Does the place of education matter in reducing the difference in earnings between immigrants and native-born in Canada?

By

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Abstract

Using the 2016 Canadian Census, this paper examines whether the place of education matters in reducing the wage difference between immigrants and native-born Canadians. The Mincerian equation has been utilized to show the effect of education on earnings. The result shows that the returns to education for immigrants is less than the Canadian born by 1.14% for males and 0.46% for females. A wage difference between immigrants and native-born was found to be 42% for males and 43% for females. Our findings suggest that a lack of foreign credentials recognition is the cause for the difference in earnings.

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1. Introduction

Many findings in existing literature have indicated the importance of immigration for the Canadian labor market. According to Akbari and Aydede (2013), the population of developed countries is getting increasingly older on average while experiencing lower growth, due to a reduction in birth rates. This has increased demand for immigrants, especially in developed countries. The Canadian Census of 2016 shows that about 21.7% of the total population in Canada are immigrants. Also, immigrants can improve the retirement process for the ageing population. McDonald & Donahue (2011) noted that an aging population and the recession in 2008, has lowered the funds available for individuals to retire in Canada. Additionally, Variyam (2006) emphasized on skilled immigrants as better substitutes for ageing population in the Canadian labor market. According to Aydede and Dar (2017), skilled immigrants with more education credential struggles to get better jobs due to foreign education background.

Moreover, studies including Aydemir & Skuterud (2005), has emphasized the wage difference between immigrants and native-born, where Immigrant earnings are less, compared to native-born workers due to language barriers and foreign education background. Therefore, studying the effect of education on immigrants, will show whether their education can help bridge the gap in earning differences. Likewise, research on education can determine why there is an earning difference.

This paper focuses on whether the place of education helps to reduce the wage difference between immigrants and native-born in Canada. The findings show that the returns to education for immigrants is less than the Canadian born by 1.14% for males and 0.46% for females. This remained negative and significant for all subsequent control variables added to the model for both males and females. These outcomes suggest that although

education improves earnings for individuals, the improvement varies with the level of education credentials and immigration status.

The next section discusses the relevant literature for the research. Section 3 describes the data and descriptive statistics. Section 4 shows the methods for our study. Section 5 will provide the results, and Section 6 concludes the paper.

2. Literature Review

According to Reitz (2001), immigrants are paid less in Canada than domestic workers due to licensing, discrimination, and having a background in foreign education. Canadian firms imply that immigrants lack skills and training for specific jobs in firms, which they take advantage of by providing them with lower wages. In some cases, employers undervalue the skill level of immigrants as it can be difficult to understand the quality of foreign work experience, which leads them to have lower earnings. Furthermore, licensing issues exacerbate the problem. Most employers require a background in Canadian work experience or education; which leads to skilled foreign workers, such as doctors and engineers, to work in relatively lesser skilled sectors with lower wages. Aydemir and Skuterud (2005) examined foreign worker earnings over the years of 1966 to 2000. The paper showed that there was a reduction of earnings at the entry-level for immigrants because foreign education was underrated and unappreciated in the host country. As per the authors, immigrants who were in Canada during the 1990s, earned lower wages compared to those who arrived during the 1960s. According to the findings, immigrants arriving to Canada in the 1990's were earning a lower income by 61 log points and 63 log points for males and females respectively. Although Aydemir and Skuterud did not find a significant relationship between immigrant worker earnings and their foreign educational background; the authors believe that language barriers have had an affect on these

immigrant groups with regards to their lower earnings. However, when the authors controlled the places of origin and the barriers for language, they saw a better income for 1995 immigrant groups compared to the 1965 groups**.** Aydede & Dar (2016) used OLS regression to show the discrepancies in the employment sector. They found that those who have earned their degrees outside of Canada, had been weakly matched to their jobs due to less experience and language barriers.

According to Variyam (2006) the government of Canada had introduced a point scheme to determine the skill level of specific immigrant workers back in 2002. The government investigated the specific industries where they needed skilled workers, and based on that scheme, immigrants were given permanent residency under the point program. However, this program was not effective as the businesses slated to hire the foreign workers went bankrupt. This resulted in the government introducing the Immigration Refugee Protection Act (IRPA) program where the education level for immigrants was taken into major consideration, with masters and Doctorate level degrees earning the highest weight in points. The author concludes that only highly educated and skilled immigrants could adjust with the changes of the IRPA program, and that these immigrants would provide a higher tax revenue for the economy. Kaushal (2011) made a comparative analysis between immigrants. He investigated the difference in potential earnings between foreign college graduate immigrants with immigrants who graduated from colleges in the United States of America (USA). The paper revealed that immigrants who had a foreign degree had the probability of earning less than host country graduates by nine percent for males and three percent for females. However, when the foreign degree holders could go to USA colleges, they had a more favourable outcome. Their earnings improved significantly where the gap in earnings for males decreased by 42%, with no discernible gap in the earnings for females.

