A Study of Middle-aged Immigrants Participation in Post-migration Education

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Contents

Abstract:

This paper focuses on middle-aged immigrants' decisions to take part in post-migration education and on the effect of post-migration education on their performance in the Canadian labour market. Immigrants' social and economic attributes are included in a model that examines their decisions to go back to school after their arrival in Canada. Furthermore, this paper makes a comparison between immigrants who obtained their highest education in Canada and those who got their credentials outside Canada in the context of the determination of weekly employment income. The study finds that numerous factors, such as age, language ability, birth place, and pre-migration education, have influences on the decision of immigrants to engage in further education after they arrived in Canada. Also, females with children have more interests in investing in post-migration education than those without children. Furthermore, immigrants who completed their highest education outside Canada face more restrictions in the labour market than those who got their highest diplomas in Canada. However, those restrictions tend to disappear after they have a degree in Canada.

1. Introduction

Many people around the world regard Canada as a land of opportunity and try to enter the country as immigrants. According to the Canadian census, immigration accounted for two-thirds of Canadian population growth between 2001 and 2006. To select among the numerous applicants, the government has been using since 1967 an immigration points system as a tool to assess the eligibility of the applications of skilled workers. According to the test offered by Citizenship and Immigration Canada, the most important factor is education. The higher the degree or the number of years of schooling the applicants have, the more points they get. An equally important factor is English or French language ability. The third factor in importance is work experience. Applicants should have at least one year of full-time paid work experience. If applicants have four or more years work experience, the system will allocate them more points. The following factor is age, the applicant whose age ranges from 21 to 49 being the most preferred. The last factors are arranged employment and adaptability respectively. From the above, it can be said that the Canadian immigration points system emphasizes education, and that young and middle-aged immigrants with some work experience are preferred. The well-educated, fluent in official languages, middle-aged applicants are regarded as the most promising group among all the applicants in the view of the government.

Even though most new immigrants are well educated and have valuable work experience in some professional fields in their countries of origins, many of them seem to meet more difficulties in establishing themselves in the Canadian labour market than they thought. According to the publication *The Canadian Immigrant Labour Market in 2007* (Gilmore, 2008), the unemployment rate of immigrants aged 24 to 52 was 6.6 percent, which was 2 percentages points higher than that of their Canadian-born counterparts. Also, the employment rate for the immigrant was 77.9 percent, while it was 83.8 percent for the Canadian-born.

These figures only offer a limited view of the general performance of immigrants in the Canadian labour market. A report from Travis Lupick (2009) states that *"Statistics Canada's definition of 'employment' doesn't differentiate between a PhD from India who works at McDonald's and a Canadian-educated Norwegian who works as a nurse at Vancouver General Hospital"*. Therefore, it is hard to determine whether these well-educated immigrants are working a job in their preferred field or in a survival job in order to prevent themselves and their families from being hungry.

A large amount of research has been conducted to analyze the difficulties that immigrants are facing in their host countries. The fact that work experience and education achieved in their countries of origin are valued much less than that of their Canadian-born counterparts is generally recognized as an important factor that accounts for the disadvantages of immigrants in the local labour market (Ferrer and Riddell, 2004; Chiswick, 1978, 1979). Furthermore, some researches argue that investing in further education in the host country contributes to the immigrant's human and social capital (see, for example, Anisef, Sweet, Adamuti-Trache and Walters, 2009). They point out that taking part in post-secondary education helps new immigrants to integrate to the culture of the host country, to enhance their language abilities and to re-establish themselves in the labour market.

Actually, more and more immigrants have decided to participate in post-migration education in their middle ages. According to the 2006 Canadian census, the rate of attendance in school among immigrants aged 30 to 49 was about 10%, compared to 7.4% in 2001.

In this paper, I wish to get a better understanding of the behaviour of adult immigrants in terms of their participation in post-migration education after they arrived in Canada. More precisely, the purpose is to study 1) Who will take part in post-migration education, and 2) What is the impact on earnings of participation in post-migration education.

Using micro data from the 2006 Canadian census, the sample of this study includes middle-aged adult immigrants who have immigrated to Canada between ages 30 and 49 and who have completed at least a high school education. Two main regression analyses will be presented. The first one will be a binary choice regression on the factors which influence immigrants' decisions to engage in a post-migration educational program after they arrived in Canada. These factors to be examined include immigrants' social and economic attributes. Specifically, personal demographic characteristics, domestic situation, educational level are included. In the second regression, the weekly employment income of immigrants who have gained their highest degrees or diplomas in Canada will be compared to that of immigrants who achieved their credentials outside Canada.

The rest of this paper consists of four sections. The next one is a literature review. The following section is a presentation of the methodology, which includes a discussion of the sample, the variables and the two regressions models to be estimated. This is followed by a section on the analysis of the results. The analysis consists of two parts which aim at presenting and discussing the output of the two models respectively. The last section is a conclusion which summarizes the key findings of this study.

2. Literature review

The literature related to the decision of adult immigrants to take part in education programs following their migration is still not very rich. However, it is generally known that immigrants are facing more barriers than their native-born counterparts in looking for a job in their host country. Based on pooled 1999, 2001 and 2003 cross-sections data from the Work and Employee Survey, Pendakur and Woodcock (2008) found that it was common for the skilled immigrants to face a

variety of difficulties in hunting for a job in their preferred fields. Their study suggests that newly arrived male immigrants initially work for low-wages jobs, but that their incomes improve as they move up in the wage distribution. At the same time, Grenier and Xue (2011) found that, among all immigration categories, male skilled worker principal applicants were the most likely to get employed in their intended occupation during the first 4 years in Canada. They also report that the first year in Canada is critical for an immigrant to find a job in the preferred field; after that period, the new immigrants find it harder and harder to have employment in their intended field.

Using Census data, Ferrer and Riddell (2004) conducted a research on the returns to human capital of immigrants and native-born workers in the Canadian labour market. Their key finding is that both the work experience and the years of schooling obtained in the countries of origin of immigrants are valued much less than those of their native-born counterparts. The study states that *"The returns to years of schooling are significantly lower for immigrants than for native Canadians and the gap widens over the period. In contrast, the marginal value of immigrant credentials is consistently equal to or higher than that of natives"* (p. 16). Furthermore, they found evidence which shows that the difference in returns to work experience and years of schoolings between immigrants and native-born workers applies for the adult immigrant, but not for the youth. An important implication was that the human capital of immigrants who engaged in education in Canada would not be discounted by the Canadian labour market. Therefore, the authors concluded that investing in post-migration education was a way for the adult immigrants to re-establish their human capital in the host country. The study also linked immigrants' original countries and regions to the difference in returns to human capital. It found no evidence of significant difference between the immigrants from the US and the UK and the native-born workers. However, immigrants from other countries or regions gained lower returns than their native-born counterparts.

Chiswick (1978, 1979) hypothesized that the human capital of immigrants may not be fully valued in the host country. Duleep and Regets (1999) introduced this concept to their model by the notion of skill-transferability. Because of differences in cultural and other circumstances of the labour market, immigrants from less-developed countries face more difficulties than those from the more developed regions, which would be reflected in the skill-transferability parameters. Using U.S. longitudinal individual data, they find that *"the immigrants with low initial skill transferability will have greater human-capital investment"* (p. 188). In their data, the school attendance rate for immigrants from economically less-developed non-refugee Asian countries was 19 percent, which was 10 percentage points higher than that of West European immigrants. From this, it can be assumed that immigrants from less-developed countries are more motivated to enrol in education programs after their arrivals. At the same time, they point out that immigrants gain faster earnings growth than natives due to the greater investment in human capital.

