

**The Labour Market Performance of Canadian Immigrants: the  
Role of Location of Oversea Degree and of Foreign Canadian Degree Holder's  
Place of Origin**

**By**

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**Abstract:**

Will the highly skilled immigrants find jobs in Canada matching their income expectations and their training? With the Public Use Micro-data File (PUMF) of the 2011 National Household Survey (NHS), earning ability differences between Canadian and immigrant workers, from both Western and developing countries, are examined under two major effects: 1) place of highest degree; and 2) place of origin of the immigrants who received Canadian degrees. The effectiveness of Canadian and Foreign Education systems are tested based on the major fields of individuals' highest degrees. The research finds that the Canadian labour market performances of immigrants are lower for those whose location of highest degree was outside Canada. Canadian education is effective on upgrading immigrant's labour performance.

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## **1. Introduction:**

Immigrants are the primary source of labour force growth in Canada. It is also the case that the performance of this source of labour has been quite fluctuant. Compared to the locals, the recent immigrants do not perform as well as the cohorts of immigrant who arrived 40 years earlier or so (Green and Worswick, 2012; Aydemir and Skuterud, 2005). The reasons are related to the changes in the skill composition of the immigrants which affected the occupational structure of the Canadian labour market. With such argument it seems that wherever the immigrants are from, they still suffer a wage gap compared to the native-born which is greater than it was decades ago.

My inspiration for this research is to clarify the image of the Canadian labour market situation for immigrants and have an answer to the question: “Will the highly skilled immigrants find jobs matching their working expectation in Canada, regardless of their highest degree location and immigration status?”

Focusing on full-year and full-time individuals aged 25 to 64 in the Public Use Micro-data File (PUMF) of the 2011 National Household Survey (NHS), the paper proceeds as follows. The next section recaps researches that have been done on earning differentials between immigrants and native-born workers. The third section describes the data set that is used for this research. Then I summarize the selected variables and econometric model and present some descriptive statistics. Section four presents regression results addressing the following points: 1) investigation of how the location of study contributes to the performance differences between highly educated full-year full time immigrants and native Canadians with equal educational and labour market activity level; 2) clarification of to what extent place of origin affects individual income; and 3)

discussion of the effectiveness of Canadian education on immigrants in different major fields of study. The conclusions, insights and potential drawbacks of this research will be presented in the last section.

## **2. Literature Review:**

Countries vary in their levels of development. There is no doubt that countries with higher per capita GDP are able to provide higher quality of education. Therefore, the location where one achieves a highest degree becomes an important factor in the determination of one's income in the Canadian labour market. Moreover, there are cultural differences among countries. For example, it would be common sense to note that Asia and North America share different cultures with completely polar philosophies. Therefore, this review will first survey the literature on the effect of highest degree location, and then it will review works related to the study of immigrant status effects by place of origins.

### **2.1 Human Capital Transferability and Location of Studies**

The human capital and location of studies literature suggests that different locations of study may have different quality level of education. Transfer from one place to another may cause a human capital loss due over-qualification.

Bratsberg and Ragan (2002) analyzed male individuals in the U.S. They argued that: 1) when taking language proficiency into account, immigrants with higher language skills earn more than immigrants with similar education background and poorer language skills; 2) when not taking language proficiency into account, immigrants who received U.S. schooling earn higher wages

than those who got their degrees outside of the U.S.; and 3) U.S. schooling upgrades the education received in the source country. Regarding immigrants without U.S. schooling, the earnings are higher for those from highly developed countries and countries that use English as an official language.

Also, regarding the language proficiency, Buzdugan and Halli (2009) pointed out that, when taking language proficiency into account, most domestic degree receivers experience higher income than the people who achieved their degree outside.

Mattoo, Neagu and Özden (2008) investigated the occupational placement of immigrants in the U.S. labour market. They found that the country of origin affects the quality of the human capital transfer (i.e. expenditure on tertiary education and use of English as a medium of instruction varies across countries) by showing empirical findings which indicate that Latin American and Eastern European immigrants' participation rates in unskilled (low paid) jobs are higher than those of Asian and industrial countries' immigrants. They also pointed out that instead of attributing the problem to the skill underutilization (human capital transferability loss), we should attribute it to low working skills. However, Chiswick and Miller (2009) do not agree and believe that the transferability of international immigrant human capital is imperfect and that it is the cause of the miss-match for labour market entrants. They also found that, besides the transfer barrier effect, over-education is more likely to be found among recent labour market entrants while under-education is more common among older workers.

Fortin, Lemieux and Torres (2014) found that around seventy percent of the immigrant/native wage gap in Canada could be explained by the source of human capital. The authors use Canadian Census data and focus on full-time working people with positive wages and an education level higher than high school between the ages of 20 and 64.

The studies above all agree that the education in the host country is a significant factor that influences immigrants' earning ability. Moreover, the returns to the same level of education vary by location of highest degree achieved.

Besides the GDP per capita difference, which is believed to be a main factor in explaining the education performance in different countries that immigrants came from, societal and cultural differences must also be taken into accounts. A study conducted by a joint research group from Tianjin, China and from Ottawa (Edwards, Bunn, Wang, and Zou, 1999) mentioned that modern China established its own health system in the early 1950s following the former Soviet regime. However, later on, it stagnated due to exogenous political factors for many decades. With such factors, the continuity of the development process was interrupted and that imposed a negative impact on human capital. This may contribute to the explanation of the earning gap between native Canadian and immigrants from China.

Similar research regarding the differences between the Chinese and the Canadian health systems was carried by Chen (2002) who found significant value differences in health and nursing between China and Western countries. Chinese philosophies and religions strongly influence the way of life and the thinking about health and health care. Those completely different

philosophies influence people's behaviour. As the immigrants' sources diversify, behaviour varies among immigrants from country to country. It follows from those studies that overall differences in performances in the Canadian labour market in the same field of specialty can be explained by inter-states or inter-continental differences caused by social and cultural elements.

To sum up, the literature suggests that we should expect significant differences in immigrants' earnings level from different locations of highest degree. However, there are differences of opinion whether the existence of low paid immigrant jobs is due to a miss-qualification related to human capital transferability, to the low working skills of immigrants or to societal and cultural differences.

## **2.2 Place of Origin and Assimilation**

The literature above applies to individuals who came to Canada with their highest degree. Moreover, those who came to Canada to achieve a degree should also be considered. Chiswick (1978) analyzed the earnings of foreign-born white male adults with the U.S. 1970 Census of Population, by comparing the US-born to the foreign-born by country of origins, years in the U.S., and citizenship. He found differences in the effects of schooling and post school training. The time for immigrants to assimilate and to overtake the native-born was estimated to be between 10 and 15 years after immigration.

Borjas (1985) found that the earning gap between local citizens and immigrants shrinks as the immigrants assimilate in the U.S. society. With 1970 and 1980 censuses data, Borjas claimed that the data support the hypothesis that there has been a secular decline in the "quality" of

immigrants admitted to the U.S. One plausible explanation is that the countries of origins of the new immigrants are less developed than those of the earlier ones who came from Europe and developed countries. Borjas (1991) argued that the point system used by Canada is more skilled concerned than the immigration system based on family ties used by the U.S. The skill gap of immigrants in the Canadian immigration system was attributed to differences in the immigrant mixture of national origins. Borjas reasserted his early theory by stating that this system worked well since it can alter the immigrants' flow to meet the Canadian labour market demand.

Baker and Benjamin (1994) re-examined the economic assimilation of immigrants to Canada. Overall, their findings were similar to those of Borjas that the temporal decline in the quality of immigrants is correlated with changes in their source country composition and labour market behaviour.