Fougère, Harvey, & Rainville (2011) demonstrated that the aging population is reducing labor productivity growth for Canada, where extremely skilled immigrants could be used to substitute the reduction in the labor force. They found that extremely skilled immigrants have the probability of being more productive with better characteristics, which caused a rise in real Gross Domestic Product (GDP). However, these immigrants need credentials and training, they especially need to get a degree from a Canadian university to improve their skill level; which results in the immigrants working in low skilled sectors while pursuing local degrees and experience. This requires a significant investment in time and resources, which will further lower the per capita GDP of the economy until the foreign workers are able to cross the barrier into the skilled labour force. Therefore, there is a trade-off that needs to be taken into consideration when planning for the infusion of skilled foreign workers into the labour force.

Bonikowska, Hou, & Picot (2011) did a comparative analysis between earnings for highly educated immigrants in Canada and the USA. USA immigrants who were university graduates earned more wages at entry-level than Canadian Immigrant graduates during the 1990s. Moreover, the earning difference between domestic employees and Immigrant graduates were higher in Canada compared to the USA. Akbari and Aydede (2013) analyzed whether immigrants can work as a substitute against host country workers while considering their education level. Unfortunately, they did not find immigrants as a good substitute against native-born workers after reviewing their education groups. Moreover, they believe that recent immigrants with lower education levels, such as high school graduates, can adjust with the Canadian workforce and will be able to substitute the native-born workers in the future. Banerjee & Lee (2015) used longitudinal survey data to determine earning opportunities for native-born and immigrants with Canadian degrees, by using the growth curve modeling in two different levels. They found a significant relationship between recent immigrants and higher earnings in Canada, when the

immigrants have local educational opportunities, but there were still gaps in earnings when compared to the native-born workers.

Ferrer, Green and Riddell (2006) examined the effect of immigrant earnings based on their education level. Their main goal was to find out whether there is a difference in skill level between immigrants and native-born workers based on foreign and Canadian experience. They found a positive relationship between Canadian experience and education for immigrants. The author believes cognitive skills are equal for native-born workers as foreign experience does not result in lesser cognitive skills for immigrants, but there was a significant difference in earnings due to variances in literacy rate.

There are many literatures like Aydemir and Skuterud (2005) and Kaushal (2011), which have studied the effect of education on wage difference. This paper strives to use the 2016 Canadian census in line with previous research conducted in this topic; to show whether the place of education matters for the earning differences between immigrants and native-born considering the effect of industry, Census Metropolitan Area (CMA) and province of residence.

3. Data and Descriptive Statistics

The analysis involves using the 2016 Census Public Use Micro Data File (PUMF) of Statistics Canada. The dataset has about 930,421 observations. Census files have more detailed information involving education, earnings, language proficiency, demographics, social, ethnic, and cultural factors, which helps to show the earnings of immigrants and native-born Canadians based on the place of education. Only male and female immigrants and native-born, who have an education level more than a high school degree are considered. The age group are from 15 to 64. Our study has 261,969 observations. The male observations are 134,734 individuals, and females are 127,235 individuals.

The dependent variable is the log of weekly wages and salaries, which is derived from total wages divided by total weeks worked by individuals. This paper considered Individuals who had positive earnings and dropped those individuals who had no information on wage rate. The independent variables are years of education, foreign education, age and its squared form, immigration, years since migration, and its squared form as well. The other explanatory variable includes demographic, ethnic, industry, Census Metropolitan Area, and the province of residence. The census data does not have education as numeric, so, this study considers the Mincer, J. (1958) approach for the analysis. For the years of education variable the value 0 have been assigned for those with no formal education, 12 to those who have finished high school, 14 for those who have up to post-secondary education, 16 to those with a bachelor degree, 17 for master's degree and 20 to those who have earned a doctorate. The foreign education variable is for those who have degrees outside Canada, and so was calculated by multiplying years of education times foreign degree certificate holders. The foreign degree certificate holder is a dummy variable, where 1 includes those who have a foreign degree or 0 otherwise. The immigration variable is a dummy variable where 1 represents immigrants or 0 otherwise.

Census records age variable in discrete intervals, so this variable has been changed into a continuous form by taking the mid-point of each interval. The years since migration represents the immigrant's number of years present in Canada and was estimated by subtracting immigration year less census year. Other demographic variables involve married, common law, kids. Married is a dummy variable where 1 represents the individual is married or 0 otherwise. Common law is dummy as well, with one being in a common-law relationship or 0 otherwise. The presence of kids represents 1 or 0 otherwise. Similar dummy variable approach for industry, CMA, and province of residence was applied. Also,

agriculture, forestry, fishing, and hunting is taken as the base industry. The CMA shows the difference between Halifax as the base CMA and Nova Scotia as the base province of residence. The variables are described in Table 2.

Table 1 shows the descriptive statistics table, which shows that female mean wage is more than male individuals. The mean for years of education shows similar results but, most of the female individuals have more foreign degree than males. Also, average age of females is slightly more than males as well. Moreover, for both genders, average years since migration are about four and a half years, and more females are married than males.