Using data from the *Ontario Immigrant Literacy Survey*, Ferrer, Green and Riddell (2006) address three main problems related to the effects of literacy on immigrants' earnings. Firstly, they point out that the literacy skills of immigrant and native-born are not the same. More specifically, *"the native-born literacy distributions first order stochastically dominate the distributions for immigrants"* (p. 408). This implies not only that there are differences in education, but also that there is a relationship between literacy skills and Canadian experiences. Secondly, their study rejects the fact that *"immigrants receive a lower return to the types of cognitive skills measured in literacy tests than do otherwise equivalent native-born workers"* (p. 408). This suggests that, from the viewpoint of the authors, discrimination cannot explain the earnings gap between immigrant and native-born. Lastly, they confirm that literacy skills affect earnings significantly. They show that pre-migration university education has lower return than host country acquired university education of native-born. However, this situation disappears when literacy skills are taken into account. The study explains that *"immigrants receive a lower return to*

foreign-acquired university education because foreign universities generate lower levels of 'usable' (in Canada) literacy skills" (p. 408).

Banerjee and Verma (2011) conducted an empirical analysis of the investment in post-migration education by new immigrants to Canada. Their study uses the Longitudinal Survey of Immigrants to Canada (LSIC), waves 1, 2, and 3. The survey collects information on new immigrants who arrived in 2000 and 2001 during their first four years in Canada. The key finding is that the *"younger immigrants from "non-traditional" source countries, who are already well educated, fluent in English or French, and worked in a professional or managerial occupation prior to migration are most likely to enrol in post migration education"* (p. 59). The results show that immigrants who have an undergraduate degree have a higher probability of taking part in education programs by about 2.5 times in terms of odds ratio than their less educated counterparts. Language ability, which is defined as a scale variable from 0 to 4, is shown to matter in their study. A one-unit increase in official language fluency increases by 1.5 times the odds of enrolment in post migration education. The authors explain that the lack of fluency in official languages will make it more difficult to obtain information about education. Furthermore, the countries of origin affect immigrants' behaviour in participating in post-migration education. They find that immigrants from the more developed western nations have less incentive to invest in further schooling. However, the study indicates that gender does not have significant influence on the post-migration education.

Adamuti-Trache and Sweet (2007) reported similar results while examining adult immigrants' participation in post-secondary education. The LSIC (with only wave 1, 2000-01 and wave 2, 2002-03) is used in their research. They show that pre-migration education has significant influence on school enrolment. The university educated immigrants have about a two percentage point higher probability to enrol than their non-university credential counterparts. Referring to gender, females are less

likely to take part in the post-secondary education than males. Furthermore, the decision for adult immigrants to have educational investment declines with their ages.

Anisef, Sweet, Adamuti-Trache and Walters (2009) also employed the LSIC to examine the newly arrived immigrants taking part in the post-secondary education. Even though they used the same survey as Banerjee and Verma (2011) and Adamuti-Trache and Sweet (2007), there are differences in the three samples. Banerjee and Verma (2011)'s study was based on pooled data from LSIC (wave1, wave2, and wave3), and their sample is *"restricted to immigrants between the ages of 25 and 64 who worked prior to arrival in Canada, planned to work after immigration, and reported earnings in at least one of three waves of the survey"* (p. 66). Furthermore, they use four dummy variables to capture the information on the immigrants' pre-migration education*: "1) high school or less; 2) post-secondary education including college: 3) undergraduate degree; and 4) postgraduate degree"* (p. 65). But Adamuti-Trache and Sweet (2007) collected their sample only from wave1 and wave2 of LSIC. In the study by Anisef, Sweet, Adamuti-Trache and Walters (2009), the research sample is based on LSIC wave 3 data and it includes only the respondents who have answered at all three waves of LSIC. Their target immigrants meet the following specific conditions: 1) Never lived in Canada before they immigrated. 2) Their age at immigration ranges from 25 to 49. 3) Have already finished their post-secondary education in their original countries or regions. The study indicates that *"the primary decision for immigrants to engage in further study in Canada is economic"* (part I). The non-participants were doing better than the participants in terms of employment. Therefore, there exists a tendency for the participants to regard post-secondary education as a way to enhance their human capital in Canada's labour market. Furthermore, among the new well–educated immigrants, people who had received a university degree show more interest in investing in further education than those with a college degree. That indicates that pre-migration education has a relationship with participation in post-migration education. Unlike the study by Banerjee and Verma (2011), Anisef, Sweet,

Adamuti-Trache and Walters (2009) point out that gender is a key factor that affects post-secondary education participation. They find that females are less likely to take part in post-secondary education. The study argues that women immigrant face more barriers, including social and cultural biases, when adjusting themselves to a new and different education system.

Anisef, Sweet, Adamuti-Trache and Walters (2009) also indicate that the domestic situation of the new immigrants has an influence in investing in post-secondary education. They argue that the high cost of child-care is a challenge faced by the immigrants. Therefore, many of them have difficulty not only financing their post-secondary education, but also financing their family members' education. There is another study supporting this finding. Palameta and Zhang (2006) show that 45 percent of students whose families immigrated to Canada after 1980 need Canada student loans to finance their engagement in post-secondary education; the number for their Canadian-born counterparts is 31 percent. Furthermore, Anisef, Sweet, Adamuti-Trache and Walters (2009) find that language skill plays an important role in pursuing post-secondary education. The research shows that language ability does not only affect the new immigrants' access to the institution, but also their performance in the chosen study program. This is consistent with Banerjee and Verma (2011).

To summarize the literature, it is widely accepted that lower returns to work experience and years of schooling achieved in the countries of origin of immigrants are responsible for an important part of the disadvantages that they face in their host countries. Many studies suggest that participation in post-migration education is a way for immigrants to enhance their human capital and to build up themselves in the local labour market. Their key findings are that age, language ability, countries and regions of origins, and pre-migration education have significant influences on immigrants' behaviour in terms of investing in post-migration education. But the studies still do not agree in the role that gender is playing in this issue. Some indicates that it does not have significant influence on the post-migration education (Banerjee

and Verma, 2011), while others point out that females are less likely to take part in post-secondary education (Adamuti-Trache and Sweet, 2007; Anisef, Sweet, Adamuti-Trache and Walters, 2009).

3. Methodology

3.1 Sample

The recent Canadian studies surveyed above have been conducted by using the Longitudinal Survey of Immigrants to Canada (LSIC) which focuses on collecting information on newly immigrants during their first four years in Canada. Instead of LSIC, this study employs the Canadian 2006 census. There are a lot of differences between Canadian census and the LSIC. Firstly, the census is done at the national level and aims at providing the profile of the population of the whole country at one point in time. Its target respondents are not only immigrants but all Canadian residents. Therefore, the total number of respondents in the census is much larger than that of LSIC. Furthermore, the census focuses on providing more general information from its respondents than LSIC.

The research sample is collected from the 2006 census Public Use micro data according to the following criteria:

1) Individuals who immigrated to Canada between ages 30 and 49;

2) Individuals with more than a high school level education.

Those criteria are chosen to focus on a population of middle-aged immigrants who have completed an important part of their education and gained work experience outside of Canada, and who may decide to go back to school to improve their economic opportunities. The total sample includes 46,587 individuals, which is a

much larger number than the samples of the other researches that used LSIC. In the first part of this study, an exploration in the factors that affect immigrants' decision to participate the post-migration education is conducted. After dropping the missing values of the independent variables, the total number of cases is reduced to 34,213. Also, I have re-classified some categories according to the 2006 census codebook to make regression analyses more straightforward. In the second part, I do a comparison of the weekly employment income between immigrants who have received an educational program in Canada and those who obtained their highest degrees or diploma outside of Canada. For that regression, I have dropped the respondents whose employment income is reported to be negative or zero, as well as those with very small or very large incomes who may behave as outliers; the latter are incomes that are reported as less than $500 a year, or over $200,000 a year. That leads the sample size for the second regression analysis to be 14,973.

