1st and 8th years.  
PSE = postsecondary education  
Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

without a university degree.<sup>11</sup> The four measures of the change in employment income examined are different between immigrant women who begin PSE in Canada and those who do not, these findings applying both to those who arrived with and without a university degree. For men, the results are conclusive only with regard to the growth rate for employment income, as noted previously (Table 5).

The results of the logistic regressions do not indicate that the gaps previously observed between groups with PSE and the reference group without PSE regarding the probabilities of transitioning from having no employment income to having such earnings, and vice versa, are different for immigrants with and without a university degree on arrival.<sup>12</sup> Nor do the results of linear regressions indicate a significant difference in the growth rate and nominal increase in employment income.<sup>13</sup>

## Conclusion

This study compared the evolution, over an eight-year period, of the employment income of immigrants who began postsecondary education (PSE) in Canada in the second or third year after their arrival with that of immigrants who did not do so. Four measures were used: the probability of going from a situation with no employment income to one with employment income; the probability of going from a situation with employment income to one with no employment income; the rate of growth of employment income; and the nominal increase in employment income. The analysis was conducted for women and men separately.

According to the four measures, women who began PSE in Canada have better outcomes, even when individual characteristics known at the time of immigration are taken into account. For men, the differences

**Table 5 Employment income in the first and eighth years, by education level on arrival**

	Women				Men		
	No PSE begun	PSE begun in 2nd year	PSE begun in 3rd year		No PSE begun	PSE begun in 2nd year	PSE begun in 3rd year
<b>Arrived without university degree</b>							
Proportion with employment income				%			
1st year	57.0	66.5	67.2		84.5	83.9	86.3
8th year	66.7	82.9	81.2		88.5	92.0	92.1
				\$			
Average employment income <sup>1</sup>							
1st year	15,500	14,200	13,500		26,900	21,400	25,600
8th year	24,600	35,100	29,700		38,200	38,900	49,000
				%			
Growth of average employment income, <sup>1</sup> 1st to 8th year	58.7	147.2	120.0		42.0	81.8	91.4
<b>Arrived with university degree</b>							
Proportion with employment income				%			
1st year	62.7	68.3	69.6		86.1	87.6	86.5
8th year	70.5	84.5	87.4		88.6	93.9	89.0
				\$			
Average employment income <sup>1</sup>							
1st year	26,600	18,100	16,300		41,400	28,800	28,100
8th year	43,100	42,700	38,200		64,500	55,000	49,900
				%			
Growth of average employment income, <sup>1</sup> 1st to 8th year	62.0	135.9	134.4		55.8	91.0	77.6

1. Includes only individuals with positive employment income in 1st and 8th years.

Note: PSE = postsecondary education

Source: Statistics Canada, Longitudinal Administrative Databank, 1999 to 2007.

between those who began PSE and those who did not are significant only with respect to the growth rate for employment income. The evolution of employment income related to pursuing PSE in Canada does not differ significantly depending on whether immigrants were with or without a university degree on arrival.

There is therefore an association for both women and men between pursuing PSE in Canada and the growth of immigrants' employment income over an eight-year period. Also, for immigrant women, PSE pursued in Canada is associated with greater labour force participation eight years after their arrival.

Since it is impossible to take the effects of some non-observable variables into account, these results should be interpreted with caution. The gaps that remain between immigrants who undertake PSE in Canada and those who do not (after individual characteristics known at the time of immigration are taken into account) are caused by the combined effects of pursuing PSE in Canada and the non-observable characteristics mentioned previously. However, the relative importance of these two factors is unknown. Future research might shed light on this matter.

The administrative data used do not show whether immigrants who began PSE obtained a postsecondary degree in Canada. What this study establishes is that there are certain links between immigrants attending a postsecondary educational institution in Canada and how their employment income evolves. By attending such an institution, newcomers obtain not only education but also access to guidance and job search services, the opportunity to perfect their knowledge of the official languages, the possibility of expanding and diversifying their social networks and various other advantages. In the future, it would be useful to explore how each of these advantages contributes to improving immigrants' employment prospects. It would also be interesting to determine whether participation in PSE is more beneficial to immigrants than the Canadian-born.<sup>14</sup>

