**Languages of work and earnings of immigrants in Canada outside Quebec**

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# Abstract

Using data from the 2011 National Household Survey, this study explores the effect on earnings of using different languages at work for immigrants in Canada outside Quebec. The economic returns of using various languages of work are analysed with OLS regressions. As noted by Grenier and Nadeau (2013), English plays an important role in the workplace because of its international lingua franca status. This study finds that the immigrants who receive the highest wages are those who work in English only. Those who earn the least are those who use their home language most often and English second on a regular basis. In terms of gender, the negative effects of using languages other than English at work are larger for males than for females. In addition, immigrants whose home language is closer to English get higher earnings.

# Content

# 1. Introduction

Canada is a diversified country, containing many cultures, ethnic groups and languages. It attracts large numbers of immigrants every year. According to the immigration Point System, immigrants are evaluated on the basis of their education, language proficiency, work experience and adaptability. As a result, when immigrants come to Canada and integrate into the labour market, they bring skills that are intended to provide benefits to the development of Canada. At the same time, when immigrants want to blend into the labour market, a major step is to search for a suitable job. In the process of finding a job, many factors will influence their decisions, such as the wages that they can receive, the workplace environment and the language requirements of the job.

Language plays a vital role in people's daily life. On the one hand, it is an expression of cultural identity. Individuals may wish to get first-hand materials about different societies (Christofides and Swidinsky, 2008). For example, immigrants can learn the traditions of the destination country from conversations with other people who live there. On the other hand, language is a way to communicate with others, especially in the workplace. If individuals can communicate in a language that everybody knows, they will accomplish their tasks more efficiently in a particular working environment (Grenier and Nadeau, 2013). Fluency in English or French is important for immigrants when they settle better in Canada.

According to Statistics Canada (2011), 98.7% of the workers in Canada say that they use English or French at work most often or on a regular basis. Specifically, 84.7% of the

working population report that they use English at work most often or on a regular basis, while about 25.3% of the people mention that they use French at work most often or on a regular basis. As expected, people who say that French is their language of work are more likely to work in Quebec. In all other regions, English largely dominates in the workplace, with 98.4% of the population using it. However, even when immigrants have a command of English or French, their language skills may not be strong enough to satisfy all the demands of the workplace. Immigrants who used a language other than English or French at work accounted for 4.7% of the entire working population in 2011, and the non-official language used most widely in the workplace was Chinese.

Furthermore, when immigrants join the labour market, an important factor that determines whether to work in English or in their mother tongues is the value of the investment in language skills, a form of human capital (Breton, 1978; Chiswick and Miller, 1995, 2001; Grenier and Nadeau, 2013). Individuals tend to prefer jobs with high economic returns. In other words, the choice between using English or other languages at work is related to earnings from employment.

Some economists have studied the relationship between language and the wages of immigrants. Not surprisingly, most studies have found that immigrants who are fluent in the dominant language get higher wages (Dustmann and Van Soest, 2002; Chiswick and Miller, 1995). Weak language skills can increase the wage gap between immigrants and native-born individuals by reducing productivity (Bleakley and Chin, 2004). If immigrants

in Montreal work in English, they can get higher earnings than those whose language of work is not English (Grenier and Nadeau, 2013).

In this paper, I wish to explore the relationship between languages of work and earnings among immigrants in Canada. Specifically, using data from the 2011 National Household Survey Public Use Microdata File and for immigrants who do not live in Quebec, I compare individuals whose language at work is English to those whose language of work is a non-official language. Then I try to determine whether or not it is true that working in English leads to higher earnings.

This paper contains five sections. The next one is a review of the literatures about the relationship between language and earnings, especially for immigrants. The following section introduces the data, the descriptive statistics and the methodology. The next section presents the analysis of the results. The last section is the conclusion.

## 2. Literature review

Many studies have analysed the earnings of immigrants. In some of them, language was used as a control variable, but without further discussion of that variable. For instance, Meng (1987) estimates that, as immigrants accumulate Canadian work experience, the wage gap between Canadian-born and immigrant males becomes smaller and that it is equal to zero after 14 years. Meng includes official language skills and mother tongues (English, French or other languages) in his regressions. Bonikowska, Green and Riddell (2010) find that an important part of the wage gap between immigrants and native

Canadians can be explained by differences in basic cognitive skills, and that improving the literacy and numeracy skills of immigrants could reduce this gap. They say that an immigrant's mother tongue can influence literacy and numeracy skills. The rest of this section reviews studies that focus specifically on the language attributes of immigrants. I will first consider the relationship between language proficiency and earnings, and then I will discuss how language of work affects earnings.

## 2.1. Language proficiency and earnings

Many scholars have explored the relationship between language skills and earnings. Using language proficiency as a variable to identify immigrants' language abilities, they usually found a positive relationship with economic returns.

Chiswick and Miller (1994) proposed a conceptual framework for a better understanding of the factors that affect language proficiency. They hypothesized that skills in a language improve when there are *economic benefits* to learning it, when there is *exposure* to that language and when there are conditions that favour *efficiency* in learning it. They explain that a higher level of education and longer duration in a country can increase language fluency while an older age at immigration and higher minority-linguistic concentration can decrease it. Marital status, place of birth and place of residence also have effects on language proficiency. Specifically, in English Canada, married immigrants tend to speak English more fluently than unmarried immigrants. Referring to places of birth, they report that most immigrants coming from Asia and Central and South America use English when

they are in English Canada while they choose to speak French or to be bilingual in Quebec. In English Canada, immigrants living in the west of Ontario are more likely to speak English than other languages, while those living in the east of Ontario tend to be bilingual rather than to speak only English.