3.2 Variables

The variables to be used in this study, as well as their percentage distributions or mean values are shown in the Table 1. The outcome variable of the first analysis is school attendance, which is used to capture the information of participation in the post-migration education. This variable is s a dummy variable that indicates the status of attending school of the respondents during the previous year, regardless of whether enrolment was full-time or part-time. The second outcome variable shown in part two is the weekly employment income, defined as annual employment income divided by the number of weeks worked in 2005. I take the logarithm of the employment income, so that the negative and zero employment incomes are dropped. Therefore, the total number of cases shown in part two is less than that in part one.

Table 1. Descriptive Statistics for the variables used in the models (percentage distribution or mean, with standard deviation in parentheses)

	Part 1 n=34,213		Part2 n=14,973	
	Percentage	Mean	Percentage	Mean
Outcome variables				
Attendance				
Attending school	9.76%			
Not attending school	90.24%			
Employment income per week (log value)				6.36
				(1.33)
Geographic variables				
Province/regions				
Eastern and northern Canada	0.47%		0.26%	
Ontario	56.93%		59.17%	
Quebec	13.71%		12.64%	
Central Canada	1.83%		1.60%	
Alberta	7.75%		8.51%	
British Columbia	19.32%		17.82%	
Large Census Metropolitan Area				
Living in cma	88.14%		91.98%	
Not living in cma	11.86%		8.02%	
Demographic variables				
Presence of children				
Kids between 0-14	35.64%		46.68%	
Gender				
Female	49.18%		42.18%	
Male	50.82%		57.82%	
Immigration variables				
Age at immigration				
30 to 34 years	42.25%	32	44.36%	32
35 to 39 years	28.63%	37	29.91%	37
40 to 44 years	18.54%	42	17.76%	42
45 to 49 years	10.58%	47	7.97%	47
Years since immigration		15.92		10.90
		(13.08)		(8.29)
Years since immigration^2		424.54		187.42
		(614.06)		(281.72)
Place of birth				
U.S.A	2.44%			
Other Americas	10.00%			
Europe and Oceania	29.76%			

Africa	6.50%	
Central and Middle Asia	6.24%	
Eastern Asia	21.62%	
Southeast Asia	9.75%	
Southern Asia	13.69%	
Language ability		
Knowledge of official language		
English	77.52%	83.23%
French	4.21%	3.29%
Both English and French	8.98%	11.53%
Neither English nor French	9.29%	1.94%
Labour activity		
Full-time		85.21%
Part-time		14.79%
Education variables		
Education level		
College 1	9.02%	11.65%
College 2	4.76%	7.06%
Below bachelor	14.92%	21.93%
Bachelor degree	54.88%	32.15%
Above bachelor and master degree	14.22%	23.50%
Doctor degree	2.20%	3.71%
Location of study		
1th identification:		
In Canada		18.05%
Outside Canada		81.95%
2nd identification:		
Canada		18.05%
U.S.A		4.62%
Other Americas		4.90%
Europe		24.36%
Eastern Asia		16.07%
Southern and Southeast Asia		22.45%
Others countries and regions		9.56%

The independent variables are made of six main categories: geographic, demographic, immigration, language ability, labour market activity and education. The geographic variables have two components: province/regions, and large census metropolitan area. I use 6 categories for the province or region where the respondents are living. Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New

Brunswick, Northwest Territories, Yukon and Nunavut are classified as Eastern and Northern Canada. Manitoba and Saskatchewan are defined as Central Canada. The other provinces are defined individually and Ontario will be picked up to act as a reference group. The large census metropolitan areas are defined as a dummy variable in this research. This paper defines the areas whose ratio of the population over the total Canadian population exceeded 2 percent as large census metropolitan areas. Such areas are Quebec, Montreal, Ottawa-Gatineau, Toronto, Hamilton, Winnipeg, Calgary, Edmonton and Vancouver. I want to examine whether immigrants living the large census metropolitan areas show more interests in post-migration education.

This study includes two regression analyses which are specified in section 3.3. Both regressions have a number of demographic factors. These factors are presence of children and gender. Specifically, presence of children takes the value one if there are children between 0 and 14 years in the immigrants' families, and it takes the value zero if there are none.

The immigration variable classification has four sub-categories, which are age at immigration, years since immigration, years since immigration squared, and place of birth. Age at immigration is a numerical variable. It is defined as the mid-point of the five years age categories used in the codebook of the public use data. The variable "years since immigration" represents the numerical difference between 2006 and the year when the respondent immigrated to Canada. Note that the average years since immigration of the first part is 15.9. Since this paper focuses on the individuals who migrated to Canada in middle ages, between 30 and 49, that indicates that the age of the individual at the time of the census in part one is approximately between 45.9 and 64.9. Some of them may have quitted the labour market, having no employment income and living on their saving or pensions. In the second regression analysis, the paper focuses only on individuals who have employment income. Therefore, the total population numbers in the second part will less than in the first

part. And also, the average years since immigration will be shorter in the second part than in the first part.

At the same time, I introduce the related variable "years since immigration squared" in order to see if the effect of years since migration diminishes over time. This variable is supposed to influence immigrant's decision of going back to school. Chiswick (1978) argues that as time passes, the immigrant obtain knowledge of the host countries, and may get related job skills, which all help them establish themselves and would narrow the gap of employment income between the immigrant and the native-born. That suggests that the coefficient of the years since immigration should be negative and that the coefficient of years since migration squared should be positive in the first regression which examines the factors that affect immigrants' behaviour of taking part in further education after they arrived in Canada.

The first regression examines the impact of place of birth on immigrants' participation in post-migration education. Previous studies have shown that the immigrants from less developed countries or regions would be more motivated than their counterparts from developed places in taking part in the post-migration education. This variable has 8 sub-categories: U.S.A., Other Americas, Europe and Oceania, Africa, Central and Middle Asia, Eastern Asia, Southeast Asia and Southern Asia. U.S A. was chosen as a reference among these 8 countries and regions. Note that, in the second regression on employment income, this variable will be eliminated and replaced with location of study.

The next category of independent variables is language ability. Respondents are asked to report in which official language they can conduct a conversation. Therefore, knowledge of official languages is employed to represent the respondent's language ability. Four categories of language ability are shown in Table 1, which are English only, French only, both English and French, and neither English nor French. This study uses the English only group as the reference. I want to have a better

understanding of how the language abilities affect the immigrants' decision to engage in the further education in the host country.

The second regression links the labour market activity to immigrants' weekly employment income level. Respondents are asked to report whether the weeks they worked in 2005 were mainly full-time or part-time. The immigrants whose weeks are full-time have this variable take the value 1 and those whose weeks are part-time have the variable take the value 0.

Considering education, there are two variables in this category. They are education level and location of study. There are 6 levels of education: college1, college2, below bachelor, bachelor degree, above bachelor and master degree, and doctoral degree. According to the codebook of the 2006 Canadian census, the college1 level consists of trades certificate or diploma, registered apprenticeship certificate, college, CEGEP or other non-university certificate or diploma from a program of 3 months to less than 1 year. College2 includes college, CEGEP or other non-university certificate or diploma from a program of 1 year to 2 years. The below bachelor level includes the same kinds of programs as the college2 level, except that they last more than 2 years; it also includes the university certificate or diploma below bachelor. Furthermore, the above bachelor and master degree level describes the education level of immigrants who have gained university certificate or diploma above bachelor level and degree in medicine, dentistry, veterinary medicine or optometry and master degree. Many researches have shown that the previous education that the immigrants have acquired affects their behaviour of investing in the further education (see, for example, Anisef, Sweet, Adamuti-Trache and Walters, 2009). Since the information on location of study is not available for those immigrants whose education level are equal or below high school level, all the immigrants in the sample have obtained a prior education higher than high school.