Table 1: Summary Statistics

	Total		Male		Female	
Variable	Mean	sd	Mean	sd	Mean	sd
ln (Wage)	6.845	1.180	6.678	1.157	7.022	1.179
Years of Education	15.005	1.247	15.056	1.218	14.950	1.275
Years of Education*Foreign Education	2.048	5.328	1.959	5.216	2.143	5.443
Age	41.284	11.901	40.835	11.831	41.759	11.956
Age^2	1845.98	996.67	1807.43	984.47	1886.79	1007.84
Immigration	0.233	0.423	0.230	0.421	0.236	0.425
Year Since Migration	4.353	10.099	4.331	10.037	4.376	10.163
Year Since $Migration^2$	120.930	386.096	119.503	378.060	122.440	394.423
Married	0.501	0.500	0.482	0.500	0.522	0.500
Common Law	0.174	0.379	0.174	0.379	0.174	0.379
Kids	0.591	0.492	0.598	0.490	0.582	0.493
Aboriginal	0.029	0.167	0.032	0.175	0.026	0.158
Visible Minority	0.014	0.116	0.014	0.115	0.014	0.116

Table 2: Variable Description

ln (Wage)	Log of weekly wage earned by individuals.
Years of Education	Years of education. 14 for post secondary, 16 for bachelors, 17 for masters and 20 for doctorate.
Years of Education*Foreign Education	Foreign Education – Dummy variable denotes 1 for foreign degree or 0 otherwise. Years of Education * Foreign Education - An interaction term showing those who have degrees outside Canada.
Age	The average age of individuals
Age^2	The squared form of age variable
Immigration	Dummy Variable which is one for immigrants or zero otherwise
Year Since Migration	Years since migration - years present in Canada for immigrants but zero for native-born
Year Since $Migration^2$	Squared form of years since migration
Married	Dummy Variable which represents one for married or zero otherwise
Common Law	Dummy Variable which represents one for common law or zero otherwise
Kids	Dummy Variable which represents one for kids or zero otherwise
Aboriginal	Dummy Variable which represents one for aboriginal people or zero otherwise
Visible Minority	Dummy Variable which represents one for visible minority or zero otherwise
Industry	Dummy Variable which represents one for labor in specific industry or zero otherwise
Census Metropolitan Area (CMA)	Dummy Variable which represents one for specific CMA or zero otherwise
Province of Residence	Dummy Variable which represents one for specific Province of residence or zero otherwise

4. Methodology

The methodology for this research involves quantitative analysis of earning levels between immigrants and native-born workers based on their place of education. The analysis involves a dummy variable regression on cross sectional data, to get the linear relationship between educated immigrants and educated native-born earnings, for the age group of 15 to 64 in Canada. For better accuracy, the results were clustered by province of residence and robust standard error was used. The model used is shown below:

$$\boldsymbol{lnwages_i = \beta_0 + \beta_2 Years\ of\ education_i + \beta_3 Years\ of\ Education * Foreign\ education_i + \beta_4\ Immigration_i + \beta_5\ X_i + e_i}$$

The dependent variable is:

$\boldsymbol{lnwages_i}$: $shows\ the\ log\ of\ weekly\ wages\ earned\ by\ individual\ i$

The Independent variables are:

$\boldsymbol{Years\ of\ education_i}$: $represents\ the\ years\ of\ education\ for\ individual\ i.$

$\boldsymbol{Years\ of\ Education * Foreign\ education_i}$: $represents\ those\ who\ have\ degree\ outside\ Canada.$

$\boldsymbol{Immigration_i}$: $represents\ a\ dummy\ variable\ where\ one\ is\ for\ immigrants\ or\ zero\ otherwise.$

$\boldsymbol{X_i}$: $represents\ other\ explanatory\ variables.$

$\boldsymbol{e_i}$: $represents\ the\ error\ term$

The dependent variable for the data is the log of weekly wages for individual i. The independent variables are years of education, foreign education, and immigrations. The $\boldsymbol{Xy_i}$ represents other explanatory variables covariates used by Dilmaghani (2020), as the Mincer's covariates which includes, demographics, ethnic, census metropolitan area, age and their squared form, years since migration and its squared form and their province of residence. Five regression analysis will be run on both genders for immigrants and native-born.

5. Results

The estimation for our analysis is shown on table 3 for males and table 4 for females. The goal of this research is to analyze if the place of educations helps to reduce the wage difference between immigrants and native-born Canadian workers. Model (1) shows the base estimate where years of education and foreign education is the variable of interest. The dependent variable is the log of weekly wages and the independent variables are added in separate columns. Model (2) adds the demographic and ethnic covariates effects. The industry covariates effect is added on Model (3). Model (4) adds the CMA covariates effect and Model (5) has the province of residence effect.