In another article, Chiswick and Miller (1995) stress that economic returns can be a key determinant of obtaining language capital. Their findings are consistent with those of their 1994 article. In addition, marital status and the presence and age of children can affect language proficiency. This is because immigrants can increase their language proficiency by marrying a native speaker, and parents can improve their language fluency through their children.

Chiswick and Miller (2001) move forward to develop a model of language acquisition among immigrants and test it using adult male data from the 1991 Canadian Census. They believe that the geographic distance of the origin country from Canada, the linguistic distance between the mother tongue and English or French, refugee status and place of residence, both before and after immigration, affect language fluency, thus determining economic well-being. Based on previous studies about language scores, Chiswick and Miller (2005) develop a quantitative way to express the distance between English and other languages. They match different language codes in the 1990 and 2000 U.S Census with language scores which are based on the difficulty for native-born English-speaking Americans to learn a foreign language. Language distance is defined as the inverse of the

language score. In their study, they use respondents' home languages to determine language scores and find that linguistic distance is negatively related to language proficiency in both U.S. and Canada.

Some studies evaluate language proficiency in other ways. Dustmann (1997) examines the speaking and writing abilities of immigrants in Germany. He notes that parental education has a large influence on both abilities while ethnic concentration does not have a strong effect. Grenier and Nadeau (2011) use not only official language but also home language to identify language proficiency. They argue that the use of the language spoken mostly at home is an indirect way to evaluate official language proficiency. For example, immigrants whose home language is English in Toronto are expected to be more fluent in English than those whose home language is not English.

Above all, many different factors associate with immigrants' language proficiency that can be related to efficiency, exposure and economic incentives. Earnings, as the outcome of economic incentives, is the variable that matters the most for immigrants. If immigrants look forward to getting higher income, they need to have good command of the destination language (Chiswick and Miller, 1995).

Tainer (1988) argues that language proficiency can increase the earnings of foreign-born men in the U.S. and that it has different influences on different ethnic groups. If language variables are omitted, she says that there can be some errors in the estimation of the

influences of education and duration in the U.S. on earnings.

Based on the 1981 and 1986 Australian Population and Housing Census, Chiswick and Miller (1995) analyse immigrants in Australia and compare them to those in the United States, Canada and Israel. Their analysis shows that English language fluency is significantly and positively associated with earnings. Moreover, the United States has the largest coefficient for language proficiency on earnings, and Australia has the smallest coefficient.

Chiswick and Miller (2002) do a similar study using 1990 United States Census data. They consider adult men from 25 to 64 years old. They find that immigrants born in non-English-speaking countries who can speak English well earn 14% more than those who lack this ability. They stress that it is vital for immigrants from non-English-speaking countries to have a good command of English. Furthermore, they note that education, work experience, marital status, citizenship and employment status have complementary influences on earnings. In other words, those who are fluent in English receive larger economic returns if they are married and have more years of schooling, more experience and more working weeks in a year. Specifically for marital status, married males who are fluent in English earn 23% more than unmarried males who are fluent in English and married males who are not fluent in English just earn 15% more than those who are not fluent in English; this also means that married males who are fluent in English earn more than those who lack this ability. The places where immigrants live also matter. Specifically,

individuals who are fluent in English and reside in a non-English linguistic concentration area receive lower income than those who are not good at English and live in such an area. In their study of the assimilation of immigrants in the US, Chiswick and Miller (2012) add a new variable, linguistic distance, to their model. They find that if an immigrant's mother tongue is close to English according to their measure, the immigrant gets higher earnings just after arrival, but the growth in earnings is faster for immigrants whose linguistic distance relative to English is larger.

Dustmann and Van Soest (2002) find that language fluency has more influence on the earnings of immigrants than the previous studies suggest. As there are unobserved heterogeneity and measurement errors due to the self-reporting of language skills, when the OLS estimation method is used in the previous studies, they try to find the influences of these weaknesses on the relationship between language proficiency and earnings by focusing on 10-year German Socio-Economic Panel data. They try to use minimum distance estimation and IV estimation to address the bias. They also include parental and household composition variables to reduce the correlation between language proficiency and unobserved heterogeneity and use parental education as an instrument to reduce the measurement errors in different regressions. As a result, they find that unobserved heterogeneity yields an upward bias on the effect of language proficiency on earnings and time-varying measurement errors cause a downward bias on the effect. The negative bias is bigger than the upward bias of unobserved heterogeneity.

Bleakley and Chin (2004) observe that adults who immigrated to the U.S. when they were children achieve a higher level of English fluency and get a higher wage. Duration of residence in the U.S. is a vital factor for immigrants to get a higher economic return.

Even though Hum and Simpson (1999) consider that language, which has an insignificant coefficient in their results, is not the main reason for the lower wages of Canadian visible minorities, a positive relationship between language and immigrants' earnings still exists in other researches. Chiswick and Miller (2003) find that the earnings of immigrants in Canada rise with years of schooling, years of experience in the labour market before immigration, longer duration in Canada and better fluency in the official languages. Greater fluency in the destination language leads to better skills in finding a job and improves earnings. Based on their empirical work, they find that language proficiency can affect productivity directly.

Boyd and Cao (2009) use 2001 Canadian Census data to study the effects of language proficiency on Canadian adult immigrants' earnings. They categorise immigrants' language proficiency into five levels based on their mother tongues (English, French, or other languages), their home languages (English, French, or other languages) and their abilities to conduct a conversation in English or French. They find a positive relationship between language proficiency and earnings. They recommend that, to reduce the loss of potential income, immigrants improve their levels of language fluency as early as possible. They also suggest that work location plays a mediating role between language fluency and

earnings; they find that, after including work location variables in the model, the loss of earnings of immigrants who are not fluent in the official languages becomes smaller. Using quantile regressions to examine whether the impacts on earnings differ along the earnings distributions of women and men, they find that the top quarter of the income distribution often reflects higher earnings for immigrants who have better language skills, and if immigrants are at the higher ends of the earnings distributions, especially at the top quarter, the loss of having low level language skills is the highest.