The second regression analysis uses almost the same variables as the first one, except that the variable "place of birth" is replaced with "location of study". As shown

in Table 1, I have classified the variable "location of study" in two ways. The first one is a dummy variable which determines whether respondents completed their highest education in Canada or not. The other one is a set of dummy variables consisting of seven categories which are Canada, U.S.A., Other Americas, Europe, Eastern Asia, Southern and Southeast Asia and other countries and regions. Its purpose is to provide more detailed information on the effects of the different places immigrants have acquired their highest degrees or diplomas on weekly employment income. There are two reasons for replacing the variable "place of birth" with "location of study". Firstly, the regression analysis aims at examining the difference in employment income between immigrants who have achieved their highest degree in Canada and those who obtained them outside of Canada. Secondly, there is a high correlation between the place of birth and the location of study, since many immigrants have finished their highest degrees in their birth places. Given the key objective of the regression analysis, the reference category for the employment income regression is the immigrants who have gained their highest education in Canada.

In the first regression analysis, the respondents will be separated into two groups: female and male. The second regression analysis will divide respondents into the insider group (highest degree inside Canada) and the outsider group (highest degree outside Canada). Table 1.A in the Appendix describes the samples separately for males and females in the first regression model, and for the insiders and outsiders in the second regression model.

3.3 Models

In the first regression analysis, I focus on the factors that influence immigrants` behaviour in taking part in post-migration education. The outcome variable "attendance" is a dummy variable which indicates whether or not the immigrant has attended school between September 2005 and May 2006. Immigrants

who have reported that they have "attended" will be allocated value 1; otherwise, the value 0 is allocated. Multiple ordinary least squares linear regression (also called the linear probability model) is the preferred method of examining the outcome variable. I have also tried the probit model and the results are similar to those of multiple ordinary least squares. Therefore, only the latter are presented. The regression model can be written as:

$$\text{Attendance}_i = \pi_0 + \pi_1 (\text{geographic variables})_i + \pi_2 (\text{demographic variables})_i + \pi_3 (\text{immigration variables})_i + \pi_4 (\text{language variables})_i + \pi_5 (\text{education variables})_i + e_i$$

Both the parameters π and the independent variables in the equation are vectors, with the exception of π_0.

In order to have a clear understanding of the differences in attitudes between females and males with respect to participation in post migration education, the regression is conducted three times by using respectively the female sample only, the male sample only and the whole sample.

In the second regression analysis of this study, my aim is to present a comparison of weekly employment income between immigrants who have obtained their highest education outside Canada and those who achieved their highest degrees or diplomas in Canada. Therefore, the outcome variable is weekly employment income. This study still uses multiple ordinary least squares linear regression as a method of analysis for weekly employment income. The regression model is:

$$\text{Weekly employment income}_i = \alpha_0 + \alpha_1 (\text{geographic variables})_i + \alpha_2 (\text{demographic variables})_i + \alpha_3 (\text{immigration variables})_i + \alpha_4 (\text{language ability})_i + \alpha_5 (\text{labour activity})_i + \alpha_6 (\text{education variables})_i + \mu_i$$

Similarly to the first model, both the parameters α and the independent variables in the equation are vectors, with the exception of α_0. In this model, weekly employment income is the natural logarithm of the weekly employment income of

individual i. The geographic variables, the demographic variables and language ability variables contain the same information as in the first regression analysis. As explained above, one of the four immigration variables was eliminated in the second model, i.e., the place of birth of the immigrant. Furthermore, a new variable "Labour market activity" is introduced into the regression to indicate whether the individual worked mainly full-time or part-time. At the same time, a category "location of study" is added under the education variables. Note that, in order to have a closer look at the differences in employment income between the immigrants who achieved their education in Canada and those who achieved it outside Canada, only the first identification of "location of study" will be included in this model.

Furthermore, insiders and outsiders will be separated and examined under the same model individually. Another regression will be conducted by using the whole sample.

Before presenting the results from those models, two simple analyses will be presented in order to explore the differences in school attendance and the level of weekly employment income among immigrants with different places of birth and locations of study. Note that, while conducting a simple regression of weekly employment income on the variable "location of study", I will only include the second identification of "location of study" in the model. In other words, I aim at presenting the relationship between the outcome variable without taking other factors into consideration.

4. Regression analysis

4.1 Part 1: attendance regression

As a first step, Table 2 presents a simple regression for attendance with only the variable "place of birth" in order to see gross differences in probabilities of

attending school between immigrants of various origins. Because of cultural, social and economic diversities across the world, people who came from different places would show different attitudes towards taking part in post-migration education. The contents include the estimated coefficients, standard errors, and significance levels. More information on R^2 and F-value can be found in appendix in Table 2A.

Table 2. Simple regression of attendance on place of birth

	coeff.	s.e.	sig.
Attendance			
Place of birth			
Reference: U.S.A			
other Americas	0.0769	0.0114	***
Europe and Oceania	0.0199	0.0106	*
Africa	0.1071	0.0120	***
central and middle Asia	0.0792	0.0121	***
eastern Asia	0.0537	0.0108	***
southeast Asia	0.0385	0.0114	***
southern Asia	0.0562	0.0111	***

* p<.0.1; ** p<.005; *** p<.001

As shown in Table 2, the U.S.A is picked out to be a reference group. All the estimated coefficients are positive and significant. Among all the countries and regions of origins, immigrants from Africa have the highest probability of engagement in post-migration education. The value of the estimated coefficient is 0.1071 which implies that immigrants from Africa have a 10.71% higher probability of participation in post-migration education than those from the U.S.A The following group consists of immigrants whose places of birth are other Americas and Central and Middle Asia. They both experience about 8 % higher probability of going back to school after their arrival than their counterparts from the U.S.A. In terms of Southern Asia, the estimated coefficient is 0.0562, which is slightly higher than that of Eastern Asia; however, the difference is statistically insignificant[1]. Among all the groups from Asia, immigrants from Southeast Asia are shown to be the least aggressive group in investing in further education. However, they still have 3.85% higher probabilities

[1] The F-test for the equality of these two coefficients shows to be F (1, 34205) = 0.20 Prob > F = 0.6515.

than those from the U.S.A. Since Europe and Oceania have similar education systems, cultures and economic backgrounds as Canada and the U.S.A, it is not a surprise to find that immigrants from these regions have the lowest value of the estimated coefficient. The value is 0.0199. The results of Table 2 show that immigrants' places of birth are related to participation in post-migration education. More specifically, the more developed the countries or regions immigrants come from, the less likely they are to go back to school after their arrival in Canada.

Table 3 presents the results of the first regression model respectively for females only, males only and the whole sample. This table, which has the same structure as Table 1, includes the estimated coefficients, standard errors and significance levels. More information on R^2 and F-value can be found in appendix in Table 3A.