The result shows a positive relationship between years of education and log of wage rate across all the models. With a rise in years of education, the log of wage rises significantly by 16.7% for males and 9.5% for females. This remains significant for all the models. The model also shows the interaction effect of years of education and foreign degrees. Given the same years of education, those who have foreign degrees, significantly earns 1.14% less wage for males and 0.49% for females. This effect also remains significant throughout all specifications. The average wage difference between the immigrants and native-born is 42% and 43% for males and females respectively. This wage gap remains similar for males but increases for females in the subsequent models. A negative quadratic relation is assumed in the model between earnings and age. The regression result supports this assumption. The coefficient of age is positive and significant for both male and female, but this effect reduced in the subsequent models. On the other hand, the coefficient of age squared is negative and significant for all the models for both male and female. This proves the quadratic relation between age and earnings. Similar results can also be assumed for year since migration. Both indicate that the wage level is increasing but at a decreasing rate for age and year since migration. This is true for both genders due to diminishing

returns to scale. Model (2) adds the effects of demographic, and ethnic covariates. The earning level for married male rose by 6.3% and 34% for married female but decreases in the following models. Those who are in common law relationship, has earning potential of 2.4% for males and 17.6% for females respectively. Also, this remains significant for all the models, but the earning potential decreases for both genders in the subsequent models. Moreover, earning level falls significantly with the presence of kids for males by 10% but no significant relationship was found with female individuals. However, aboriginals earn significantly 6% less wage for males and 3% for females which is not significant in Model (2) but becomes significant in the subsequent models. Also, visible minorities significantly earn 7.4% less wage for females and it remained significant, but no significant results were found for male counterparts.

Table 3: Males

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Years of Education	0.167***	0.164***	0.141***	0.134***	0.134***
	(0.007)	(0.007)	(0.006)	(0.005)	(0.005)
Years of Education * Foreign education	-0.011***	-0.011***	-0.008***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age	0.123***	0.125***	0.104***	0.105***	0.105***
	(0.008)	(0.007)	(0.006)	(0.006)	(0.006)
agesquared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
immigration	-0.421***	-0.443***	-0.378***	-0.416***	-0.419***
	-0.0311	(0.031)	(0.043)	(0.036)	(0.033)
Year since migration	0.024***	0.026***	0.020***	0.019***	0.019***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Year since migration squared	-0.0003***	-0.0003***	-0.0002***	-0.002***	-0.0002***
	(0.00003)	(0.00003)	(0.00004)	(0.00003)	(0.00003)
married		0.063***	0.037***	0.036**	0.029
		(0.008)	(0.008)	(0.014)	(0.018)
common-law		0.028**	0.006	0.033***	0.041***
		(0.009)	(0.011)	(0.009)	(0.006)
kids		-0.101***	-0.092***	-0.089***	-0.086***
		(0.021)	(0.018)	(0.016)	(0.016)
Aboriginal		-0.061*	-0.068**	-0.063**	-0.086***
		(0.030)	(0.027)	(0.023)	(0.019)
visible minority		-0.008	-0.001	-0.030*	-0.031*
		(0.022)	(0.021)	(0.017)	(0.017)
Constant	1.526***	1.588***	1.806***	1.860***	1.854***
	(0.272)	(0.247)	(0.258)	(0.241)	(0.236)
Observations	134,734	134,734	134,734	134,734	134,734
R-squared	0.083	0.085	0.128	0.133	0.135

Note: The dependent variable is the log of weekly wages and the independent variables are added in separate columns. Column (1) shows the variables of interest. Column (2) adds the demographic and ethnic covariates effects. The industry covariates effect is added on Column (3). Column (4) adds the Census Metropolitan Area covariates effect and Column (5) has the province of residence effect.
Robust standard errors in parentheses; *** p < 0.01, **p < 0.05, *p < 0.10.

Table 4: Females

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Years of Education	0.095***	0.090***	0.097***	0.083***	0.083***
	(0.013)	(0.013)	(0.008)	(0.008)	(0.007)
Years of Education *Foreign education	-0.005**	-0.007***	-0.004**	-0.005***	-0.005***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
age	0.151***	0.127***	0.111***	0.111***	0.111***
	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)
agesquared	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
immigration	-0.433***	-0.488***	-0.437***	-0.459***	-0.463***
	(0.062)	(0.063)	(0.065)	(0.050)	(0.046)
Year since migration	0.014**	0.017***	0.014**	0.014***	0.014***
	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)
Year since migration squared	-0.0001	-0.0001*	-0.0001	-0.0001*	-0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.00004)	(0.00004)
married		0.336***	0.280***	0.262***	0.249***
		(0.014)	(0.009)	(0.015)	(0.023)
common-law		0.176***	0.141***	0.164***	0.176***
		(0.017)	(0.018)	(0.013)	(0.011)
kids		-0.028	-0.019	-0.010	-0.004
		(0.016)	(0.014)	(0.010)	(0.009)
Aboriginal		-0.031	-0.066**	-0.076***	-0.096***
		(0.031)	(0.025)	(0.021)	(0.019)
visible minority		-0.074***	-0.063***	-0.061**	-0.061**
		(0.019)	(0.019)	(0.020)	(0.020)
Constant	2.399***	2.879***	2.809***	2.851***	2.855***
	(0.367)	(0.354)	(0.285)	(0.266)	(0.266)
Observations	127,235	127,235	127,235	127,235	127,235
R-squared	0.077	0.088	0.139	0.146	0.148

Note: The dependent variable is the log of weekly wages and the independent variables are added in separate columns. Column (1) shows the variables of interest. Column (2) adds the demographic and ethnic covariates effects. The industry covariates effect is added on Column (3). Column (4) adds the Census Metropolitan Area covariates effect and Column (5) has the province of residence effect.
Robust standard errors in parentheses; *** p < 0.01, **p < 0.05, *p < 0.10.