In order to clarify the role of the immigrants' source countries composition, Bratsberg and Terrell (2002) studied the earning ability by country of origin using data from the 1980 and 1990 U.S. censuses. With immigrants from 67 countries, the study pointed out that for the 1990 census the largest returns of education was 8.2% for immigrants from Japan while the smallest return rate was 2.0% for immigrants from Haiti. For immigrants from Europe, the overall return was between 4.3% and 7.9%. Most Western Europe immigrants experienced higher returns than immigrants from former socialist countries. Canadian immigrants in the U.S. had a very high rate of return of 6.9% while Indian and Chinese immigrants suffered at low rates of 4.8% and 2.7%. Also, the study calculated that the average of the rate of return among all 67 countries was 4.8%.

The research done by Ferrer, Green and Riddell (2006) found that the literacy level affects immigrants' earnings. They used the Ontario Immigrant Literacy Survey, which included literacy and numeracy test scores. They found that the literacy performance of the native-born was higher than that of the immigrants. However, the returns to literacy skills are identical for the two groups, which contradicts the discrimination-based interpretation. Therefore, we can conclude that if immigrants received Canadian education, then it would be reasonable to expect their labour market performances to be as good as that of the native-born. Ferrer and Riddell (2008) later found that the host country education not only upgrades the original education (Bratsberg and Ragan, 2002), but that it also enlarges the earnings gains of immigrants associated with achieving education degrees. Also, in some extents, immigrants' earnings gains were even greater than those of the natives with similar degrees.

Moreover, will the insufficient education attainment cause a decline in earnings as well? Regarding this concern, Ferrer and Riddell (2008) tested that hypothesis by using data from the 1981, 1986, 1991, 1996, and 2001 Canadian Censuses. They found no evidence that the decline in earnings of recent immigrants is associated with lower valuation of their education attainment in Canada.

The studies discussed in this section have shown that the compositional changes in the immigrants' sources have a notable effect on their overall performance. Also, researchers have emphasized that Canadian education upgrades immigrants' incomes. Moreover, with Canadian education, immigrants can reach similar or even higher levels of income than native-born Canadian degree holders.

Regarding language proficiency, Carliner (2000) used data from the 1980 and 1990 U.S. censuses to examine the impact of English language skills of natives and immigrants. He found evidence that is consistent with the hypothesis that English-speaking ability is an important determinant of the earnings of immigrants in the U.S. Immigrants who do not speak English well must improve English proficiency as well as other skills in order to succeed in the labour market. For those immigrants whose first language is English or who speak English very well, fluency in English is valuable because it facilitates the transfer to the U.S. labour market of the schooling and labour market experience obtained abroad. Bratsberg and Ragan (2002) also argued that immigrants with higher language skills earn more than those with the same education background but poorer language skills.

In conclusion, the literature generally agrees to the following facts:

- 1) The local language proficiency level is positively related to one's income level in labour market;
- 2) Whether or not taking language proficiency into consideration, domestic education can alleviate immigrants' income gap;
- 3) China, India and most of the other developing countries have lower returns to education than Western countries;
- 4) Many other differences across countries, such as societal, cultural, political, and industry structure, lead to education quality differences. Hence, place of origins is a main factor in explaining income differences;

- 5) The differences mentioned above can be eliminated after a long time period spent in the host country.
- 6) However, initial income gaps between new immigrants and natives have been increasing over time.

My contribution in this paper relative to the literature is that I provide a detailed labour income difference comparison between immigrants and native-Canadians by characterizing labour income factors in two major indicator variables: 1) Location of study, for those who brought their highest degree into Canadian labour market; and 2) Place of Origin, for those who are Canadian highest degree recipients.

### **3. Data Description and Summary Statistics**

#### **3.1 Data and Sample**

The data set is selected from the 2011 National Household Survey (NHS) Individuals Public Use Micro-data File (PUMF). This data set contains a total of 887,012 records, accounting for 2.7% of the Canadian population, and it includes 124 variables. This survey is voluntary and self-administered as a replacement to the census long-form questionnaire. All the individuals are randomly selected from the entire Canadian population.

In this paper, I focus on people between the ages of 25 and 64 with positive wages, with education level higher than high school and who were full-year and full-time workers in 2010. I further differentiate between immigrants and Canadian citizens by birth. Immigrants either achieved their highest degree abroad or acquired it after they landed to Canada. Fortin, Lemieux

and Torres (2014) assume that the interval between the ages of 15 to 29 is the most valuable time study for a new degree since in this age range, individuals are mature enough to adapt into their new society and young enough to spend time in investing their education. Hence there is a trade-off between: 1) including those who did doctoral studies by setting 30 years old as the lower limit for age to allow those individuals to finish their studies and to be ready for the Canadian labour market or 2) ignoring this group by choosing age 25 as the lower limit.

From Table 1, we can see that the proportion of doctoral degree holders is only 1.5% of the total sampled population. Since the number of doctoral degree holders is very low, the individuals who achieved doctoral degrees are dropped and the age range for my research is between 25 and 64.

Table 1. Highest Degree Holders in the Sample

Highest certificate, diploma or degree	Freq.	Percent
Trades certificate	14,333	9.28
Registered Apprenticeship	11,041	7.15
College, CEGEP < 1 year	5,619	3.64
College, CEGEP 1 - 2 years	24,145	15.63
College, CEGEP > 2 years	21,446	13.88
University or below	10,926	7.07
Bachelor's degree	43,577	28.2
University or above	6,678	4.32
Medicine, dentistry	1,026	0.66
Master's degree	13,418	8.68
Earned doctorate degree	2,300	1.49
<b>Total</b>	<b>154,509</b>	<b>100.00</b>

Source: NHS 2011 PUMF

The 2011 NHS PUMF registered observations for some variables as “not available”. If such observations exist among my key regressors, I drop them. The data covers all persons living in private dwellings including permanent residents and non-permanent residents (i.e. refugees, holders of work/study permits), but it excludes people living in institutional collective dwellings (i.e. hospitals, nursing homes and penitentiaries) and non-collective dwellings including hotels and student residences. For this research, I exclude the non-permanent residents.

## **3.2 Variables**

### ***3.2.1. Dependent Variable:***

*Incomes (LNWAGES):*

The dependent variable is the logarithm of gross wages and salaries before deductions for such items as income tax, pensions and employment insurance for people who worked full-year and full-time in 2010. Wages include military pay and allowances, tips, commissions and cash bonuses, benefits from wage-loss replacement plans or income-maintenance insurance plans, supplementary unemployment benefits from an employer or union as well as all types of casual earnings during calendar year 2010. Other employment income such as taxable benefits, research grants and royalties are included. Based on Statistic Canada definition (2016), full-year full-time workers refer to persons 15 years of age and over who worked full-time 49 to 52 weeks in 2005 for pay or in self-employment. Full-time is defined as usually working 30 hours or more per week.

### ***3.2.1 Independent Variables:***

I group the independent variables into five categories: 1) geographic; 2) demographic; 3) immigrant; 4) language; and 5) human capital.

#### ***3.2.1.1 Geographic Variables:***

*Provinces (PR\_):*

I use “Province or territory of current residence” and generate 6 dummies variables: British Columbia, Alberta, Prairies (i.e. Saskatchewan and Manitoba), Ontario (reference group), Quebec, and Atlantic Canada (i.e. New Brunswick, Nova Scotia, Prince Edward Island, and

Newfoundland and Labrador). The observations from the Northern Canadian Territories (Yukon, Northwest, and Nunavut) were dropped since the number of individuals in the survey from those areas is small.