Table 3. Multiple ordinary least squares linear regression of attendance

	Female			Male			Whole		
	coeff.	s.e.	sig.	coeff.	s.e.	sig.	coeff.	s.e.	sig.
Attendance									
Geographic variables									
Province/regions									
Reference: Ontario									
Eastern and northern Canada	-0.0139	0.0359		0.0084	0.0302		0.0013	0.0233	
Quebec	0.0312	0.0098	***	0.0266	0.0084	***	0.0278	0.0064	***
Western Canada	-0.0242	0.0178		-0.0020	0.0155		-0.0137	0.0118	
Alberta	0.0131	0.0090		0.0179	0.0079	**	0.0154	0.0060	***
British Columbia	-0.0016	0.0063		-0.0091	0.0057		-0.0051	0.0043	
Large Census Metropolitan Area									
Reference: Not living in large cma									
Living in cma	0.0063	0.0081		-0.0121	0.0068	*	-0.0034	0.0053	
Demographic variables									
Presence of children									
Reference: Do not have kids between 0 to 14									
Kids between 0-14	0.0168	0.0062	***	0.0017	0.0053		0.0066	0.0040	*
Immigration variables									
Age at immigration	-0.0033	0.0005	***	-0.0024	0.0004	***	-0.0030	0.0003	***

Years since immigration	-0.0124	0.0007	***	-0.0111	0.0006	***	-0.0120	0.0004	***
Years since immigration^2	0.0002	0.0000	***	0.0002	0.0000	***	0.0002	0.0000	***
Place of birth									
Reference: U.S.A									
Other Americas	0.0788	0.0165	***	0.0355	0.0157	**	0.0588	0.0114	***
Europe and Oceania	0.0434	0.0153	***	0.0024	0.0144		0.0225	0.0105	**
Africa	0.0610	0.0179	***	0.0526	0.0162	***	0.0565	0.0120	***
Central and middle Asia	0.0595	0.0176	***	0.0177	0.0163		0.0383	0.0120	***
Eastern Asia	0.0392	0.0159	**	0.0192	0.0149		0.0296	0.0109	***
Southeast Asia	0.0386	0.0165	**	0.0103	0.0158		0.0264	0.0114	**
Southern Asia	0.0178	0.0164		0.0218	0.0152		0.0198	0.0111	*
Language ability									
Knowledge of official language									
Reference: English									
French	0.0028	0.0146		0.0128	0.0135		0.0109	0.0099	
Both English and French	0.0375	0.0105	***	0.0143	0.0088		0.0249	0.0068	***
Neither English nor French	-0.0251	0.0078	***	-0.0177	0.0084	**	-0.0205	0.0057	***
Education variables									
Education level									
Reference: Bachelor degree									
College 1	0.0237	0.0091	***	0.0033	0.0072		0.0111	0.0057	*
College 2	0.0053	0.0107		0.0160	0.0104		0.0116	0.0075	
Below bachelor	0.0269	0.0068	***	0.0252	0.0062	***	0.0272	0.0046	***
Above bachelor and master degree	0.0435	0.0078	***	0.0341	0.0060	***	0.0362	0.0048	***
Doctor degree	-0.0328	0.0232		0.0017	0.0118		-0.0116	0.0108	

* p<.0.1; ** p<.005; *** p<.001

In terms of the regression on females, only Quebec shows a significant coefficient among all the geographic variables. In other words, the female immigrants in Quebec are more likely to go back to school after they arrived in Canada than their counterparts in Ontario. The same result shows for males. The low tuition fees in Quebec could be a reason why more immigrants in Quebec go back to school than those in other regions in Canada. In addition, male immigrants living in Alberta are also more willing to take part in the post-migration education than those living in Ontario. Even though the probability of their participation is less than that of male immigrants living in Quebec, the difference is statistically insignificant[2]. As we all

[2] The F-test for the equality of these two coefficients shows to be F(1, 17360) = 0.64 Prob > F = 0.4255

know, Alberta is one of the provinces which now experiences high-speed development. The high-speed development is a double-edged sword. It creates more job opportunities, but it also increases competition. The steep competition may induce some immigrants to invest more in education to enhance their human capital to grab a better chance in the labour market.

The respondents are asked to report whether they have kids whose ages are between 0 and 14. Among the female immigrants, the presence of children is positive and significant. That indicates that a female immigrant who has kids has more incentives than a female immigrant without children. Some studies have reported that the presence of children in the immigrants' families would be a barrier in their pursuit of further education (Anisef, Sweet, Adamuti-Trache and Walters, 2009). This study shows the opposite; that is, the presence of kids can motivate a female immigrant to invest in post-migration education.

Rindfuss, Brewster and Kavee (1996), in their explanation of the changes in female's labour force behaviour in United States during from 1977 to 1991, stated that *"Economic changes set in motion during this period made supporting a family on just one income increasingly difficult. Not only had male wage rates begun to stagnate by the mid-1970s, but there were also substantial increases in the cost of housing and related items, along with an escalation in the goods and services deemed necessary"* (p. 466). Female immigrants are facing the same problem. Especially in less-developed countries and regions, it is a common thought that women ought to take the most part of responsibility of rearing the kids at home. However, the presence of children expands family costs. With the increasing living costs, it becomes harder to support the whole family only on male wages. When female immigrants land in Canada, they find that it is hard to rely on the male wage to support the whole family, especially if they have kids to rise. They need to go out to work to earn money. As I have mentioned in the introduction section, immigrants commonly have problems to re-establish themselves in the local labour market because of the relatively lower

returns to their past education and work experience. Therefore, female immigrants with children would regard taking part in the post-migration education as a way to access to the labour market.

Since the presence of children increases the economic burden of immigrants, females with children are shown to be more aggressive in engaging in the further education. In contrast, this children variable has no significant influence on male immigrants. One possible explanation to this matter is that males are still regarded to be the main economic resource of the family. For the whole sample, this variable is slightly positive with the p-value less than 0.1.

All the immigration variables (age at immigration, years since immigration, years since immigration squared, and place of birth) are significant in the regression on the whole sample. Both the female group and male group have similar results. The estimated coefficient of "age at immigration" is -0.0030 for the whole sample. The negative value indicates that the older the immigrant, the less willing he or she will be to enrol in a post-migration education program. For example, a ten year increase in age at immigration decreases the probability to go back to school by about 3 percentage points. The next variables are "years since immigration" and "years since immigration squared". Their estimated coefficients are -0.0120 and 0.0002 respectively. As Ferrer and Riddell (2004) reported in their study, immigrants would learn the host countries' cultures and languages, which would help them build up their own lives and find the right places in local labour markets. The negative value of the estimated coefficient for the "years since immigration" indicates that the longer the immigrant has stayed in Canada, the less likely he will go back to school. And the positive coefficient of years since immigration squared term reveals the fact that the above negative effect becomes smaller as time goes on.

Compared to the simple regression shown in Table 2 that has only "place of birth", this model contains other factors and this will affect the values of coefficients of the variable "place of birth". The results now show the net differences

in changes in probabilities of going back to school due the different places of birth. Even though all the estimated coefficients are positive and significant for the whole sample, there are large decreases in the values of all the estimated coefficients for the "place of birth" after taking other relevant factors into consideration. Furthermore, among all the immigration variable, "place of birth" is the variable that witnesses the most remarkable differences between gender groups. Female immigrants whose birth place is the U.S.A. are shown to have the lowest probability to go back to school after they arrived in Canada. However, in the male group, only immigrants born in other Americas and Africa are statistically more willing to enrol in post-migration education program than those who were born in the U.S.A. For the whole sample, the estimated probability of going back to school of the respondents from other Americas and Africa are the highest among all the countries and regions compared to those from the U.S.A. The following group is Central and middle Asia. Compared to Eastern and Southeast Asia, their estimated coefficients are not statistically different,[3] at 0.029 and 0.026 respectively. Furthermore, Southern Asia experiences a smaller probability than other parts of Asia. There exists a tendency for immigrants from less-developed countries and regions to engage more in further education.

In terms of language ability, the respondents who can conduct a conversation only in English have no significant differences in the probability of participation in post-migration education with those people who can conduct a conversation only in French. Furthermore, immigrants who have the knowledge of both English and French are more willing to go back to school. This indicates that the capability in both official languages helps immigrants get access to the post-migration education. Also, immigrants who lack official language ability are stopped from participating in further education after they have landed in host countries. The variable "neither English nor French" is significantly negative, with a coefficient of -0.0205 for the whole sample.