In Canada, many studies view Quebec as a special case. They conduct comparative studies between Quebec and the rest of Canada or analyse Quebec specifically. Carliner (1981) concludes that, both within and outside Quebec, speaking English gives individuals advantages on earnings. Likewise, Chiswick and Miller (1994) say that learning English is crucial for immigrants in Canada as the English labour market is larger and pays higher wages. Carliner (1981) also postulates that immigration status and experience are not critical to illustrate the wage gaps between individuals who speak different languages in Canada. However, Hum and Simpson (1999) point out that immigration status is important to explain the wage gap for visible minorities in Canada. In this paper, I only focus on immigrants in Canada.

Shapiro and Stelcner (1997) employ data from the 1991 Canadian Census to explore earnings disparities in Quebec and to compare them to those estimated from the 1971 and 1981 censuses. They control not only for demographic variables, immigration and human

capital factors, but also for labour market variables, such as occupation and industry. It is clear that people value knowledge of French more in Quebec and that Francophones are at an advantage in the Quebec labour market. There is no premium decrease for Anglophones who can speak French. Allophones are at a disadvantage, not only on the earnings side, but also on their relative positions in Quebec. The authors also find that employment status affects the economic benefits of language skills, especially for men. Specifically, many jobs with lower wages in the service sector are part-time jobs. Nadeau (2010) explains that Anglophones get higher wages in Canada outside Quebec than Francophones from 1970 to 2000 because the labour market demand for English was larger, while Francophones in the public sector have better economic returns than Anglophones in Quebec as a result of the large demand for French in that sector.

Therefore, the positive relationship between language proficiency and earnings cannot be denied. Previous researches have also found that many other factors can affect the earnings of immigrants, such as education, work experience, years since migration, work status, etc. Immigrants with a longer duration in Canada, a higher education level and a full-time job tend to speak English fluently, thus increasing their earnings. So language is a necessary factor when studying immigrants' earnings.

## 2.2. Languages of work and earnings

More recently, some researchers have turned their attention to languages used at work. This research became possible due to the new questions about languages of work introduced in

the 2001 Census, and included in 2006 Census and the 2011 National Household Survey.

Christofides and Swidinsky (2008) aim at studying the effect of second official language skill on the earnings of Canadian-born individuals whose mother tongue is English or French with the 2001 Canadian Census. The data on language is available for official language and languages of work. They find that in Canada outside Quebec, bilingual men who use English mainly and French frequently at work earn the most, but bilingual men who use only French at work earn the least. Males who are fluent in French have more opportunities to get a higher-paying job. For women, there is a stronger relationship between languages of work and earnings. Women who know English and French well can earn 6.6% or 9.3% more than women who only speak English fluently, depending on whether they use French as a language of work or not. The authors note that many females whose language of work is French are teachers. In Quebec, French as a language of work increases the wages of bilingual workers, and bilingual workers who use English frequently at work get a higher wage than those who do not.

Also using the 2001 Canadian Census data on languages of work, Li and Dong (2007) focus on Chinese immigrants in Canada and aim to compare the economic values of employees and entrepreneurs who work in the enclave economy to those who work in the mainstream economy. There is no unique way to identify the enclave economy, and they define it based on the language of work. Specifically, they choose the use of non-official languages in the workplace as a standard to define participation in the enclave economy. If

they are in an environment where people most often use an official language at work, they are in the mainstream economy. Otherwise, they are in the enclave economy. They find that males and females get lower earnings in the enclave economy than those in the mainstream economy, no matter whether they are self-employed or employed. In addition, employed individuals, both men and women, get higher earnings than self-employed individuals in the mainstream economy, while some self-employed immigrants get higher incomes than employed employees in the enclave economy. Furthermore, they argue that the wage gap between the mainstream economy and the enclave economy is primarily due to language characteristics and occupations.

Grenier and Nadeau (2013) use 2006 Canadian Census data to investigate the effect of using a second language in the workplace in Montreal for native-born individuals and immigrants workers whose mother tongue is an official language (English or French) or another language. Considering earnings, both the French mother tongue group and the other mother tongues group benefit a lot from using English as a second language at work because of the international status of English as a lingua franca. In contrast, the English mother tongue group gains little by using French. For the French and the other mother tongues groups, a higher education level contributes to using English more frequently at work, but for the English mother tongue group, education has no such influence on French as a second language.

To summarize, the literature universally acknowledges that language proficiency has a

positive and significant relationship with earnings, especially for immigrants. Regarding languages of work, English has a dominant role in Canada except in Quebec, which means that there are plenty of advantages for immigrants outside Quebec to use English at work. Specifically, if immigrants use English as their language of work, they are expected to be paid more than those using other languages. Also, gender, age, education, duration of stay in Canada, marital status, work status, experience and place of birth are all factors that can influence the earnings of immigrants. In this paper, the languages that are used most frequently or on a regular basis at work will be the focus of attention for the study of the earnings of immigrants.