### 3.2.1.2 Demographic Variables:

#### *Age (AGE):*

I generate a new variable *AGE* approximated by taking midpoints of each five-year age group, converting the original variable *AGEGRP* in the codebook from discrete to continuous for regression and further data manipulation. Taking age group 25 to 29 years old as an example, I use the midpoint of 27 years old as the representative age for all individuals in this group. This variable is not directly used in the analytical regression model, but helps to establish other variables such as “years of schooling”, “working experience”, and “working experience squared”.

#### *Gender (GENGER):*

I assigned *GENDER* equal to 1 for males and equal to 0 for females.

#### *Marital Status (MRD):*

I define the variable *Marital Status (MRD)* by aggregating two statuses into one, legally married and living common law. Then I set that variable equal to one for this group and equal to zero for all the other marital statuses (never married, separated, divorced and widowed).

### 3.2.1.3 Immigrant Variables:

#### *Immigration Status (IMM):*

For the *IMMSTAT* variable in the codebook, I set *IMM* equal to 0 if individuals are born in Canada and equal to 1 if they are landed immigrants.

*Place of Birth (POBDUM):*

As mentioned by Borjas (1991) and others, place of birth is a key factor in characterizing the variety of configurations of immigrant skills around the world. Adser and Chiswick (2007) also argued that the earning differences brought by significant negative partial effects of foreign birth vary across origins and destinations, as well as by gender. Hence, this variable is selected as indicator of the original place where an immigrant comes from. Specifically, I introduce four immigrant subgroups based on the dataset categories and on my research interest:

***Western countries*** basically consist of all Northern and Western European countries plus the United States, Italy and Oceania. As the dataset aggregates most of the Northern and Western European countries under the section “other Northern and Western Europe”, it turns out to be impossible to make any inter-country comparisons. It is worth noting that, in this subgroup, Canada is not included because it is used as the reference country. All the regression coefficients of national dummy variables are compared with Canada.

***Developing countries*** (with China and India excluded) are countries other than “Western Countries”, China and India.

***China*** and ***India*** are the two countries with the largest populations in the world, and they are also two main sources contributing to Canadian immigration. As shown in Table 2, 7.9% of immigrants are from China and 9.2% of immigrants are from India and both percentages are around half of the percentage of the western immigrants. Therefore, the

earning ability of immigrants from those two countries largely affects the overall immigrants' Canadian labour market performance. Here, I include them separately as listed below in Table 2.

Table 2 Immigrants Distribution by Source Countries

Source Country	Amount	Percentage
Western Countries	6,323	18.85
Developing Countries	21,469	64.01
China	2,652	7.91
India	3,097	9.23
<b>Total</b>	<b>33,541</b>	<b>100</b>

Source: NHS 2011 PUMF

### *Effect of Place of Highest Education (HDGROTCAN)*

In the dataset, the variable *LOCSTUD* refers to the place where an individual achieved his/her highest degree. Since the variable captures the location in aggregated major regions of the world, I assume that if an individual acquired a highest degree outside Canada, such an individual obtained the degree in his/her place of origin. Under this assumption, hereby, I define *HDGROTCAN*, a dummy variable that is equal to 1 if an individual was granted his/her highest degree outside Canada and which is equal to 0 if the degree was granted in Canada.

### *Years since Migration (YSM):*

It is an important variable describing the speed of assimilation of immigrants in the Canadian labour market. It is defined by taking midpoints of each Year of Migration (*YRIMM*) group from the earliest years up to 1989. For 1990 and later, single years are provided and I subtract the year of immigration from the base year 2011. Years since migration captures the rate at which the earning gap between Canadian born individuals and immigrants alleviates as immigrants assimilate into the Canadian labor market. The variable is further redefined as actual years since migration minus 10 years in order for the fixed effects of the place of birth and the location of

studies to be evaluated 10 years after immigrants landing in Canada. (as opposed to after 0 years). Empirically, this transformation does not change the impact that YSM has on our log incomes, but this extra decade allows immigrants either to assimilate into the Canadian society or finish their study in Canada.

#### 3.2.1.4 Language Variables:

##### *Language (OL):*

This indicator shows the ability to conduct a conversation in English or French. According to the codebook, this variable refers to the ability to conduct a conversation either in English only, in French only, in both English and French, or in none of the official languages of Canada. Since knowing an official language is important in the labour market, as Carliner (2000) showed in his study, I set *OL* equal to one if an individual knows at least one of the official languages, and equal to zero if the individual knows none of the official languages.

#### 3.2.1.5 Human Capital

##### *Year of Schooling (YOS):*

Like Gao (2013) and Grenier and Nadeau (2011), I define years of schooling based on the information on highest degree, certificate or diploma. I assume that individuals started attending grade one when they were six year-old and that they finished their trades certificate/diploma or one-year college/CEGEP program after 13 years; they got registered apprenticeship certificates or two-year college/CEGEP program certificates or diplomas after 14 years of schooling; if individuals are holding a university certificate or a diploma below bachelor level or graduate from a college or CEGEP long term program (program lasting more than two years), they are

assigned 15 years of schooling; for bachelor degree, 16 years of schooling is assumed; if individuals got university certificate/diploma above bachelor, they are granted 17 years of schooling; if they obtained a degree with 18 years of schooling, most likely the degree will be medicine, dentistry or Master's.

#### *Working Experience (WRKEXP):*

Following Mincer (1974) human capital earnings function, I assume that working experience starts once individuals finish their education. Here I also assume that the individuals only started to work after achieving their highest degree and once they started they are employed until they retire. The potential work experience is defined as the difference between age in 2011 and age at which one finished his/her highest degree, which is equals the age minus six minus the years of schooling. Working Experience Squared (*WRKEXP2*) is introduced to allow a diminishing marginal benefit of working experience.

#### *Major of highest degree*

According to the dataset primary groupings of major field of study, majors are sorted into four main categories:

- 1) Arts; including "Education", "Visual and performing arts and Communications Technologies", "Humanities", and "Social and Behavioural Science and Law"
- 2) Business; including "Business", "Management" and "Public Administration"
- 3) Applied Science; consisting of "Physical and Life Sciences and Technologies", "Mathematics", "Computer and Information Sciences", "Architecture, Engineering, and Related Technologies", and "Agriculture, Natural Resources and Conservation"

4) Health; containing “Health”, “Parks”, “Recreation” and “Fitness”

### **3.3 Sample Selection**

This study focuses on Canadian citizens by birth and on immigrants. As mentioned earlier, I eliminate the non-permanent residents and I focus only on the performance of highly educated labour force population; therefore, the original sample size goes down due to the elimination of individuals whose highest degree is high school or less. Individuals who did not answer this question are also dropped. As already mentioned, I include only “full-year full-time worker”.

In the data set there are individuals with zero earnings since they did not work at all. Therefore, these observations were dropped as well as those where income is not available. Figure 1 shows the income distribution frequency by income interval before the elimination of any income levels. Starting from 0 dollars, each bar stands for 10,000 dollars more than the preceding bar. In addition to the restrictions mentioned above and based on Figure 1, I eliminate individuals with annual income level lower than \$20,000. The reason is to ensure that no unqualified individuals are included. The calculation behind this was by assuming each qualified individual works 40 hours per week. Therefore, the hourly wage rate is at \$10.20, which is just the medium level of Canadian provincial minimum wage. In addition, since we can see that individuals with income less than \$20,000 and more than \$100,000 are very few, I dropped all the individuals in those income ranges. These extreme wage values could affect the average levels and that would bias my empirical analysis if I included them.