[3] The F-test for the equality of these two coefficients shows to be F(1, 34187) = 0.28 Prob > F = 0.5969

Like previous studies, this paper links the immigrant's education level to the behaviour of taking part in the post-migration education. Banerjee and Verma (2011) argue that an undergraduate degree increases the odd of investing in post-migration education compared to a lower level of education. However, my study shows that, with bachelor as reference category, for the whole sample, both immigrants who have completed degrees below bachelor level and those who obtained an education above bachelor and master level have more incentive to take part in the post-migration education. In other words, both degrees below bachelor level and above bachelor and master level raise the probabilities compared to a bachelor degree. The distribution of the changes in probabilities of going back to school increases with education after the bachelor level and reaches its peek at the level of degree above bachelor and master, and then it decreases at the doctoral level. However, the population of respondents who have a doctoral degree is very small. Among all the education levels, the estimated coefficient for the "above bachelor and master level" is the highest. That suggests that the credentials of these relatively highly educated immigrants may be the most non-recognized in the host country. Therefore, they may feel that it is very necessary to invest in post-migration education,

To summarize, the key findings of the analysis are: 1) Immigrants living in Quebec and Alberta have more incentives to engage in post-migration education than those immigrants in other regions of Canada; 2) Female immigrants with children have more incentives to go back to school than those without children; 3) Immigrants' places of birth are related to their decisions to invest in further education after their arrival in Canada; 3) Immigrants who have below bachelor degree and above bachelor and master education levels show more interests in participation in post-migration education.

4.2 Part 2: employment income regression

Table 4 first provides some basic information on a simple weekly employment income regression with only the locations of study based on the second identification of that variable (as defined in Table 1). It shows the gross differences in weekly employment income which are related to the differences place where immigrants complete their highest education. More information on R^2 and F-value can be found in appendix in Table 4A.

Table 4. Simple regression of weekly employment income on second identification of location of study

	coeff.	s.e.	sig.
Employment income per week(log value)			
Location of study			
Reference: Canada			
U.S.A	0.1788	0.0563	***
Other Americas	-0.1377	0.0550	**
Europe	0.0014	0.0336	
Eastern Asia	-0.3523	0.0371	***
Southern and Southeast Asia	-0.1317	0.0342	***
Others countries and regions	-0.1240	0.0432	***

* p<.0.1; ** p<.005; *** p<.001

Location of studies in Canada is the reference category. Among all the countries and regions, only the immigrants with U.S.A degrees have significantly higher levels of weekly employment income than their counterparts who finished highest schooling in Canada, with a difference of 18%. That suggests that the Canadian society values the education in the U.S.A. more than the one received in the other countries and regions, including Canada. Though the estimated coefficient of Europe is positive, it is statistically insignificant, meaning that there is no evidence that there are some differences in income between immigrants with European highest education degrees and those with Canadian degrees. Immigrants who have completed their highest schooling in all the others countries and regions face disadvantages in weekly employment income. The employment income gap between the immigrants

who have achieved their highest education degrees in Eastern Asia and those with Canadian degrees is the widest, at about 35%. This figure suggests that immigrants who acquired their highest education in Eastern Asia may be more economically motivated to go back to school. This implication coincides with the fact revealed by the first model, which is that immigrants from Eastern Asia are among the groups with the highest population of respondents who reported to go back to school. As a whole, Table 4 shows a tendency for immigrants with degrees from the less-developed countries to have more difficulties in the Canadian labour market.

The results of the second model are shown in Table 5. This model aims at presenting the differences in weekly employment income between immigrants who have completed their highest education level in Canada and those who achieved their highest degrees and diplomas outside Canada. Table 5 consists of three regression analyses. They are respectively regressions on insiders only, outsiders only and the whole sample. As already mentioned, the term "insider" stands for the immigrant who completed their highest education in Canada, and the term "outsider" is used to represent the respondents who have their credentials outside of Canada. More information on R^2 and F-value can be found in appendix in Table 5A.

Table 5. Multiple ordinary least squares linear regression of weekly employment income

	Insider			Outsider			Whole		
	coff.	s.e.	sig.	coff.	s.e.	sig.	coff.	s.e.	sig.
Employment income per week (log value)									
Geographic variables									
Province/regions									
Reference: Ontario									
Eastern and Northern Canada	0.2368	0.4813		0.3406	0.2244		0.3167	0.2033	
Québec	-0.1628	0.1006		-0.2685	0.0500	***	-0.2477	0.0447	***
Central Canada	-0.4415	0.1917	**	-0.0502	0.0903		-0.1225	0.0817	
Alberta	0.1855	0.0888	**	0.1455	0.0412	***	0.1506	0.0374	***

British Columbia	-0.0032	0.0674		-0.0992	0.0303	***	-0.0833	0.0276	***
Large Census Metropolitan Area									
Reference: Not living in large cma									
Living in cma	-0.1867	0.0897	**	0.0119	0.0431		-0.0250	0.0387	
Demographic variables									
Gender	-0.0461	0.0518		-0.2216	0.0239	***	-0.1921	0.0217	***
Reference: male									
Presence of children									
Reference: Do not have kids between 0 to 14									
Kids between 0-14	0.0447	0.0567		0.0151	0.0261		0.0160	0.0237	
Immigration variables									
Age at immigration	-0.0024	0.0060		-0.0164	0.0025	***	-0.0144	0.0023	***
Years since immigration	0.0547	0.0096	***	0.0573	0.0043	***	0.0562	0.0039	***
Years since immigration^2	-0.0012	0.0003	***	-0.0014	0.0001	***	-0.0013	0.0001	***
Language ability									
Knowledge of official language									
Reference: English									
French	-0.1059	0.1453		0.1011	0.0816		0.0531	0.0709	
Both English and French	0.1275	0.0918		0.1766	0.0453	***	0.1668	0.0406	***
Neither English nor French	0.0945	0.2760		-0.3843	0.0775	***	-0.3570	0.0745	***
Labour activity									
Reference: Part time									
Full-time	0.8896	0.0682	***	0.9553	0.0333	***	0.9451	0.0299	***
Education variables									
Education level									
Reference: Bachelor degree									
College 1	-0.2176	0.0796	***	-0.1972	0.0441	***	-0.2102	0.0367	***
College 2	-0.1297	0.0913		-0.2582	0.0516	***	-0.2232	0.0434	***
Below bachelor	-0.1052	0.0819		-0.0969	0.0309	***	-0.1032	0.0287	***
Above bachelor and master degree	0.2522	0.0848	***	0.0956	0.0294	***	0.1145	0.0278	***
Doctor degree	0.4135	0.1230	***	0.4667	0.0646	***	0.4390	0.0564	***
Location of study									
Reference: in Canada									
Out of Canada							-0.0938	0.0281	***

* p<.0.1; ** p<.005; *** p<.001

In terms of the geographic variables, both the insider and the outsider groups experience a higher level of weekly employment income in Alberta, compared to the reference of Ontario. Specifically, insiders have 18.55% higher weekly employment income in Alberta and outsiders have 14.55% higher income level. However,

outsiders living in Quebec and British Columbia are shown to have a lower income level than their counterparts in other regions. There is no significant evidence that shows that these decreases are also taking place in the insider group. When looking at the weekly employment level of insiders living in Central Canada, the estimated coefficient is -0.4415 (s.e. = 0.1006). The negative value implies that insiders from Central Canada earn less than those from Ontario. And the gap in weekly employment income between them is relatively wider than in other regions. Furthermore, insiders who are living outside the big census metropolitan areas are shown to have slightly more income than those from large census metropolitan areas. That may be explained by the steep competition in the large census metropolitan areas which lowers average wages. However, there are no significant differences in weekly employment income between outsiders living in large census metropolitan areas and those living outside. For the whole sample, the estimated coefficient for the variable "large census metropolitan area" is insignificant.