## 3. Data and descriptive statistics

### 3.1. Sample

This paper uses data from the 2011 National Household Survey Public Use Microdata File (a complement to the 2011 Canadian Census) which targets all individuals whose usual place of residence is a private dwelling in Canada. The data file contains a total of 887,012 records, which is a sample of 2.7% of the Canadian population; non-immigrants account for 77.6% of the sample, immigrants for 21.4%, and non-permanent residents for 1.1%. There are 124 variables in the data file, 82% of which are about personal characteristics and 18% about family, household and dwelling characteristics. Among all the variables, 18 concern language. Specifically, the language variables record the first official language spoken, knowledge of official languages, knowledge of non-official languages, mother tongue, home language and language of work.

Some restrictions on the sample are applied before doing the analysis. Firstly, the analysis only focuses on males and females aged 25 to 64, excluding younger individuals and retirees, whose main social activities are not work. I include both full-time workers and part-time workers in my sample. I also drop immigrants who came to Canada in 2010 and 2011, because their earnings in 2010 are not for an entire year in Canada. To simplify, I consider only immigrants whose language of work is English or a non-official language, omitting those who use French as a language of work. Consequently, I exclude immigrants living in Quebec where many people speak French at work. In the language of work questions, individuals are asked to report the languages used most often or on a regular basis at work. Because this paper does not consider French in the workplace, I drop individuals who work in French most often or on a regular basis. In order to have clear language variables, I do not include immigrants who use both English and home language on a regular basis and immigrants who answer that they use a non-official language both most often and on a regular basis. There are very few observations with those characteristics.

The dependent variable is gross wages and salaries in 2010. Observations with annual wages less than $500 and more than $200,000 are regarded as outliers and removed from the sample so as to eliminate very small and very large values of earnings. This paper only cares about immigrants and drops a small number of immigrants who reported that their birthplace is Canada. After applying these restrictions and dropping some observations with missing values of age, place of birth, education, year of immigration and employment status, the total

sample includes 58,889 immigrants, 29,092 (49.4%) of whom are women and 29,797 (50.6%) of whom are men.

## 3.2. Variables

The dependent variable for this analysis is annual wages or salaries, defined as gross wages and salaries before deducting income tax, pensions and employment insurance in 2010. I take the logarithm of it in the regression. The independent variables are categorized into six groups: geographic, demographic, immigration, labour market activity, human capital and language ability.

For the geographic variables, I use region in my regressions. As I exclude Quebec, there are nine provinces and three territories left. According to the statistics, the largest numbers of immigrants live in Ontario, British Columbia and Alberta. As a result, I re-categorized the provinces and territories into five regions with Ontario as the reference group. I put Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick and Northern Canada together and call that region Atlantic and Northern Canada. Because of the small sample sizes, Northern Canada and Atlantic Canada are combined even though they are geographically far from each other. Manitoba and Saskatchewan constitute Central Canada. Ontario, Alberta, and British Columbia are represented individually.

I include age, age squared, and marital status in the regression as the demographic variables. In order to define the age of immigrants in years, I choose the midpoints of the five-year

age groups that are provided by the public use data. I also use a dummy variable to define

marital status, with a value of one for the legally married (and not separated) and living

common law. The value zero includes those who were never legally married (and not living

common law), who are separated (and not living common law), who are divorced (and not

living common law) and who are widowed (and not living common law).

The immigration variables contain years since immigration and place of birth. The number

of years since migration is equal to the difference between 2011, when this survey was

conducted, and the year of immigration. Here, all the birthplaces in the regression are

classified by continent. Table 1 presents the different places of birth. North America is the

reference group. Within Asia, I list China, India and the Philippines separately.

**Table 1 Place of birth**

| Variable | Place of birth |
|---|---|
| North America | United States, Central America, Jamaica, other Caribbean and Bermuda |
| South America | South America |
| Europe | UK, Germany, Other Northern and Western Europe, Poland, Other Eastern Europe, Italy, Portugal, Other Southern Europe |
| Africa | Eastern Africa, Northern Africa, Other Africa |
| China | China |
| India | India |
| Philippines | The Philippines |
| Other Asia | West Central Asia and the Middle Asia, Hong Kong, Other Eastern Asia, Other Southeast Asia, Pakistan, Other Southern Asia |
| Oceania and others | Oceania and others |

In the questionnaire, there are two questions related to language of work. The first question

asks which language a person uses most often in a job. The second one asks whether there

is another language that is used on a regular basis and, if the answer is yes, which one it is.

Based on those two questions, I create the following language of work variables: *Only*

*English*, *Only home*, *English second*, *Both languages* and *Home second. Only English* is the

reference group. Table 2 shows the definitions of the language variables. For the majority

of immigrants, if they answer that they speak a non-official language at work, the

non-official language they speak are their home language. It is reasonable for most people

to choose the language that they know the best and to use it at work if they can. Carliner

(1981) notes that the home language is the language that people currently use and that it

can reflect language skills. As a consequence, if immigrants do not use English at work,

they will use their home language. In this study, I also use a variable for linguistic distance

(LD), whose purpose is to measure the distance between the home language and English.

To construct it, I use the method based on language scores proposed by Chiswick and

Miller (2001, 2005). Those scores measure the difficulty for English-speaking people to

learn a foreign language. The larger the score of a language, the easier it is for

English-speaking people to learn that language. Based on a set of language scores (LS),

linguistic distance is defined as 1/LS. For the very few immigrants whose home language is

classified in the "other" home language category, I calculate LD based on birthplace. For

instance, if an immigrant speaks an "other" home language, e.g. Mongolian, and his

birthplace is China, then his language score is assumed to be 1.375, and the language

distance is 1/1.375. Table A1a and table A1b in the Appendix show language scores based

on home language and birthplaces respectively.