After those restrictions, the final sample size comes down to 124,768 observations, from the



where I defined for the immigrants a set of dummies for Highest Degree achieved Outside Canada ( $HDOTCAN_j$ , from the four major regions of origin mentioned above) with coefficients  $\theta$ , and a set of dummies for Highest Degree achieved inside Canada ( $HDINCAN$ ) with coefficients  $\lambda$ . The Canadian born individuals are the reference categories for those dummy variables. Equation (2) will be estimated separately for males and females and for the four majors of highest degree defined above.

### **3.4.2 Descriptive Statistics**

#### **Immigrant Population Summary**

Table 3 Immigrant Population Summary gives a summary of the sample population by separating “place of origin” and “major of highest degree” among males and female for those who studied outside and inside Canada.

The findings from Table 3 can be summarized as follows: (1) The immigrant population in the sample is 27,180 (about 21.8% over the entire population of 124,768); (2) The full-time full-year immigrants’ population (from adding the above four areas) for males is 14,374 and it is 12,806 for females; (3) Applied science is the most popular major (39.2% of the immigrants are in that field) while health and personal training services are the least popular; (4) Applied science is the most popular for the males while arts is the most favoured by females; (5) Developing countries contribute the most to the immigrant population in 2011 (i.e. 82.1% including China and India); (6) 9.1% of the immigrants are from India, followed by China (8.1%); (7) For most regions of origin, the number of the immigrants who studied in Canada is higher than the number who

studied outside Canada; the exceptions are the Chinese and Indian females; (8) Compared to the other immigrants, Indians are the least likely to obtain a degree in Canada.

Table 3 Immigrant Population Summary by Place of Highest Degree Major, Field of Highest Degree Major and by Gender

POB	Degree	Sex	Arts	Business	Applied	Health	Service	Sub-total
Western Countries	Outside	F	210	237	70	123	30	670
	Canada	M	183	147	523	32	73	958
	Inside	F	576	465	160	293	51	1545
Developing Countries	Canada	M	356	302	869	70	104	1701
	Outside	F	1084	1165	843	723	63	3881
	Canada	M	577	827	2758	265	119	4546
China	Inside	F	1161	1507	656	1030	163	4517
	Canada	M	609	1029	2623	220	200	4681
	Outside	F	130	146	269	65	4	614
India	Canada	M	63	76	519	27	20	705
	Inside	F	73	210	129	59	8	479
	Canada	M	38	88	248	13	11	398
India	Outside	F	351	155	159	78	8	751
	Canada	M	173	234	518	31	7	963
	Inside	F	58	128	58	98	7	349
Canada	M	33	118	244	15	12	422	
<b>TOTAL</b>			<b>5675</b>	<b>6834</b>	<b>10646</b>	<b>3142</b>	<b>880</b>	<b>27180</b>
<b>%</b>			20.88	25.14	39.17	11.56	3.24	100

Notes: "Degree" refers the place highest degree achieved  
Source: NHS 2011 PUMF

## Canadian-Born Population Summary

Table 4 Canadian Nonimmigrant Population Summary by Highest Degree Major and by Gender

Sex	Arts	Business	Applied	Health	Service	Total	%
F	15773	14114	4555	9573	2000	46015	49.21
M	8670	7652	25668	2047	3459	47496	50.79
%/F	34.28	30.67	9.90	20.80	4.35	100.00	
%/M	18.25	16.11	54.04	4.31	7.28	100.00	
Total	28471	26866	36812	13379	6514	93511	
%	26.14	23.28	32.32	12.43	5.84	100.00	

Source: NHS 2011 PUMF

Table 4 provides a similar overview of the non-immigrant Canadian sample by "major of highest degree" and gender in the 2011 national household survey. This table reveals that: (1) The non-immigrant population in the sample includes 93,511 individuals (around 75.0% of the 124,768 individuals in the total research population); (2) The distributions by gender are similar to those

of immigrants; (3) Applied science is the most popular major while Health and personal training services are the least popular; (4) Applied science always dominates other majors for the males while Arts is dominant for the females.

#### 4. Empirical Results and Discussion

The complete results of the regressions of my research model are shown in the appendix Table A with 10 specifications. The first two columns are based on the entire population regardless of major field of study. Overall, the table indicates that among immigrant groups, immigrants from Western countries performed better than immigrants from the other countries in the Canadian labour market while they are still behind the performance of native-Canadian workers. My regression populations are then divided in four main groups by the major field of study and each of them contains two subgroups based on gender. The columns are labelled as (1) through (10). Since the dependent variable is in logarithmic format, the coefficients stand for the percentage change on the income per unit of increase of the independent variables. Compared to previous works showing similar regression models (for example, Reitz, 2001; Gao, 2013), the signs of the coefficients are consistent with the literature. In this section, I first present the coefficients of the variables that are common to both immigrants and natives.

Table 5 Year of Schooling Coefficients in Percentages

Total		Arts		Business		Applied Science		Health	
Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
12.0%	6.0%	12.3%	7.0%	11.3%	8%	10.1%	7.9%	14.1%	6.5%
***	***	***	***	***	***	***	***	***	***

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001  
Source: Appendix Table A.

Table 5 shows that the ten coefficients of “Year of Schooling” (YOS) are all significantly positive. Furthermore, the return to schooling for females in each major group regression is higher than that of males.

The “Years of Working Experience” refers to the fact that, normally, as a person spends more years working in a specific field, the experience that is accumulated in that field becomes an asset that can improve their earning ability. From the results in Table 6, we can see that the rate of individuals benefiting from the increased earning ability that comes from experience is about 2-3% across of academic majors and genders.

Table 6 Coefficients of Years of Working Experience and its Square in Percentages

	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Working Experience	2.7%	2.7%	3.4%	3.5%	2.2%	2.5%	3.1%	2.4%	2.3%	3%
Working Exp <sup>2</sup>	-0.05%	-0.05%	-0.06%	-0.07%	-0.04%	-0.05%	-0.06%	-0.04%	-0.03%	-0.06%

Source: Appendix Table A.

Overall, we might say that males experience a slight advantage over females when it comes to the effectiveness their working experience. For example, a male working with the business degree will obtain an initial 2.5% increase of his annual wages for an additional year of experience, whereas a female working in the same field will only obtain a 2.2% increase in wages.

In addition to years of experience, marital status can also have an effect on a person’s salary. However, the effect is significant mostly for married males (see Table A), as the literature has suggested that some wives are willing to give up their future competitiveness in the workplace to

be supportive of their husbands' career goals, while not many husbands are willing to do the same for their wives (Schultz, 1993).

#### 4.1 Immigrant Foreign Highest Degree Location Effect

The location of the highest degree is one of the key effects analyzed in this research paper. Table 7 presents the coefficients related to that effect. The complete results are found in Appendix Table A. Table 7 illustrates two total regressions and eight partial regression results belonging to eight different groups discussed by my research model.