With respect to gender, as expected, females earn significantly less than males for the whole sample, with a gap of 19 %. However, this study finds that there is no significant evidence that females in the insider group earn less than males in the same group. In contrast, for the outsider group, the estimated coefficient of the gender is negative and significant, which is -22%. In other words, among all the immigrants who achieved their highest education outside Canada, the human capital of female is much less valued than males, but that disadvantage disappears after they receive a degree in Canada. In terms of the presence of children, for both the insiders and the outsiders, there is no significant evidence of differences in the weekly employment income between immigrants who have kids aged between 0 to 14 and those who do not. In the first regression, it was found that the presence of children may act as a kind of mental motivation that pushes the immigrants to invest in further education after their arrivals. However, in the second regression, no evidence shows that this kind of motivation affects immigrants' weekly employment income.

All the immigration variables examined in the second model are significant for the whole sample. The estimated coefficient of age at immigration is -0.0144 (s.e. = 0.0023). That implies that the weekly employment income of the immigrant declines with age at immigration. For each additional year, the immigrant will experience a 1.44% decrease in his or her weekly employment income. Note that, even though the estimated coefficients of age at immigration are shown to be negative for both groups, only the coefficient of outsiders is significant. That indicates that outsiders face more disadvantages due to their age than insiders. However, this negative effect due to age disappears by investing in human capital in Canada. In terms of the "years since immigration", the estimated coefficient is 0.0562 for the whole sample. The positive value indicates that the longer the immigrant has been in Canada, the more he or she will earn because of improvement in the knowledge of local cultures and languages. Specifically, one more year in Canada will increase by about 5.62% the immigrant's weekly income. In terms of the "years since immigration squared", its negative value indicates that the positive effect of "years since immigration" on weekly employment income diminishes over time. The results show that the effects of both "years since immigration" and "years since immigration squared" are about the same for both the insiders and outsiders.

The following variable is language ability. For all groups, the results show that there are no significant differences in weekly employment income between the immigrants who can only conduct a conversation in English and those who only have the knowledge of only French. However, for the whole sample, immigrants who know both English and French experience a significant increase of about 16.68% in weekly employment income. The immigrant who lack ability in both official languages loses about 35.70 % of income compared to the immigrant who only has the knowledge of English.

Note that the estimated coefficients of language ability for the insider group are insignificant. That indicates that language ability is neither an asset nor a

disadvantage for insiders in the labour market. In other words, the insiders face fewer restrictions due to languages than the outsiders while hunting for a job. Immigrants who have their highest education in Canada appear to be assumed by their employers that they have the basic communication skills, listening skills and writing skill that are required in the Canadian labour market. However, for the outsiders, employers appear to be more uncertain about their language abilities. Furthermore, for the outsider group, immigrants who have knowledge of the two official languages experience a 17.66% increase in weekly income compared to those who can only conduct conversations in English. However, they suffer 38.43% decreases if they have knowledge of neither English nor French.

As expected, the immigrants who reported that the weeks they worked in 2005 were full-time weeks had higher weekly income than those who answered that the weeks were part-time weeks. For the insider group, the full-time weekly employment income is 88.96% significantly higher than the part-time income. For the outsider group, the increase is about 95.53%, which is significantly higher than that of insider group[4]. The results indicate that the gap between part-time workers and full-time workers decreases when they invest in a degree in Canada.

This regression has replaced the variable "place of birth" shown in the first regression analysis with a new one called "location of study" to expand on the education variables. There are two sub-categories to capture the education information. The first one is the education level. As expected, the higher education the immigrant has, the higher the weekly employment income he or she reaches. With bachelor degree as reference, immigrants whose education levels are below bachelor degree witness significant decreases in weekly employment income. Specifically, for the whole sample, the income levels of a college1 degree, college2 degree and below bachelor level decrease by 21.02%, 22.32% and 10.32% respectively compared to the income level of a bachelor degree. When immigrants have higher education levels

[4] The F-test for the equality of these two coefficients shows to be F(21, 14931) = 1.76 > critical vale = 1.57

than the bachelor degree, their incomes increase by 11.45% for a degree above the bachelor or a master, and by 43.90% for a doctoral degree.

Furthermore, with the same education level, there is still a wide gap between insiders and outsiders in weekly employment income. Among insiders who have the degrees or diplomas below bachelor level, only the estimated coefficient of college1 level is negative and significant. The value is -0.2176. In terms of the above bachelor and master degree level, the insiders have 25.22 % increases in weekly employment income compared to insiders with bachelor degrees. For the outsider group, immigrants experience only a 9.56 % increases in income level for having obtained a degree above bachelor or a masters. The fact is that, with the same education level, outsiders have less income than insiders because foreign schooling has lower returns than Canadian schooling.

The last variable is location of study, which is defined only with the first identification of location of study. It is a dummy variable which indicates whether respondents achieved their highest education in Canada or not. Since the regression is estimated separately on the insider group and the outsider group, this variable is included only in the regression analysis for the whole sample.

The estimated coefficient of location of study is -0.0938. This negative and significant value indicates that immigrants who completed their highest education outside Canada suffer a 9.38% decrease in weekly employment income compared to those who got their highest degrees or diplomas in Canada. As mentioned above, years of schoolings achieved in the countries of origins are valued much less than those obtained in Canada. Therefore, outsiders have more disadvantages in the labour market than insiders. This kind of disadvantage is reflected by the gap in weekly employment income between insiders and outsiders. That is why more and more immigrants decide to go back to school after their arrivals. It is not only because they are more motivated, but also because they realize that Canadian diplomas are much preferred than the credentials that they have obtained in their countries of origin.

In summary, the results of the second model show some important information on the performances of immigrants: 1) Immigrants who finished their highest education in their countries of origin face more disadvantages than those who obtained their credentials in Canada; 2) In the outsider group, the returns to work experience and years of education of females are much lower than those of males, but they can eliminate that disadvantage by investing in a degree in Canada. 3) Outsiders face more restrictions due to age than insiders; however, this negative effect disappears after they receive credentials in Canada. 4) Taking part in education in Canada narrows the gap of weekly employment income between part-time workers and full-time workers.

5. Summary and conclusion

In this paper, I have employed the 2006 Canadian census public use micro data to examine the factors that have an impact on the decisions of immigrants to take part in post-migration education. I also presented a regression analysis of weekly earnings to compare immigrants who received their highest degree in Canada to those who received it elsewhere. Here are some key findings of my paper:

1. Immigrants in Quebec and Alberta show more interest in participation in post-migration education than their counterparts living in the other regions of Canada. For the immigrants living in Quebec, both their employment income level and education cost are lower than those in other regions. They have more economic incentives to invest in post-migration education. For the Alberta immigrants, the relative high-speed development raises the level of competition. Immigrants there need to enhance their human capital in the local labour market if they want to be successful.

2. Instead of regarding the presence of children as a barrier to invest in further education, this study finds that female immigrants with children have more incentives to go back to school than those without children. Female immigrants who have children seem to be more aggressive than their counterparts and intend to establish themselves in the local labour market through engagement in post-migration education.

3. As expected, immigrants from the less developed countries show more interests in pursuing further education. Among seven countries and regions, immigrants born in Other Americas show the strongest determination to go back to school after they arrived in Canada.

4. While examining the impact of the immigrant' pre-education level on their behaviour of taking part in post-migration education, this study shows that, compared to a bachelor education, the probabilities of going back to school increases when they have "below bachelor" education level and when they have "above bachelor and master degree".