**Table 2 The descriptions of the language variables**

| Variables | Description |
|---|---|
| Only English | Immigrants only use English at work (English exclusively) |
| Only home | Immigrants only use home language at work (home language exclusively) |
| English second | Immigrants use home language most often and use English on a regular basis |
| Both languages | Immigrants use English and home language equally often |
| Home second | Immigrants use English most often and use home language on a regular basis |

The labour market activity variables include work status and weeks worked in 2010. Respondents are required to report if they worked mainly full-time weeks or part-time weeks in 2010, where full-time means 30 hours or more weekly. A dummy variable is created and takes the value one for immigrants who work mainly full-time weeks and the value zero for those who mainly work part-time. Weeks worked is the number of working weeks in 2010 spent working on all kinds of jobs. I also use the mid-point of each working weeks group in the codebook and take the logarithmic value of weeks worked in the estimation.

The human capital variable is education. I re-code the highest certificate, diploma or degree variable. From its 13 initial levels, I change it into six levels. Each level is represented by a dummy variable and the reference group is no certificate, diploma or degree. Table A2 in the Appendix shows the different education levels based on the highest certificate, degree or diploma.

## 3.3. Descriptive statistics

Table A3 in the Appendix provides mean values and standard deviations of the variables (standard deviations are not shown for the dummy variables). Table 3 presents those values for the language variables.

From Table A3, we can see that the mean value of annual wages for men is higher than for women. For both genders, 64% of the immigrants live in Ontario. British Columbia and Alberta are the other two main regions of residence of immigrants. More than half of the immigrants in the sample come from Asia. With respect to the education variables, the largest proportion of immigrants in this sample has a postsecondary degree below the university level, with 24.7% for males and 25.3% for females. Immigrants with a bachelor's degree are in the second place, with proportions of 21.6% and 23.4% for males and females respectively. The proportion of immigrants who have a degree above bachelor level is larger for males than for females in this sample.

Table 3 presents the distribution of the languages of work for males and females respectively. The majority of immigrants work in a single language environment, and English is by far the dominant language at work. Specifically, about 86% of males and females use English only at work; however, about 7% also use their home language regularly at work while using English most often. In addition, about two percent of immigrants use both languages equally at work. Finally, about 3% of immigrants use their

home language only and a small proportion use it most often and see English as a second

language at work.

**Table 3 Distribution of the languages of work, by gender**

| Variables | Male | Female |
|---|---|---|
| Only English | 0.862 | 0.857 |
| Only home | 0.032 | 0.033 |
| English second | 0.017 | 0.016 |
| Both languages | 0.019 | 0.023 |
| Home second | 0.070 | 0.071 |
| Total | 1.000 | 1.000 |

Table 4 shows the distribution of the languages of work and the mean wages by region.

Immigrants in Ontario and British Columbia are different from those in other regions.

Unlike the Atlantic provinces, Northern Canada and Alberta where more than 90% of

immigrants work in English only, British Columbia has smaller proportions of only English

users at work: 76.7%. Immigrants in Ontario and British Columbia choose to use their

home language only at work more than in the other regions, especially in British Columbia

where 6.9% of immigrants work by using only their home language. In addition, another

9.7% of them also use their home language regularly while using English mostly. They are

followed by those from Central Canada and Ontario, with 8% and 6.4% of them

respectively using regularly their home language. There are also larger proportions of

immigrants in Ontario and British Columbia who use both languages equally or their home

language mostly and English regularly. In Ontario and British Columbia, Toronto and

Vancouver are the major metropolitan areas where many immigrants live. Many services and jobs are available to immigrants in languages other than English.

The wages of immigrants in British Columbia are the lowest. Immigrants working in Ontario also receive lower wages than those in Atlantic and Northern Canada and in Alberta, where immigrants are more likely to use English at work and less likely to use home language at work. This suggests that the higher wages earned among immigrants can be partly explained by using more English at work in Canada.

**Table 4 Distribution of the languages of work and the mean wages, by region**

| Variables | Atlantic and Northern Canada | Central Canada | Ontario | British Columbia | Alberta |
|---|---|---|---|---|---|
| **Employment wages (log value)** | 10.485 | 10.361 | 10.449 | 10.318 | 10.547 |
| **Language variables** | | | | | |
| Only English | 0.976 | 0.886 | 0.879 | 0.767 | 0.903 |
| Only home | 0.003 | 0.012 | 0.025 | 0.069 | 0.015 |
| English second | 0.003 | 0.009 | 0.013 | 0.033 | 0.009 |
| Both languages | 0.007 | 0.013 | 0.019 | 0.034 | 0.013 |
| Home second | 0.011 | 0.080 | 0.064 | 0.097 | 0.060 |
| Total | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Table 5 shows distribution of the languages of work and the mean wages by birthplace for all immigrants. Immigrants from regions other than Asia tend to use relatively more English at work than those from Asia, especially China and India. Those immigrants are much less likely to use only English at work (63.4% and 80.8% for China and India respectively). There are more immigrants from these two countries who use only their

home language at work (15.4% and 4.9% for China and India respectively). Immigrants from China are more likely to use their home language mostly and English on a regular basis than their counterparts from India. This situation is the same for immigrants from China and India who use both languages equally, or use English mostly and their home language regularly. The prevalent use of the home language among these immigrants can be explained by the large number of immigrants from China and India who consume products and services made especially for them.

Looking at the wages, immigrants from Asia get lower wages than their counterparts from other places. The mean value of wages for immigrants from China is the lowest, and they are followed by immigrants from India. This again suggests a positive relationship between using English at work and earnings.