6. Conclusion

Immigration is important for the Canadian labor market due to its ageing population. Most literature emphasises the importance of education for immigrants in the labor market. This paper looks at the wage differences between immigrants and native-born Canadians, while considering their place of education. The findings showed that an additional year of education significantly increases earnings by 16% and 9.5% for males and females respectively. Furthermore, those with foreign education credentials showed significantly lower earning potential, with 1.14% for males and 0.46% for females. This clearly indicates a wage difference between immigrants and the native-born. The difference in earnings between male immigrants and native-born is 42% whereas for females it is 43%.

Foreign education is a major cause for the difference in earnings of immigrants which is consistent with the findings in the literature reviewed. Chen & Skuterud (2020), also found a misjudgement on the international student's 'quality' when comparing them with domestic undergraduate students. Essentially, foreign education credentials have been undervalued in Canada which serves to enhance the difference in earnings. Therefore, future policy implications could introduce a job specific certification program for these foreign educated immigrants; which could potentially help reduce the difference in earnings between immigrants and the native-born Canadians.

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I would like to thank Dr Maryam Dilmaghani for her immense support and supervision in this difficult time for my research. I would also like to thank her for helping with the methods of my analysis. Moreover, I am expressing my appreciation to the economics department of Saint Mary's University for providing thoughtful insights into my research. Lastly, I would like to thank my friends and family for supporting me throughout this journey.

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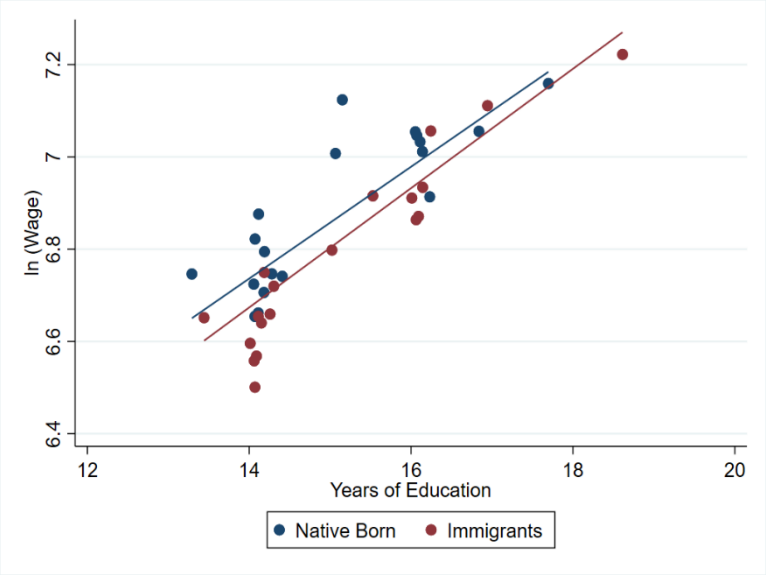
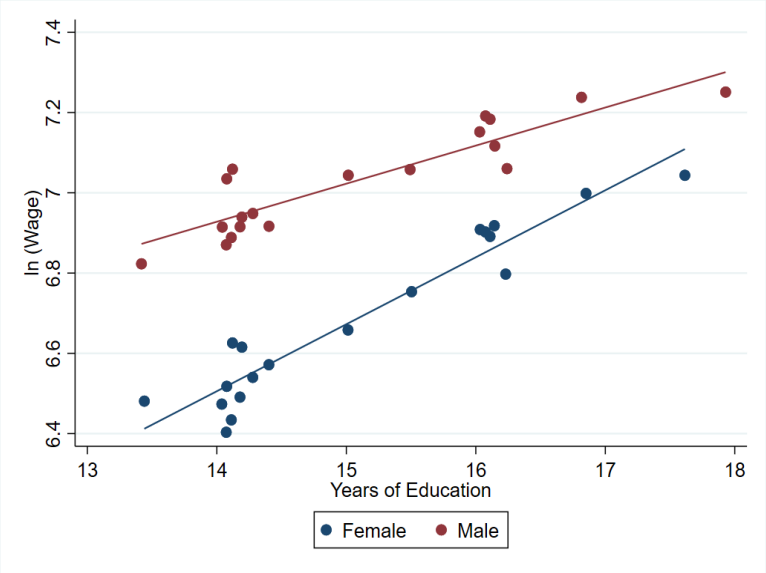
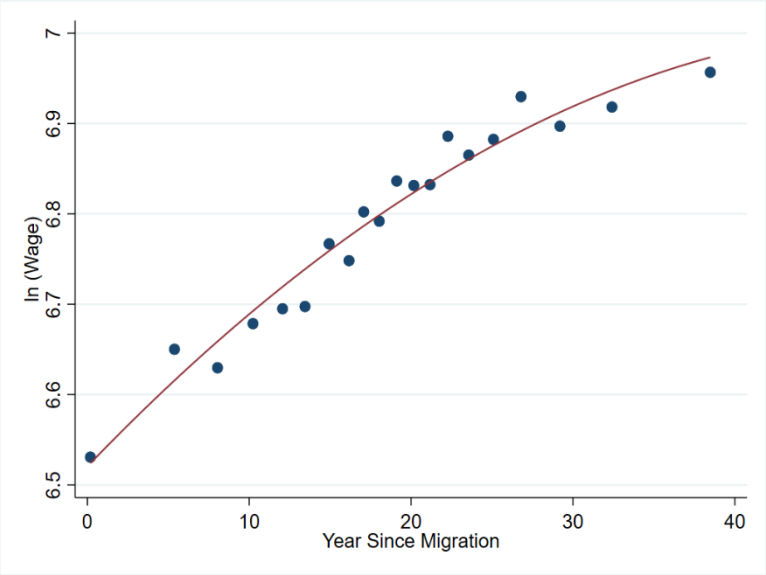
Appendices