Table 7 Partial Regression Table for Foreign Highest Degree Location Effect

	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Western Countries	-0.113 ***	-0.097 ***	-0.147 ***	-0.102 ***	-0.112 ***	-0.083 *	-0.073	-0.096 ***	-0.080 *	-0.009
	(-0.016)	(-0.013)	(0.027)	(0.030)	(0.025)	(0.034)	(0.051)	(0.017)	(0.036)	(0.071)
Developing Countries	-0.270 ***	-0.265 ***	-0.306 ***	-0.312 ***	-0.286 ***	-0.298 ***	-0.264 ***	-0.262 ***	-0.242 ***	-0.313 ***
	(-0.006)	(-0.006)	(0.012)	(0.016)	(0.012)	(0.015)	(0.016)	(0.008)	(0.015)	(0.028)
China	-0.270 ***	-0.263 ***	-0.321 ***	-0.370 ***	-0.269 ***	-0.331 ***	-0.254 ***	-0.274 ***	-0.331 ***	-0.327 ***
	(-0.015)	(-0.014)	(0.031)	(0.049)	(0.030)	(0.046)	(0.024)	(0.017)	(0.045)	(0.077)
India	-0.357 ***	-0.272 ***	-0.440 ***	-0.328 ***	-0.301 ***	-0.294 ***	-0.316 ***	-0.263 ***	-0.211 ***	-0.283 ***
	(-0.013)	(-0.012)	(0.020)	(0.028)	(0.029)	(0.025)	(0.031)	(0.017)	(0.042)	(0.067)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Source: Appendix Table A

Generally, all subgroup (3-10) regressions share the same pattern as the first two columns, indicating that western countries do better than the developing countries including China and India. Specifically, all the coefficients indicate a negative effect for holding a foreign degree compared to the Canadian-born. One possible explanation is language proficiency not fully covered in the "Official Language" variable. While immigrants often experience no language problem when accumulating their individual human capital (in their original countries), these problems tend to appear once they go to work (in the immigrant host country). This is because immigrant employees often experience greater difficulty communicating in their workplaces than

native Canadian employees do. This negative effect may also be due to other factors. For example, diplomas from developing countries may not be recognized in Canada. As a result, people may have to take jobs which are not directly related to their education background.

#### **4.1.1 Vertical Comparisons**

Comparing the columns of Table 7, I am able to interpret the result based on the quality of the education received according to the location where it was received and by the major of the highest degree obtained. Without a doubt, the quality of the education of immigrants who studied in Western countries ranks highest and is second only to the quality of the education of immigrants who studied in Canada.

##### ***Arts***

Both males and females from developing countries, including Chinese and Indian immigrants, suffer the highest wage gaps when compared to the salaries of native-Canadian degree holders.

##### ***Business***

Female Chinese immigrants with diplomas in business suffer slightly less than female Indian immigrants with similar diplomas. Furthermore, the wages of the aforementioned Chinese females are greater than those of immigrants who obtained their highest degree in other developing countries.

##### ***Applied Science***

Overall, immigrants from developing countries including China and India performed less well than western countries immigrant in the Canadian labour market.

## ***Health***

Western countries are amongst the leaders when it comes to the quality of their health programs. This is why immigrants who obtained their highest degree in the field of health field from a Western country receive the second best wage benefits when employed in Canada, the best benefits being reserved for Canadian immigrants who obtained their highest degree from Canada itself. Unlike the Business and Applied Science programs, China seems to have relatively lower quality health training. Immigrants who obtained degrees in health from China receive a lower salary than those who received degrees in other less developed world. Additional details concerning this phenomenon will be discussed in the next subsection.

### **4.1.2 Horizontal Comparisons**

#### **Western Degree Holders**

Generally speaking, immigrants who acquired their highest degree outside of Canada suffer a loss of human capital transferability. Conversely, immigrants who obtained their highest degrees from Western countries suffer losses which are much smaller than those of immigrants from other countries. Indeed, the immigrants who obtained their degrees from Western countries are liable to a human capital loss if they studied in the Arts, Business or, if they happen to be males, in Applied Science. In all other cases, the coefficients are not statistically significant.

A possible reason why the education available in Western countries in the domain of the Arts and Business may differ in quality when compared to the quality of the education offered in Canada is the language of instruction. Since most Western countries do not claim English or French as their official language, it is not surprising that there is a loss associated with the

transfer of the human capital by immigrants who studied in countries with national languages that are not the same as the Canadian ones.

This is even truer when the field is associated with a major that requires intensive reading and writing skills. These difficulties can possibly explain why female immigrants holding degrees in the Arts from Western countries suffer an average income loss of 14.7% compared to the average native-born Canadian degree holder, while males in the same situation obtain 10.2% less income than Canadians holding local degrees in the same field.

As for the field of Business, females who obtained their degree in Western countries will, on average, obtain a salary that is 11.2% lower than that of native Canadian degree holders. Instead of blaming these wage disparities on the lower quality of business training programs in Western countries when compared to Canadian schools, attention should be turned to the societal and cultural gender inequality and one possible reason is that females are usually asked to spend some time staying at home and taking care of kids. The insignificant result for males seems likely when one considers that the quality of the education that male immigrants who studied Business in Western countries is equal to that of male immigrants who studied Business in Canada.

This being said, the inefficient transferring rates for males who studied in the field of Applied Science may also be due to the lack of efficiency that the immigrants who obtained such degrees from Western countries may have with Canada's official languages. By most accounts, the education offered in Western countries is at a similar quality level to that offered in Canada –

especially in the field of Business, Applied science and Health – so it stands to reason that any wage gaps between immigrants who obtained their degrees in Western countries and Canadians who obtained local degrees does not occur because Canadian schools are superior and give their graduates a competitive advantage over workers with diplomas from abroad.

### **Degree Holders from Developing Countries other than China and India**

Unsurprisingly, the performances of immigrants who studied in developing countries were much lower than those who studied in Western countries. Individuals who come to Canada with degrees from those countries suffer larger wage disparities than immigrants from Western countries for all the fields of study and for both genders.

Specifications (3) and (4) found under the Arts section of Table 7 demonstrate that females who obtained Arts degrees in developing countries suffer slightly less wage disparities, compared to their Canadian-born counterparts, than males who did the same. Similar differences are also found for immigrants who obtained diplomas in developing countries in the fields of Business and Applied Science. It is worth noting, however, that female immigrants who obtained degrees from developing countries in Health did significantly better than those who studied in the other fields.

Indeed, for female immigrants who studied Health in developing countries, the wage gap is -24.2%, which is lower than of the gap of -31.3% for males. Overall, it can be said that developing countries' immigrants with Arts degrees seem to be those who earn the least in the

Canadian workforce. This large wage gap may be caused by the cultural and social differences between the Arts education provided by developing countries schools' and schools in Canada.

### **Chinese Degree Holders**

Chinese immigrants' performance is similar to that of the other developing countries. Both male and female immigrants who hold Chinese degrees in the Arts suffer the largest wage gaps (32.1% and 37% respectively). Regarding to the performance in Business and Applied Science, while the differences are not large, the numbers can be interpreted in the following context. From the late 1970s's economic revolution onwards, the Chinese economy has accumulated human capital rapidly, which contributed in a significant way to the financial growth and welfare of the country. During China's second reform period in the 1970s, high total productivity greatly stimulated GDP's growth (Wang and Yao, 2003). All those economic changes formed the foundation of the industrialization of the Chinese economy. These progresses are not shown in the table but such gaps would have been worse without large investment in both physical capital (Heckman, 2005) and human capital, especially in the fields of Business and Applied Science.

Considering its huge economy and its rapid financial growth, China should be advancing at a level above that of the average developing country. However, in the field of Health, immigrants holding Chinese degrees still obtain wages below those of the other developing countries. This odd occurrence might be caused by cultural differences in the philosophical beliefs surrounding health care and social experiences in that field.

It is in this vein of thought that Chen (2002) indicated that there was a huge difference in the way people value health in China and in Canada, which may be the cause of the differences in the way each of these countries approaches health education. The Chinese health education was deeply influenced in the 1950s by the Soviet model, which resulted in China adopting an intense medically oriented and hospital-based healthcare system (Edwards, Bunn, Wang, and Zou, 1999). Then came a series of political movements in the 1960s and 1970s during which Chinese health education underwent a ten-year freeze.