5. There is a significant employment income gap between immigrants who have their highest degrees or diplomas in Canada and those who obtained them outside Canada, with the exception that the U.S.A. degrees are valued more than those from other countries and regions, including Canada itself. Also, immigrants from Eastern Asia are the group whose schooling in their countries of origin experiences the lowest return in the Canadian labour market.

6. Immigrants with credentials obtained in Canada face fewer restrictions in labour markets than their counterparts who finished their highest education outside Canada. These restrictions include age, gender, language ability and education level. The lower return to years of schooling in relatively less-developed countries may be responsible for this.

7. This study shows that the human capital of females has lower returns than that of males in the outsider group. But this disadvantage disappears after they achieve a degree in Canada. The improvement also can be found in the immigrants who finished their highest education outside Canada and who face disadvantages in the labour market due to age. Furthermore, the gap in the penalty between the part-time workers and the full- time worker decreases when the immigrant achieves a degree in Canada.

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Appendix

Table 1A. Descriptive Statistics for the variables used in the first model.

	Part1			
	n=34,213			
	female		male	
	n=16,827		n=17,386	
	Percentage	Mean	Percentage	Mean
Outcome variables				
Attendance				
Attending school	11.08%		8.49%	
Not attending school	88.92%		91.51%	
Geographic variables				
Province/regions				
Eastern and Northern Canada	0.45%		0.49%	
Ontario	56.43%		57.42%	
Quebec	13.42%		13.98%	
Western Canada	1.80%		1.85%	
Alberta	7.76%		7.73%	
British Columbia	20.15%		18.53%	
Large Census Metropolitan Area				
Living in cma	88.68%		87.60%	
Not living in cma	11.32%		12.40%	
Demographic variables				
Presence of children				
Kids between 0-14	33.80%		37.43%	
Immigration variables				
Age at immigration				
30 to 34 years	43.00%	32	41.52%	32
35 to 39 years	28.63%	37	28.62%	37
40 to 44 years	18.31%	42	18.76%	42

45 to 49 years	10.06%	47	11.10%	47
Years since immigration		15.0906		16.7278
		(12.5258)		(13.5412)
Years since immigration^2		384.6120		463.1750
		(574.3350)		(647.8770)
Place of birth				
U.S.A	2.64%		2.25%	
Other Americas	10.74%		9.29%	
Europe and Oceania	28.01%		31.44%	
Africa	5.88%		7.10%	
Central and Middle Asia	6.19%		6.30%	
Eastern Asia	22.91%		20.37%	
Southeast Asia	10.89%		8.64%	
Southern Asia	12.74%		14.62%	
Language ability				
Knowledge of official language				
English	75.58%		79.39%	
French	4.63%		3.80%	
Both English and French	8.17%		9.77%	
Neither English nor French	11.62%		7.03%	
Education variables				
Education level				
College 1	7.76%		10.23%	
College 2	5.27%		4.27%	
Below bachelor	15.41%		14.44%	
Bachelor degree	58.83%		51.06%	
Above bachelor and master degree	11.68%		16.69%	
Doctor degree	1.06%		3.31%	

Descriptive Statistics for the variables used in the second model.

	Part2			
	n=14,973			
	insider		outsider	
	n=2,702		n=12,271	
	Percentage	Mean	Percentage	Mean
Outcome variables				
Employment income per week (log value)		6.4545		6.3372
		(1.3240)		(1.3286)
Geographic variables				
Province/regions				

Eastern and Northern Canada	0.26%		0.26%	
Ontario	56.14%		59.84%	
Quebec	16.77%		11.73%	
Western Canada	1.63%		1.60%	
Alberta	8.51%		8.51%	
British Columbia	16.69%		18.07%	
Large Census Metropolitan Area				
Living in cma	91.64%		92.05%	
Not living in cma	8.36%		7.95%	
Demographic variables				
Gender				
Male	53.89%		58.68%	
Female	46.11%		41.32%	
Presence of children				
Kids between 0-14	42.45%		47.61%	
Immigration variables				
Age at immigration				
30 to 34 years	57.36%	32	41.50%	32
35 to 39 years	25.98%	37	30.77%	37
40 to 44 years	11.99%	42	19.03%	42
45 to 49 years	4.66%	47	8.70%	47
Years since immigration		14.0426		10.2035
		(8.5571)		(8.0649)
Years since immigration^2		270.3900		169.1780
		(322.5530)		(268.4970)
Language ability				
Knowledge of official language				
English	79.57%		84.04%	
French	4.96%		2.93%	
Both English and French	14.69%		10.84%	
Neither English nor French	0.78%		2.20%	
Labour activity				
Full-time	83.60%		85.57%	
Part-time	16.40%		14.43%	
Education variables				
Education level				
College 1	26.13%		8.47%	
College 2	13.62%		5.61%	
Below bachelor	21.84%		21.95%	
Bachelor degree	14.58%		36.02%	
Above bachelor and master degree	18.47%		24.60%	
Doctor degree	5.37%		3.35%	

Table 2A. Simple regression of attendance on place of birth

Source	SS	df	MS	Number of obs	34213
				F(7, 34205)	38.4
Model	23.50111	7	3.35730099	Prob > F	0
Residual	2990.436	34205	0.087426859	R-squared	0.0078
				Adj R-squared	0.0076
Total	3013.937	34212	0.088095896	Root MSE	0.29568

Table 3A. Multiple ordinary least squares linear regression of attendance

For female

Source	SS	df	MS	Number of obs	16827
				F(25, 16801)	48.76
Model	112.1333	25	4.48533	Prob > F	0
Residual	1545.383	16801	0.091982	R-squared	0.0677
				Adj R-squared	0.0663
Total	1657.517	16826	0.098509	Root MSE	0.30328

For male

Source	SS	df	MS	Number of obs	17386
				F(25, 17360)	40.76
Model	74.88949	25	2.99558	Prob > F	0
Residual	1275.804	17360	0.073491	R-squared	0.0554
				Adj R-squared	0.0541
Total	1350.694	17385	0.077693	Root MSE	0.27109

For whole

Source	SS	df	MS	Number of obs	34213
				F(25, 34187)	88.29
Model	182.7968	25	7.31187386	Prob > F	0
Residual	2831.14	34187	0.082813349	R-squared	0.0607
				Adj R-squared	0.06
Total	3013.937	34212	0.088095896	Root MSE	0.28777

Table 4A. Simple regression of weekly employment income on second identification of location of study

Source	SS	df	MS	Number of obs	14973
				F(6, 14966)	26.37
Model	276.48143	6	46.08024	Prob > F	0
Residual	26147.393	14966	1.74712	R-squared	0.0105
				Adj R-squared	0.0101
Total	26423.874	14972	1.764886	Root MSE	1.3218

Table 5A. Multiple ordinary least squares linear regression of weekly employment income

For insider

Source	SS	df	MS	Number of obs	2702
				F(20, 2681)	17.8
Model	555.032721	20	27.75164	Prob > F	0
Residual	4179.53346	2681	1.558946	R-squared	0.1172
				Adj R-squared	0.1106
Total	4734.56618	2701	1.752894	Root MSE	1.2486

For outsider

Source	SS	df	MS	Number of obs	12271
				F(20, 12250)	88.48
Model	2733.787	20	136.6894	Prob > F	0
Residual	18925.02	12250	1.5449	R-squared	0.1262
				Adj R-squared	0.1248
Total	21658.81	12270	1.765184	Root MSE	1.2429

For the whole

Source	SS	df	MS	Number of obs	14973
				F(21, 14951)	100.27
Model	3262.042	21	155.3354	Prob > F	0
Residual	23161.83	14951	1.549183	R-squared	0.1235
				Adj R-squared	0.1222
Total	26423.87	14972	1.764886	Root MSE	1.2447