The graph shows a bin wise scatter plot of lnwage and years of education controlling for foreign education age, agesquared, year since migration year since migration squared by immigrant status. The almost parallel nature of the lines indicates the clear difference between the effect of higher education between immigrants and native born.



The graph shows a bin wise scatter plot of lnwage and years of education controlling for foreign education age, agesquared, immigration, year since migration, year since migration squared by gender. From the converging nature of the graph shows a catch up effect of years of education for males and females.



The graph shows a positive quadratic relationship between years since migration and log of wage rate controlling for years of education, years of education* foreign degree, age, age-squared and immigration. This shows, more day's present in Canada will improve earning potentials for immigrants but, this effect will decline as the years passes.

Table 3A: Males

VARIABLES	lnwage	lnwage	lnwage	lnwage	lnwage
Years of Education	0.167***	0.164***	0.141***	0.134***	0.134***
	(0.007)	(0.007)	(0.006)	(0.005)	(0.005)
Years of Education*Foreign degree	-0.011***	-0.011***	-0.008***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age	0.123***	0.125***	0.104***	0.105***	0.105***
	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)
Age^2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
immigration	-0.421***	-0.443***	-0.378***	-0.416***	-0.419***
	-0.031	(0.031)	(0.043)	(0.036)	(0.033)
Year since migration	0.024***	0.026***	0.020***	0.019***	0.019***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Year since $migration^2$	-0.0003***	-0.0003***	-0.0002***	-0.0002***	-0.0002***
	(0.00003)	(0.00003)	(0.00004)	(0.00003)	(0.00003)
married		0.063***	0.037***	0.036**	0.029
		(0.008)	(0.008)	(0.014)	(0.018)
Common law		0.028**	0.006	0.033***	0.041***
		(0.009)	(0.011)	(0.009)	(0.006)
Kids		-0.101***	-0.092***	-0.089***	-0.086***
		(0.021)	(0.018)	(0.016)	(0.016)

Aboriginal	-0.061*	-0.068**	-0.063**	-0.086***
	(0.030)	(0.027)	(0.023)	(0.019)
Visible minority	-0.008	-0.001	-0.030*	-0.0312*
	(0.022)	(0.021)	(0.017)	(0.017)
Mining, quarrying, and oil and gas extraction		1.481***	1.356***	1.334***
		(0.047)	(0.044)	(0.047)
Utilities		1.287***	1.219***	1.225***
		(0.069)	(0.062)	(0.065)
Construction		0.641***	0.576***	0.581***
		(0.071)	(0.065)	(0.067)
Manufacturing		0.696***	0.658***	0.670***
		(0.064)	(0.064)	(0.067)
Wholesale trade		0.814***	0.755***	0.761***
		(0.080)	(0.079)	(0.081)
Retail trade		0.252***	0.210***	0.218***
		(0.056)	(0.055)	(0.058)
Transportation and warehousing		0.620***	0.561***	0.566***
		(0.052)	(0.055)	(0.058)
Information and cultural industries		0.727***	0.671***	0.678***
		(0.066)	(0.063)	(0.065)
Finance and insurance/55 Management of companies		0.880***	0.824***	0.830***
		(0.081)	(0.077)	(0.078)
Real estate and rental and leasing		0.413***	0.350***	0.355***
		(0.077)	(0.074)	(0.075)
Professional, scientific and technical services		0.629***	0.569***	0.575***
		(0.075)	(0.072)	(0.073)
Administrative and support, waste management		0.282***	0.230***	0.238***
		(0.062)	(0.059)	(0.061)
Educational services		0.559***	0.519***	0.525***
		(0.062)	(0.061)	(0.064)
Health care and social assistance		0.648***	0.608***	0.615***
		(0.063)	(0.062)	(0.064)
Arts, entertainment and recreation		0.011	-0.037	-0.030
		(0.075)	(0.075)	(0.078)
Accommodation and food services		0.126*	0.086	0.095
		(0.058)	(0.058)	(0.061)
Other services (except public administration)		0.174**	0.125*	0.132*
		(0.062)	(0.061)	(0.063)