### **Indian Degree Holders**

Possessing the world's second largest population and being one of Canada's major immigrant contributors, there is no doubt that India's performance when it comes to immigrant earning ability largely affects the overall scores of immigrant performances in general. Based on the data from regression Table 7, Indian immigrants who possess degrees in the Arts receive between 33% and 44% lower wages than holders of Canadian degrees in the same field of study. In most cases, their situation is worse than that of the Chinese degree holders. However, Indian immigrants have better performance results when it comes to their Health graduates. Compared to other countries of the developing world, an Indian Health degree is more likely to lead to a high income in the Canadian labour market.

### **4.2 Immigrant Place of Origin Effects**

The effect of the highest degree's location was analyzed in the previous section. Now, we move on to the second key effect "Immigrant Status by place of birth", which is shown in Table 8.

Two sample population regressions, (1) and (2), and eight subgroup specifications (3) to (10) that were done for the analysis of the first key effect are used to study the individuals in the table below.

Table 8 shows a new dimension to the question of immigrants’ performances in the Canadian labour market because it eliminates all foreign education variable effects and only takes into account the interaction between the immigrants’ place of origin and the major in which they obtained their highest degree in Canada. The coefficients in this table indicate the wage gap when comparing those immigrants to native-born Canadians who possess identical degrees. In doing so, the importance that the status of “immigrant” plays in a person’s potential wage expectations becomes evident. In general, the wage gaps between immigrants and the reference group are smaller when the formers obtained their highest degrees in Canada.

Table 8 Partial Regression Table for Immigrant Ethnical Effect

	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Western Countries	-0.065 ***	-0.060 ***	-0.066 **	-0.067 *	-0.074 ***	-0.096 **	-0.037	-0.056 **	-0.074 *	-0.086
	(-0.013)	(-0.013)	(0.022)	(0.030)	(0.022)	(0.030)	(0.040)	(0.017)	(0.029)	(0.062)
Developing Countries	-0.094 ***	-0.115 ***	-0.112 ***	-0.123 ***	-0.095 ***	-0.117 ***	-0.097 ***	-0.122 ***	-0.097 ***	-0.186 ***
	(-0.007)	(-0.007)	(0.014)	(0.019)	(0.013)	(0.016)	(0.020)	(0.010)	(0.015)	(0.033)
China	-0.132 ***	-0.140 ***	-0.202 ***	-0.041	-0.157 ***	-0.175 ***	-0.081 *	-0.156 ***	-0.123 **	-0.492 ***
	(-0.017)	(-0.019)	(0.043)	(0.060)	(0.025)	(0.041)	(0.034)	(0.023)	(0.047)	(0.111)
India	-0.105 ***	-0.101 ***	-0.079	-0.032	-0.116 ***	-0.091 *	-0.148 **	-0.148 ***	-0.119 **	-0.1
	(-0.02)	(-0.018)	(0.048)	(0.063)	(0.032)	(0.036)	(0.051)	(0.024)	(0.038)	(0.103)

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Source: Appendix Table A

## Western Immigrants

Table 9 compares the effects of education received outside and inside Canada by putting together and expressing in percentages the results of Table 7 and Table 8. The first row shows the performance scores of individuals from Western countries who obtained their highest degree

outside of Canada while the second row considers Western immigrants who received their highest degree from a Canadian institution. The results clearly demonstrate that, in all the fields, the immigrants with a Canadian education have a better overall performance than do immigrants with similar academic achievements in Western countries instead. In most specifications, the gap found between the two groups shows that having a degree from a Canadian institution causes an immigrants' wage gap to be cut in half.

Table 9 Canadian Education Effectiveness on Western Immigrants (in percentages)

(%) Effects	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Degree outside Canada	-11.3 ***	-9.7 ***	-14.7 ***	-10.2 ***	-11.2 ***	-8.3 *	-7.3	-9.6 ***	-8.0 *	-0.9
Degree inside Canada	-6.5 ***	-6.0 ***	-6.6 **	-6.7 *	-7.4 ***	-9.6 **	-3.7 *	-5.6 **	-7.4 *	-8.6

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Source: Table 7 and Table 8, Appendix Table A

The only exception is that Western male students who majored in Business Education or in related fields in Canada are shown to suffer more significantly relative to ones who studied outside Canada. This might be because business, being a communication intensive major, requires that individuals possess a higher language proficiency than is necessary in other fields.

### Immigrants from Developing Countries other than China and India

Much like the previous table, the first row of

Table 10 shows the gaps for the individuals from developing countries who obtained their highest degree outside Canada while the second row shows the same for those whose highest degrees were obtained inside Canada.

Table 10 Canadian Education Effectiveness on Developing Countries' Immigrants

Gaps (%) Effects	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Degree outside Canada	-27.0 ***	-26.5 ***	-30.6 ***	-31.2 ***	-28.6 ***	-29.8 ***	-26.4 ***	-26.2 ***	-24.2 ***	-31.3 ***
Degree inside Canada	-9.4 ***	-11.5 ***	-11.2 ***	-12.3 ***	-9.5 ***	-11.7 ***	-9.7 ***	-12.2 ***	-9.7 ***	-18.6 ***

\* p<0.05, \*\* p<0.01,\*\*\* p<0.001

Source: Table 7 and Table 8, Appendix Table A

### Chinese Immigrants

Chinese immigrant's performance Table 11 tells a similar pattern as previous tables, indicating that individuals get improved wages if they accepted Canadian education. However, it is worth noting that the situation in the fields of health is quite different from the overall. Male individuals undergo a larger income gap even if they acquire their highest degree inside Canada.

Table 11 Canadian Education Effectiveness on Chinese Immigrants

Gaps (%) Effects	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Degree outside Canada	-27.0 ***	-26.3 ***	-32.1 ***	-37.0 ***	-26.9 ***	-33.1 ***	-25.4 ***	-27.4 ***	-33.1 ***	-32.7 ***
Degree inside Canada	-13.2 ***	-14.0 ***	-20.2 ***	-4.1 ***	-15.7 ***	-17.5 ***	-8.1 *	-15.6 ***	-12.3 **	-49.2 ***

\* p<0.05, \*\* p<0.01,\*\*\* p<0.001

Source: Table 7 and Table 8, Appendix Table A

It is reasonable to believe that such exacerbations of income inequality might be caused by the disadvantage of inter-communication. Because the general statistics of binary variable “*Official Language (OL)*” from Table A indicating that males return to official language proficiency rates for most major fields are higher than female especially in health. Moreover, column 8 of Table A, the coefficient of *OL* might suggested that the benefit of a male individual studied in health knowing at least one official language is earning 20.8% more income than peers.

## Indian Immigrants

Looking at Table 12, with less language proficiency issue, individual males from India with Canadian health degree has insignificant income gap with native Canadians. Also with Canadian education, only female business students and male applied science students suffer a significant income gap.

Table 12 Canadian Education Effectiveness on India Immigrants

Gaps (%) Effects	Total		Arts		Business		Applied Science		Health	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
Degree outside Canada	-35.7 ***	-27.2 ***	-44.0 ***	-32.8 ***	-30.1 ***	-29.4 ***	-31.6 ***	-26.3 ***	-21.1 ***	-28.3 ***
Degree inside Canada	-10.5 ***	-10.1 ***	-7.9 ***	-3.2 ***	-11.6 ***	-9.1 *	-14.8 **	-14.8 ***	-11.9 **	-10.0 **

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Source: Table 7 and Table 8, Appendix Table A

Table 12 shows that studying inside Canada largely improves Indian immigrants' income. In four out of the ten specifications, Indian immigrants do better if they study in Canada. Not including the field of Applied Science, all others majors require strong language proficiency. Since English is one of India's official languages, this suggests that many of the additional wage benefits Indian immigrants receive compared to the Chinese immigrants are due to better transferable human capital. This is why, even when comparing amongst the average ratios of other countries immigrant who studied inside Canada, Indian immigrants are the least disadvantaged, second only to native-born Canadians.