## Perspectives

### Notes

1. The unemployment rate of very recent immigrants rose from 1981 to 2008, whereas it declined for the Canadian-born (Canadian Labour and Business Centre 2004, and Gilmore 2009). The gap in employment income between very recent immigrants and the Canadian-born has widened since the 1970s, even for bachelor's degree holders (Picot and Sweetman 2005). Moreover, the proportion of very recent immigrants having a university degree but holding a job requiring no more than a high school diploma increased by 5 percentage points from 1991 to 2006 (Galarneau and Morissette 2008).
2. Anisef et al. (2010) use the Longitudinal Survey of Immigrants to Canada and focus on immigrants who arrived during the period from October 2000 to September 2001 and had a university degree when they arrived. They separate their sample into four groups according to the type of postsecondary education (PSE) pursued in the first four years in Canada: no PSE, non-university PSE, university PSE in the same field as in the past, university PSE in another field than in the past. For each of these groups, they measure the employment rate six months after their arrival, then after four years. One of the main findings of the study is that the increase in the employment rate between these two periods is greater for immigrants who pursue university PSE in Canada than immigrants who do not pursue PSE and those who pursue non-university PSE. However, the employment rate after four years remains lower for immigrants who pursued university PSE in Canada than the other two groups.
3. To attend a Canadian postsecondary institution, it is generally necessary to have a high school diploma, which requires approximately 12 years of education. Immigrants with less than 10 years of education on arrival are therefore too unlikely to attend a postsecondary institution to be included in this study.
4. However, those who begin postsecondary education (PSE) in the third year have one less year between the start of their PSE and the point when their employment income is recorded in the eighth year.
5. According to Riddell and Song (2009), postsecondary education increases the probability of re-employment following a job loss.
6. Immigrants with employment income in both the first and eighth years represent 79% of the men and 51% of the women included in the sample. As noted earlier, the definition of employment income used in this study includes net income from self-employment, following the example of Frenette and Morissette (2003). Such income is likely to be more unstable than the earnings of salaried workers. To ensure that the inclusion of this income does not bias the results for growth in total employment income, tables 4 and 5 were redone excluding immigrants who reported such income in either the first or eighth year, or in both years. The results are similar to those appearing in this article.
7. The higher growth rates generally observed for women reflect in part the fact that their average income is much lower in the first year.

8. The dependent variable in the regression models is the logarithmic difference in income between the first and eighth years. This ensures that the results are not influenced by the fact that women's incomes are lower on average than men's.
9. The methods generally used to take the omitted heterogeneity into account cannot be used in the selected regression models. With fixed-effects models, the dependent variable must be observed several times for the same individual. In this study, income is observed in the first and eighth years only, which is insufficient. Random-effects models are useful when the non-observable characteristics are not correlated to the independent variables. This condition does not apply here because the non-observable characteristics are expected to be correlated to pursuing postsecondary education (PSE).
10. See, for example, Bonikowska et al. (2008) for details on the effect of cognitive ability on immigrants' earnings.
11. The findings of this study are also valid for both full-time and part-time postsecondary education (PSE) begun. Education deductions indicate how many months immigrants pursued full-time or part-time PSE in a given year. Beginning full-time PSE in a given year is defined as attending a postsecondary educational institution full-time for a minimum of four months that year. Immigrants who began part-time PSE did not meet this condition (either they studied part time only or they studied full time for less than four months in the first year of their PSE). When this distinction is made, the conclusions of this study are found to be adequate for all questions pertaining to women. Once again, the results for men are conclusive only with respect to the growth rate of employment income.
12. Logistic regressions were carried out using a model similar to the one described in *Regression models*. However, education level on arrival is included as a binary variable to distinguish between immigrants with and without a university degree on arrival. Also, two terms were added for the interaction between this binary variable on education on arrival and the two binary variables on PSE pursuit in Canada. The model was evaluated separately for the two sexes, as well as for individuals with and without employment income in the first year. The standard errors used are robust for heteroscedasticity. When individual characteristics are taken into account, the two interaction terms are not jointly different from zero at the 5% significance level.
13. The linear regression models used were similar to those described in *Regression models*. However, education level on arrival is included as a binary variable to distinguish between immigrants with and without a university degree on arrival. Also, two terms were added for the interaction between this binary variable on education on arrival and the two binary variables on PSE pursuit in Canada. The two models were evaluated separately for the two sexes. When the effect of individual characteristics is taken into account, the two interaction terms are not jointly different from zero at the 5% significance level, with one exception: a slight difference is detected with respect to the nominal increase in employment income for men. This difference comes from men who began PSE in the third year, since no difference is detected for men who began PSE in the second year.
14. While Canadian-born persons who pursue postsecondary education (PSE) can be identified in the Longitudinal Administrative Databank (LAD), their prior education level is unknown.

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