Public administration	0.876***	0.827***	0.829***
	(0.068)	(0.066)	(0.068)
Moncton-Saint John		0.018***	0.006***
		(0.002)	(0.002)
Quebec		0.016***	0.008**
		(0.004)	(0.003)
Montreal		0.024***	0.017***
		(0.005)	(0.003)
Sherbrooke-Trois-Rivières		-0.089***	-0.098***
		(0.006)	(0.003)
Ottawa-Gatineau		0.155***	0.094***
		(0.008)	(0.018)
Oshawa		0.122***	0.043***
		(0.003)	(0.005)
Toronto		0.169***	0.091***
		(0.003)	(0.005)
Hamilton		0.145***	0.066***
		(0.002)	(0.005)
St. Catharines-Niagara		0.040***	-0.039***
		(0.003)	(0.003)
Kitchener – Cambridge – Waterloo		0.104***	0.025***
		(0.002)	(0.005)
London		0.051***	-0.028***
		(0.001)	(0.005)
Windsor		0.066***	-0.013***
		(0.004)	(0.003)
Brantford – Guelph – Barrie		0.067***	-0.013***
		(0.002)	(0.004)
Kingston – Peterborough		-0.028***	-0.107***
		(0.001)	(0.005)
Greater Sudbury / Grand Sudbury – Thunder Bay		0.165***	0.087***
		(0.002)	(0.006)
Winnipeg		0.129***	-0.046***
		(0.003)	(0.006)
Regina – Saskatoon		0.209***	-0.005
		(0.003)	(0.004)
Calgary		0.278***	0.072***
		(0.006)	(0.003)
Edmonton		0.253***	0.046***
		(0.006)	(0.004)
Vancouver		0.105***	0.080***
		(0.005)	(0.004)
Victoria		-0.016***	-0.041***
		(0.003)	(0.002)
Kelowna – Abbotsford		-0.005	-0.030***
		(0.003)	(0.003)
Other CMA		0.008	-0.069***

				(0.030)	(0.003)
Newfoundland and Labrador					0.158***
					(0.002)
Prince Edward Island					0.078***
					(0.004)
New Brunswick					0.012***
					(0.002)
Quebec					0.004
					(0.007)
Ontario					0.079***
					(0.006)
Manitoba					0.177***
					(0.004)
Saskatchewan					0.216***
					(0.004)
Alberta					0.209***
					(0.003)
British Columbia					0.0253***
					(0.001)
Northern Canada					0.512***
					(0.011)
Constant	1.526***	1.588***	1.806***	1.860***	1.854***
	(0.272)	(0.247)	(0.258)	(0.241)	(0.236)
Observations	134,734	134,734	134,734	134,734	134,734
R-squared	0.083	0.085	0.128	0.133	0.135

Note: The dependent variable is the log of weekly wages and the independent variables are added in separate columns. Column (1) shows the variables of interest. Column (2) adds the demographic and ethnic covariates effects. The industry covariates effect is added on Column (3). Column (4) adds the Census Metropolitan Area covariates effect and Column (5) has the province of residence effect. Robust standard errors in parentheses; *** p < 0.01, **p < 0.05, *p < 0.10.

Table 4A: Females

VARIABLES	lnwage	lnwage	lnwage	lnwage	Lnwage
Years of Education	0.095***	0.090***	0.087***	0.083***	0.083***
	(0.013)	(0.013)	(0.0081)	(0.008)	(0.007)
Years of Education*Foreign degree	-0.005**	-0.007***	-0.004**	-0.005***	-0.005***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
age	0.151***	0.127***	0.111***	0.111***	0.111***
	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)
Age^2	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.00008)	(0.00006)	(0.00006)	(0.00007)	(0.00007)
immigration	-0.433***	-0.488***	-0.437***	-0.459***	-0.463***
	(0.062)	(0.063)	(0.065)	(0.050)	(0.046)
Year since migration	0.014**	0.017***	0.014**	0.014***	0.014***
	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)
Year since $migration^2$	-0.00006	-0.0001*	-0.00006	-0.00007*	-0.00007*
	(0.00006)	(0.00006)	(0.00006)	(0.00004)	(0.00004)
Married		0.336***	0.280***	0.262***	0.249***