### 4.3 Other Immigrant Variables

From Appendix Table A, all *YSM* coefficients are positively significant except for males studying in Arts. Most of my results align with those suggested by previous works. As mentioned in previous, my regression results are very much comparable to those of Reitz (2001).

Gao (2013) also addressed the significant effect of the place in which the highest academic degree was obtained. Having taken into account the variables in the regressions and the effect of *YSM*, my results make it possible for me to conclude that, overall as expected, the coefficients of years since migration are positive for males and females. This means that, as time spent since landing increases, the income gaps is partially alleviated. My results indicate that, regardless of location of study and place of origin, an additional year in Canada increases the wage by 0.3% to 0.6%.

## **5. Conclusions**

Beginning with a basic earning equation, I added immigrant effects related to place of birth, location of study and major of highest degree to test the effect of location of study and place of birth. With data from the Public Use Micro-data File (PUMF) of the 2011 National Household Survey, I focused on immigrants who worked full-time for the entire year, were aged between 25 and 64 years old and had a yearly income ranging between \$20,000 and \$100,000. My main findings are as follows:

- (1) As the Location of Study Effect, I emphasized the importance of the quality of the education according to the country in which immigrants received their highest academic degrees. As the Place of Origin Effect, I focused on the immigrants' countries of origin, language proficiency and assimilation progress.
- (2) Among the countries, developing countries including China and India are the countries with the lowest quality of education in most of fields. The education that they offer does not do well in increasing an immigrant's incomes upon joining the Canadian labour market. Also,

the Health degrees offered in China are the ones that cause its students the most suffering once they migrate to Canada.

- (3) Amongst all the vertical comparison that took the Location of Study Effect into account, there is a general pattern: full-time immigrants who work all year long and obtained their degrees from countries with a low GDP by capita end up earning less.
- (4) The results that took into account the Location of Study Effect are consistent with Bratsberg and Ragan (2002)'s claim that, when one does not take language proficiency into account, immigrants who were educated in their host country can expect to earn more than those who hold foreign degrees. Bratsberg and Ragan also argued that upgrading to a U.S. education will increase immigrants' individual incomes. Among the immigrants who do not possess U.S. diplomas, it was found that the earnings of those who studied in highly developed countries or in developing countries where English is an official language are the highest.
- (5) The Location of Study Effect can alleviate the language proficiency issue by eliminating part of it when individuals are educated outside of Canada, but the language proficiency cannot be omitted when they perform in the Canadian labour market.
- (6) The level of development has a definitive impact on the quality of the education delivered. Nonetheless, other labour performance inequalities related to gender and choice of major also have an effect on immigrants' performances.
- (7) The analysis of the Place of Origin Effect is related to language proficiency and cultural relevance concerns, since achieving a degree in the birth country may be easier for an immigrant to acquire human capital. However, there is a large human capital lost when it is transferred to the Canadian labour market. In addition, individuals improve their human capital if they seek out a Canadian education. Therefore, it could be said that between degree

location and the ethnic origin, there is a trade-off between the efficiency at which human capital can be accumulated and the efficiency at which immigrants can be assimilated.

## References

- Adserá, A., and Chiswick, B. R. (2007, July). Are there gender and country of origin differences in immigrant labor market outcomes across European destinations? *Journal of Population Economics*, 20(3), pp. 495-526.
- Aydemir, A., and Skuterud, M. (2005, May). Explaining the Deteriorating Entry Earnings of Canada's Immigrant Cohorts, 1966 - 2000. *Canadian Journal of Economics*, 38(2), pp. 641-671.
- Baker, M., and Benjamin, D. (1994, July). The Performance of Immigrants in the Canadian Labor Market. *Journal of Labor Economics*, 12(3), pp. 369-405.
- Borjas, G. J. (1985, Oct). Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants. *Journal of Labor Economics*, 3(4), pp. 463-489.
- Borjas, G. J. (1991, April). Immigration Policy, National Origin, and Immigrant Skills: A Comparison of Canada and the United States. *NBER Working Paper*, 3691.
- Bratsberg, B., and Ragan, J. F. (2002). The Impact of Host-Country Schooling on Earnings: A Study of Male Immigrants in the United States. *The Journal of Human Resources*, 37(1), pp. 63-105.
- Bratsberg, B., and Terrell, D. (2002). School Quality and Returns to Education of U.S. Immigrants. *Economic Inquiry*, 40(2), pp. 117-198.
- Buzdugan, R., and Halli, S. S. (2009, May 26). Labor Market Experiences of Canadian Immigrants with Focus on Foreign Education and Experience. *International Migration Review*, 2, pp. 366-386.
- Carliner, G. (2000). The Language Ability of U.S. Immigrants: Assimilation and Cohort Effects. *International Migration Review*, 34(1), pp. 158-182.

- Chen, Y.-c. (2002, Jan). Chinese Values, Health and Nursing. *Journal of Advanced Nursing*, 36(2), pp. 270-273.
- Chiswick, B. R. (1978, October). The Effect of Americanization on the Earnings of Foreign-born Men. *Journal of Political Economy*, 86(5), pp. 897-921.
- Chiswick, B. R., and Miller, P. W. (2009, April). The International Transferability of Immigrants' Human Capital. *Economics of Education Review*, 28(2), pp. 162-169.
- Edwards, N., Bunn, H., Wang, C., and Zou, D. (1999). Building Community Health Nursing in the People's Republic of China. *Public Health Nursing*, 16(2), pp. 140-145.
- Ferrer, A., and Riddell, W. C. (2008, Jan). Education, Credentials, and Immigrant Earnings. *Canadian Journal of Economics*, 41(1), pp. 186-216.
- Ferrer, A., Green, D. A., and Riddell, W. C. (2006). The Effect of Literacy on Immigrant Earnings. *Journal of Human Resources*, 41(2), pp. 380-410.
- Fortin, N., Lemieux, T., and Torres, J. (2014). *Foreign Human Capital and The Earnings Gap Between Immigrants and Canadian-born Workers*. University of British Columbia.
- Gao, J. (2013). *Place of Birth, Location of Study and Immigrants' Relative Earnings*. Department of Economics, University of Ottawa.
- Green, D. A., and Worswick, C. (2012). Immigrant earnings profiles in the presence of human capital investment: Measuring cohort and macro effects. *Labour Economics*, 19(2), pp. 241-259.
- Grenier, G., and Nadeau, S. (2011). "Immigrant access to work in Montreal and Toronto. *Canadian Journal of Regional Science*, 34(1), pp. 19-33.
- Heckman, J. J. (2005). China's human capital investment. *China's human capital investment*, 16(1), pp. 50-70.

- Mattoo, A., Neagu, I. C., and Özden, Ç. (2008, October). Brain waste? Educated immigrants in the US Labor Market. *Journal of Development Economics*, 87(2), pp. 255-269.
- Mincer, J. (1958). Investment in human capital and personal income distribution. *Journal of Political Economy*, pp. 281-302.
- Mincer, J. (1974). *Schooling, Experience, and Earnings*. New York: Human Behavior and Social Institutions.
- Reitz, J. G. (2001, September). Immigrant skill utilization in the Canadian labour market: Implications of human capital research. *Journal of International Migration and Integration*, 2(3), pp. 347-378.
- Schultz, T. P. (1993). Investments in the Schooling and Health of Women and Men: Quantities and Returns. *Journal of Human Resources*, 28(4), pp. 694-734.
- Statistics Canada. (2016, Jan 01). *Classification of Full-time and Part-Time Work Hours*. Retrieved from Statistics Canada:  
<http://www.statcan.gc.ca/eng/concepts/definitions/labour-class03b>
- Wang, Y., and Yao, Y. (2003). Sources of China's economic growth 1952–1999: incorporating human capital accumulation. *China Economic Review*, 14(1), pp. 32-52.