**Table 5 Distribution of the languages of work and the mean wages, by place of birth**

| Variables | North America | South America | Europe | Africa | Oceania | China | India | Philippines | other Asia |
|---|---|---|---|---|---|---|---|---|---|
| Employment wages (log value) | 10.457 | 10.447 | 10.589 | 10.510 | 10.550 | 10.277 | 10.345 | 10.408 | 10.377 |
| Language Variables | | | | | | | | | |
| Only English | 0.957 | 0.891 | 0.926 | 0.959 | 0.960 | 0.634 | 0.808 | 0.924 | 0.804 |
| Only home | 0.003 | 0.008 | 0.008 | 0.002 | 0.000 | 0.154 | 0.049 | 0.002 | 0.040 |
| English second | 0.007 | 0.008 | 0.007 | 0.001 | 0.000 | 0.049 | 0.016 | 0.003 | 0.028 |
| Both languages | 0.005 | 0.014 | 0.010 | 0.008 | 0.005 | 0.041 | 0.040 | 0.010 | 0.032 |
| Home second | 0.028 | 0.079 | 0.049 | 0.030 | 0.035 | 0.122 | 0.087 | 0.061 | 0.096 |
| Total | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Table 6 shows mean values and standard deviations of linguistic distance (LD). Men and women have similar linguistic distance distributions. As I mentioned before, males earn more than females. In this way, the relationship between linguistic distance and earnings is not so clear.

The mean values of linguistic distance are the smallest in Atlantic and Northern Canada, while the value in British Columbia is the largest. The mean values of linguistic distance in the other regions are around 0.39. Table 4 has shown the mean wages of immigrants by region. Even though immigrants from British Columbia earn the least, those from Atlantic and Northern Canada do not earn the most. Compared with immigrants from Atlantic and Northern Canada, immigrants in Ontario and Central Canada have lower wages, but larger linguistic distance. This partly shows the negative effect of linguistic distance on earnings here.

Considering the values of linguistic distance by place of birth, the mean values are larger for immigrants from Asia, especially for immigrants in China. Specifically, the mean value of linguistic distance for immigrants born in China is 0.626, which reflects the small linguistic score of Chinese. Table 5 has shown the mean wages by birthplace. Immigrants from Asia get lower wages than those from other regions and immigrants in China earn the least. Also, immigrants from Oceania and Europe get higher wages with smaller linguistic distance. This suggests a negative effect of linguistic distance on earnings for immigrants in

Canada.

**Table 6 Mean and standard deviation of linguistic distance (LD)**

| Linguistic Distance | mean | standard deviation |
|---|---|---|
| **By gender** | | |
| male | 0.397 | 0.273 |
| female | 0.394 | 0.270 |
| **By region** | | |
| Atlantic and Northern Canada | 0.141 | 0.251 |
| Central Canada | 0.389 | 0.243 |
| Ontario | 0.394 | 0.260 |
| British Columbia | 0.412 | 0.300 |
| Alberta | 0.388 | 0.282 |
| **By birthplace** | | |
| North America | 0.270 | 0.218 |
| South America | 0.444 | 0[1] |
| Europe | 0.186 | 0.233 |
| Africa | 0.341 | 0.220 |
| China | 0.626 | 0.251 |
| India | 0.418 | 0.252 |
| Philippines | 0.500 | 0 |
| Other Asia | 0.539 | 0.257 |
| Oceania and others | 0.156 | 0.256 |

## 3.4. Model

The estimation will be done separately for males and females and I use a standard OLS

log-earnings equation based on Christofides and Swidinsky (2008), with the form:

$$\log(wages) = \beta_1 + \beta_2 * L + \beta_3 * Z + \varepsilon$$

where log(wages) is the natural logarithm of annual wages or salaries, $L$ is a vector of

language variables , and $Z$ is a vector of control variables that affect annual wages; the

control variables include age, age squared, marital status, education level, years since

immigration, place of birth and employment activities. $\beta_1$ is a constant. $\beta_2$ and $\beta_3$ are

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[1] The standard deviation for South America is zero. It is because that the language score of all immigrants born in South America is same. It is also true for the Philippines.

vectors of coefficients, and ε is an error term with classical properties.

First, for Canada outside Quebec, I will use *Only home*, *English second*, *Both languages* and *Home second* as the language variables in the regression, with *Only English* as a reference group. I will then compare the effect of languages of work on earnings for immigrants who live in Toronto, Vancouver and the rest of Canada. In another analysis, I will look at the influence of languages of work on the earnings of two specific groups of immigrants for all Canada except Quebec: the Chinese and the Indians. Finally, I will add the linguistic distance variable (LD) in the regressions and see how the effects of languages of work for all immigrants in Canada outside Quebec and for immigrants who live in Toronto, Vancouver and the rest of Canada are affected. The next section reports the results of those regressions.

## 4. Empirical Results

Table A4 in the Appendix shows the OLS estimates of the effects of languages of work and the other explanatory variables on earnings for males and females respectively in Canada outside Quebec. The coefficients of the language variables are presented in tables in the text.

The demographic variables age and age squared are significant factors of immigrants' wages. Earnings for males increase at a rate of 5.3% per year and earnings for females increase at a rate of 4.4% per year. But the positive effect decreases through time because of the negative sign of age squared. Being married is significantly and positively related to

wages for males, while it is not significant for females.

With respect to region, compared to the reference region of Ontario, the coefficient of Atlantic and Northern Canada is negative, but it is not significant. Males in Alberta earn 13.7% more than their counterparts in Ontario and females in Alberta earn 8.5% more than their counterparts in Ontario. For immigrants in British Columbia, there is little earnings difference for males, but females earn 4.2% less than those in Ontario.