	(0.014)	(0.009)	(0.015)	(0.023)
Common law	0.176***	0.141***	0.164***	0.176***
	(0.017)	(0.018)	(0.013)	(0.011)
kids	-0.028	-0.019	-0.010	-0.004
	(0.016)	(0.014)	(0.010)	(0.009)
Aboriginal	-0.031	-0.066**	-0.076***	-0.096***
	(0.031)	(0.025)	(0.021)	(0.019)
Visible Minority	-0.074***	-0.063***	-0.061**	-0.061**
	(0.019)	(0.019)	(0.020)	(0.020)
Mining, quarrying, and oil and gas extraction		1.330***	1.248***	1.187***
		(0.086)	(0.075)	(0.069)
Utilities		1.012***	0.988***	0.985***
		(0.101)	(0.098)	(0.010)
Construction		0.517***	0.488***	0.481***
		(0.104)	(0.098)	(0.096)
Manufacturing		0.595***	0.593***	0.600***
		(0.091)	(0.093)	(0.094)
Wholesale trade		0.625***	0.608***	0.606***
		(0.106)	(0.106)	(0.107)
Retail trade		0.181*	0.172*	0.170*
		(0.084)	(0.085)	(0.086)
Transportation and warehousing		0.429***	0.418***	0.416***
		(0.069)	(0.071)	(0.072)
Information and cultural industries		0.542***	0.535***	0.533***
		(0.097)	(0.010)	(0.100)
Finance and insurance/55 Management of companies		0.806***	0.795***	0.794***
		(0.099)	(0.102)	(0.103)
Real estate and rental and leasing		0.245*	0.220*	0.214
		(0.118)	(0.118)	(0.118)
Professional, scientific and technical services		0.508***	0.491***	0.487***
		(0.094)	(0.093)	(0.094)
Administrative and support, waste management		0.120	0.116	0.115
		(0.104)	(0.107)	(0.107)
Educational services		0.276**	0.272**	0.268**
		(0.094)	(0.095)	(0.095)
Health care and social assistance		0.368***	0.363***	0.362***
		(0.094)	(0.095)	(0.096)
Arts, entertainment and recreation		-0.165	-0.174	-0.176
		(0.095)	(0.096)	(0.099)

Accommodation and food services	-0.062	-0.068	-0.070
	(0.086)	(0.088)	(0.089)
Other services (except public administration)	0.215**	0.200**	0.196**
	(0.088)	(0.087)	(0.086)
Public administration	0.670***	0.664***	0.660***
	(0.093)	(0.093)	(0.093)
Moncton-Saint John		-0.008**	-0.014**
		(0.003)	(0.005)
Quebec		-0.147***	-0.0971***
		(0.005)	(0.002)
Montreal		-0.097***	-0.044***
		(0.006)	(0.003)
Sherbrooke-Trois-Rivières		-0.160***	-0.111***
		(0.007)	(0.005)
Ottawa-Gatineau		0.014	-0.005
		(0.022)	(0.006)
Oshawa		0.045***	0.002
		(0.004)	(0.005)
Toronto		0.032***	-0.009
		(0.006)	(0.006)
Hamilton		0.022***	-0.021***
		(0.004)	(0.004)
St. Catharines-Niagara		-0.056***	-0.099***
		(0.004)	(0.005)
Kitchener – Cambridge – Waterloo		0.046***	0.003
		(0.004)	(0.004)
London		-0.063***	-0.106***
		(0.004)	(0.005)
Windsor		0.005	-0.040***
		(0.004)	(0.004)
Brantford – Guelph – Barrie		0.005	-0.039***
		(0.005)	(0.005)
Kingston – Peterborough		-0.075***	-0.118***
		(0.002)	(0.003)
Greater Sudbury / Grand Sudbury – Thunder Bay		0.027***	-0.009
		(0.008)	(0.009)
Winnipeg		-0.001	-0.096***
		(0.008)	(0.007)
Regina – Saskatoon		0.131***	-0.023**
		(0.006)	(0.009)
Calgary		0.251***	-0.046***
		(0.006)	(0.005)
Edmonton		0.285***	-0.016
		(0.010)	(0.010)

Vancouver				0.040***	-0.064***
				(0.007)	(0.006)
Victoria				-0.072***	-0.177***
				(0.001)	(0.001)
Kelowna – Abbotsford				0.073***	-0.031***
				(0.010)	(0.009)
Other CMA,				-0.011	-0.078***
				(0.047)	(0.010)
Newfoundland and Labrador					0.204***
					(0.003)
Prince Edward Island					-0.051***
					(0.005)
New Brunswick					0.005*
					(0.002)
Quebec					-0.059***
					(0.006)
Ontario					0.041***
					(0.002)
Manitoba					0.095***
					(0.005)
Saskatchewan					0.158***
					(0.011)
Alberta					0.305***
					(0.006)
British Columbia					0.105***
					(0.002)
Northern Canada					0.317***
					(0.009)
Constant	2.399***	2.879***	2.809***	2.851***	2.855***
	(0.367)	(0.354)	(0.285)	(0.266)	(0.266)
Observations	127,235	127,235	127,235	127,235	127,235
R-squared	0.077	0.088	0.139	0.146	0.148

Note: The dependent variable is the log of weekly wages and the independent variables are added in separate columns. Column (1) shows the variables of interest. Column (2) adds the demographic and ethnic covariates effects. The industry covariates effect is added on Column (3). Column (4) adds the Census Metropolitan Area covariates effect and Column (5) has the province of residence effect. Robust standard errors in parentheses; *** p < 0.01, **p < 0.05, *p < 0.10.