## Appendix

Table A. Complete Regression Table with All Specifications

	<b>Total</b>		<b>Arts</b>		<b>Business</b>		<b>Applied Science</b>		<b>Health</b>	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
<b>Years of Schooling</b>	0.123*** (0.001)	0.069*** (0.001)	0.123*** (0.002)	0.070*** (0.003)	0.113*** (0.002)	0.080*** (0.003)	0.101*** (0.003)	0.079*** (0.002)	0.141*** (0.003)	0.065*** (0.005)
<b>Working Experience</b>	0.027*** (-0.001)	0.027*** (-0.001)	0.034*** (0.001)	0.035*** (0.001)	0.022*** (0.001)	0.025*** (0.001)	0.031*** (0.002)	0.024*** (0.001)	0.023*** (0.001)	0.030*** (0.003)
<b>Working Experience<sup>2</sup></b>	-0.000*** (0.00001)	-0.001*** (0.00001)	-0.0006*** (0.00002)	-0.0007*** (0.00003)	-0.0004*** (0.00002)	-0.0005*** (0.00003)	-0.0006*** (0.00004)	-0.0004*** (0.00002)	-0.0003*** (0.00003)	-0.0006*** (0.00007)
<b>Marital Status</b>	0.014*** (-0.003)	0.103*** (-0.003)	0.021*** (0.005)	0.125*** (0.008)	0.006 (0.006)	0.091*** (0.008)	0.025* (0.010)	0.090*** (0.005)	0.003 (0.007)	0.092*** (0.017)
<b>Official Language</b>	0.093** (-0.033)	0.143*** (-0.032)	0.123 (0.063)	0.200** (0.075)	0.053 (0.061)	0.075 (0.078)	0.125 (0.078)	0.100* (0.046)	0.007 (0.073)	0.208 (0.144)
<b>Current Province of Residence (Reference: Ontario)</b>										
British Columbia	-0.029*** (-0.005)	-0.010* (-0.005)	-0.066*** (0.008)	-0.039*** (0.011)	-0.005 (0.009)	0.013 (0.012)	-0.039** (0.015)	-0.003 (0.006)	-0.006 (0.010)	0.013 (0.021)
Alberta	0.067*** (-0.005)	0.083*** (-0.005)	0.045*** (0.009)	0.028* (0.012)	0.071*** (0.009)	0.058*** (0.013)	0.081*** (0.015)	0.097*** (0.007)	0.082*** (0.011)	0.107*** (0.024)
Prairies Canada	-0.040*** (-0.006)	-0.037*** (-0.006)	-0.063*** (0.011)	-0.075*** (0.015)	-0.046*** (0.011)	-0.017 (0.017)	-0.057* (0.022)	-0.038*** (0.009)	-0.004 (0.013)	-0.011 (0.030)
Quebec	-0.139*** (-0.004)	-0.117*** (-0.004)	-0.156*** (0.006)	-0.127*** (0.009)	-0.126*** (0.007)	-0.072*** (0.009)	-0.143*** (0.012)	-0.130*** (0.005)	-0.131*** (0.009)	-0.140*** (0.019)
Atlantic Canada	-0.128*** (-0.006)	-0.105*** (-0.006)	-0.152*** (0.011)	-0.132*** (0.015)	-0.146*** (0.010)	-0.093*** (0.016)	-0.159*** (0.020)	-0.108*** (0.008)	-0.063*** (0.012)	-0.122*** (0.030)

Table A Continued

	<b>Total</b>		<b>Arts</b>		<b>Business</b>		<b>Applied Science</b>		<b>Health</b>	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
<b>Immigrant Foreign Highest Degree Location Effect (Reference: Canadian Highest Degree Native holder)</b>										
<b>Western Countries</b>	-0.113*** (-0.016)	-0.097*** (-0.013)	-0.147*** (0.027)	-0.102*** (0.030)	-0.112*** (0.025)	-0.083* (0.034)	-0.073 (0.051)	-0.096*** (0.017)	-0.080* (0.036)	-0.009 (0.071)
<b>Developing Countries</b>	-0.270*** (-0.006)	-0.265*** (-0.006)	-0.306*** (0.012)	-0.312*** (0.016)	-0.286*** (0.012)	-0.298*** (0.015)	-0.264*** (0.016)	-0.262*** (0.008)	-0.242*** (0.015)	-0.313*** (0.028)
<b>China</b>	-0.270*** (-0.015)	-0.263*** (-0.014)	-0.321*** (0.031)	-0.370*** (0.049)	-0.269*** (0.030)	-0.331*** (0.046)	-0.254*** (0.024)	-0.274*** (0.017)	-0.331*** (0.045)	-0.327*** (0.077)
<b>India</b>	-0.357*** (-0.013)	-0.272*** (-0.012)	-0.440*** (0.020)	-0.328*** (0.028)	-0.301*** (0.029)	-0.294*** (0.025)	-0.316*** (0.031)	-0.263*** (0.017)	-0.211*** (0.042)	-0.283*** (0.067)
<b>Canadian Highest Degree Holder Place of Origin Effect (Reference: Canadian Highest Degree Native holder)</b>										
<b>Western Countries</b>	-0.065*** (-0.013)	-0.060*** (-0.013)	-0.066** (0.022)	-0.067* (0.030)	-0.074*** (0.022)	-0.096** (0.030)	-0.037 (0.040)	-0.056** (0.017)	-0.074* (0.029)	-0.086 (0.062)
<b>Developing Countries</b>	-0.094*** (-0.007)	-0.115*** (-0.007)	-0.112*** (0.014)	-0.123*** (0.019)	-0.095*** (0.013)	-0.117*** (0.016)	-0.097*** (0.020)	-0.122*** (0.010)	-0.097*** (0.015)	-0.186*** (0.033)
<b>China</b>	-0.132*** (-0.017)	-0.140*** (-0.019)	-0.202*** (0.043)	-0.041 (0.060)	-0.157*** (0.025)	-0.175*** (0.041)	-0.081* (0.034)	-0.156*** (0.023)	-0.123** (0.047)	-0.492*** (0.111)
<b>India</b>	-0.105*** (-0.02)	-0.101*** (-0.018)	-0.079 (0.048)	-0.032 (0.063)	-0.116*** (0.032)	-0.091* (0.036)	-0.148** (0.051)	-0.148*** (0.024)	-0.119** (0.038)	-0.1 (0.103)
<b>Year since Migration -10</b>	0.003*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.002* (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.006*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.004** (0.002)
<b>Constant</b>	8.633*** (-0.038)	9.457*** (-0.037)	8.469*** (0.072)	9.244*** (0.087)	8.826*** (0.070)	9.362*** (0.090)	8.903*** (0.096)	9.422*** (0.053)	8.488*** (0.084)	9.423*** (0.167)
Observations	-0.065***	-0.060***	19773	11089	18167	10547	6897	33981	12110	2741
R-square	-0.013	-0.013	0.252	0.193	0.181	0.135	0.184	0.131	0.238	0.168
* p<0.05, ** p<0.01, *** p<0.001										