In terms of education levels, the reference group is no certificate, diploma or degree. All the coefficients of the education variables for males and females are positive and significant, indicating that the higher the educational qualification, the more earnings immigrants will receive. Also, females benefit more than males if they have a certificate. Compared with females who do not have a certificate, females earn 12.9% more with a high school diploma, 27.9% more with a postsecondary degree below the university level, 41.2% more with a university diploma, 53.2% more with a bachelor's degree and 60% more with a certificate above a bachelor's degree, while males earn 4.3% more with a high school diploma compared with those who do not have a certificate, 18.3% more with a postsecondary degree below the university level, 23.6% more with a university diploma, 38.5% with a bachelor's degree and 47% more with a certificate above a bachelor's degree.

The variable "years since immigration" has a similar effect for males and females. Specifically, males face an increase of 0.8% of earnings per year of duration in Canada, and females face a 1% increase per year of duration in Canada. Considering birthplace, the

reference group is North America and most of the coefficients of birthplaces in the regression are significant. It is interesting that immigrants from Asia earn less than those from North America, especially males from China and females from India. Men born in China earn 9.5% less than comparable North American-born men and women born in India earn 9.2% less than comparable North American-born women. Males from Europe and Oceania earn 6.4% and 10.8% more than their counterparts from North America. The coefficients of South America and Africa are not significant. That suggests that there is no evidence that there are earnings differences between immigrants from South America and Africa and those from North America.

The labour market activity variables are positively and significantly associated with immigrants' earnings. There is a big earnings advantage for an immigrant who works full-time: 92.9% for male and 77.8% for female. There is about a 0.7% increase in earnings for immigrants when their working weeks increase 1%.

This paper pays particular attention to language of work and I use immigrants who only use English at work as the reference group. Table 7 presents the effects of languages of work on the wages of immigrants. All coefficients are negative and significant at the 0.1% level, indicating that not using only English at work leads to earnings disadvantages. This can be explained by the importance of English in Canada and by the international lingua franca status of English (Grenier and Nadeau, 2013). If immigrants work in English mostly but also use their home language regularly, they will earn 15% less for males and 11% less for

females than those who use only English. If they change to use both languages equally often at work, the result is estimated at 21.8% less for males and 17.2% less for females. Immigrants who use their home language most often and English regularly get lower wages. Immigrants who work only in their home language lose 25.8% of earnings for males and 18.7% of earnings for females compared to those who use only English. It is clear that using more English and less home language at work helps to improve the level of earnings. Further, females experience smaller wage gaps than males. According to Christofides and Swidinsky (2008), this may be because that "they are more likely to work in the relatively lower-paying white-collar occupations" (page 23). However, there is an interesting and puzzling result. For both males and females, immigrants earn more if they choose to use only their home language instead of using their home language mostly and English regularly, which may be due to some higher-earning immigrants who respond that they use only home language at work, and I will discuss it later.

**Table 7 The effects of languages of work on the wages of immigrants in Canada outside Quebec**

| Languages of work | Male | Female |
|:---:|:---:|:---:|
| **Only home** | -0.258[***] | -0.187[***] |
| | (-10.05) | (-7.32) |
| **English second** | -0.362[***] | -0.302[***] |
| | (-10.93) | (-8.63) |
| **Both languages** | -0.218[***] | -0.172[***] |
| | (-6.95) | (-6.00) |
| **Home second** | -0.150[***] | -0.110[***] |
| | (-8.84) | (-6.56) |

Notes: 1) t statistics in parentheses
2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
3) Other control variables include age, age squared, marital status, region, years since immigration, education level, place of birth, work status and working weeks. The complete regression results are in Appendix Table A4.

Table A5 in the Appendix presents the results of the complete OLS estimates for immigrants living in Toronto, in Vancouver and in the rest of Canada except Quebec. The coefficients for age, age squared, marital status, education, years since immigration, birthplaces, work status and working weeks all show similar patterns to those discussed earlier.

**Table 8 The effects of languages of work on the wages of immigrants in Toronto, Vancouver and the rest of Canada (ROC)**

| Languages of work | Toronto | | Vancouver | | ROC | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| Only home | -0.283*** | -0.158*** | -0.271*** | -0.276*** | -0.137* | -0.141* |
| | (-7.50) | (-4.24) | (-6.32) | (-6.27) | (-2.01) | (-2.18) |
| English second | -0.315*** | -0.241*** | -0.407*** | -0.346*** | -0.391*** | -0.424*** |
| | (-6.36) | (-4.51) | (-7.20) | (-6.30) | (-5.29) | (-4.53) |
| Both languages | -0.210*** | -0.161*** | -0.283*** | -0.163** | -0.135 | -0.238*** |
| | (-4.89) | (-4.06) | (-4.84) | (-3.06) | (-1.80) | (-3.58) |
| Home second | -0.164*** | -0.116*** | -0.140*** | -0.122*** | -0.137*** | -0.0889* |
| | (-6.87) | (-4.99) | (-3.98) | (-3.61) | (-4.05) | (-2.43) |

Notes: 1) t statistics in parentheses
2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
3) Other control variables include age, age squared, marital status, years since immigration, education level, place of birth, work status and working weeks. The complete regression results are in Appendix Table A5.

Table 8 shows the effects of languages of work on the wages of immigrants in Toronto, Vancouver and the rest of Canada (ROC). The coefficients of only home language at work are lower for the ROC than for Toronto and Vancouver. That may be due to the very few of those who only use only their home language at work live in the ROC (as shown in Table 4). However, females in the ROC who use home language mostly and English regularly are at a disadvantage compared to those in Toronto and Vancouver. Specifically, those females earn 42.4% less than those using only English. In the ROC, immigrants who use English

mostly and home language regularly are at less of a disadvantage than in Toronto and Vancouver. In Vancouver, males who use both languages equally at work earn less than those who use home language exclusively at work, but females are not in this situation. Females in Vancouver could earn 11.3% more if using both languages equally than if using only home language.[2] In addition, in Toronto and the ROC, females in earn 0.3% or 9.7% less if using both languages equally than females who use only home language, while males in these two areas earn 7.3% and 0.2% more if using both languages equally.[3] The earnings advantage for females is not obvious in the ROC. Above all, there exist differences in the effects of using different languages on earnings, but it seems that using more English at work and less home language at work helps immigrants to increase their wages. But the wage difference between using both languages equally often at work and only home language at work depends on the location of the workplace within Canada, which may be explained by the fact that each region has its own focus on the development of industry and business that leads to distinctive demands for different language skills.

Table A6 in the Appendix presents the complete OLS estimates for immigrants from mainland China and India. The results with respect to age, age squared, years since immigration, work status and working weeks are the same as the previous ones. For the education levels, the results show that a higher education level leads to higher wages. But there is a special situation here. Unlike females born in China who get higher economic

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[2] This number is the difference between the coefficients for using both languages equally and using only home language for females in Vancouver: (-0.163) - (-0.276) =0.113.

[3] This number is the difference between the coefficients for using both languages equally and using only home language for females in Toronto: (-0.161) - (-0.158) =-0.003. For females in the ROC: (-0.141) - (-0.238) =-0.097. For males in Toronto: (-0.210) - (-0.283) =0.073. For males in the ROC: (-0.135) - (-0.137) =0.002.

returns to a higher level of education than males, females born in India do not receive higher returns to education than males. It may be that females from India with a high education level still face several important gender barriers which influence their desire to have a new life (Purkayastha, 2005). Even though the coefficients for marital status are not significant, most of the coefficients' signs are consistent with the previous results.

**Table 9 The effects of languages of work on the wages of immigrants born in China and India**

| Languages of work | China | | India | |
|---|---|---|---|---|
| | **Male** | **Female** | **Male** | **Female** |
| **Only home** | -0.361*** | -0.263*** | -0.140* | -0.038 |
| | (-7.79) | (-5.62) | (-2.13) | (-0.59) |
| **English second** | -0.482*** | -0.488*** | -0.527*** | -0.309** |
| | (-7.12) | (-7.36) | (-5.24) | (-2.82) |
| **Both languages** | -0.272*** | -0.255*** | -0.325*** | -0.210** |
| | (-3.41) | (-3.85) | (-4.87) | (-3.20) |
| **Home second** | -0.285*** | -0.199*** | -0.196*** | -0.125** |
| | (-5.96) | (-4.77) | (-4.26) | (-2.68) |

Notes: 1) t statistics in parentheses
2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
3) Other control variables include age, age squared, marital status, region, years since immigration, education level, work status and working weeks. The complete regression results are in Appendix Table A6.

Table 9 describes the effects of languages of work on the wages of immigrants born in China and India. Working in English only provides the highest economic benefits for both groups of immigrants, while working in the home language most often and English on a regular basis leads to the lowest wages. Immigrants born in China and India have lower earnings if using home language mostly and English regularly. Precisely, for immigrants from China, males and females respectively earn 48.2% and 48.8% less than their counterparts who use only English at work. And for immigrants from India, males and females respectively earn 52.7% and 30.9% less than their counterparts who use only English at work. Chinese males who use both languages at work tend to earn 1.3% more

than those using English most often and their home language on a regular basis, but females using both languages at work earn 5.6% less than those using their home language regularly.[4] The puzzling result still exists for immigrants born in China and India using English regularly will not bring more benefits for immigrants than using only home language. Compared with other language choices, using exclusively the home language brings less wage penalty for immigrants from India, with a 14% decline for males and a 3.8% decline for females (but the coefficient for females is not significant). The wages of males from India will decrease by 19.6% and 32.5%, depending on the frequency of using the home language at work. The decrease is 12.5% and 21% for females from India. It is apparent that for immigrants born in China or in India, the effect of languages of work on the earnings of males is larger than the effect on the earnings of females.

In all the three regressions, we noted the puzzling result that immigrants who use home language most often and English on a regular basis earn less than those whose language of work is only their home language. It may be that immigrants who use exclusively or mostly their home language at work are those who work in an enclave economy. In the words of Li and Dong (2007), the "economic benefit of the enclave economy tends only to be apparent among entrepreneurs and not among wage workers" (page 92). According to Citizenship and Immigration Canada (2012), a large proportion of immigrants are economic immigrants. Among them, many are self-employed. They can set up and own their own business and hire other people. The services and job opportunities that they provide are

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[4] This number is the difference between the coefficients for using both languages equally and using English mostly and home language regularly for males from China: (-0.272) - (-0.285) = 0.013. For females: (-0.255) - (-0.199) = -0.056.

special for those who also lack fluency in English. In the enclave economy, some self-employed immigrants can earn the same, or more than, salaried workers (Li and Dong, 2007). This may explain the higher earnings of immigrants who respond that they use only home language at work.

**Table 10 The effects of languages of work on the wages of all immigrants in Canada except Quebec before and after adding Linguistic Distance**

| Languages of work | Male | | Female | |
|---|---|---|---|---|
| | Before | After | Before | After |
| Only home | -0.258*** | -0.256*** | -0.187*** | -0.183*** |
| | (-10.05) | (-9.94) | (-7.32) | (-7.17) |
| English second | -0.362*** | -0.359*** | -0.302*** | -0.300*** |
| | (-10.93) | (-10.83) | (-8.63) | (-8.56) |
| Both languages | -0.218*** | -0.215*** | -0.172*** | -0.168*** |
| | (-6.95) | (-6.84) | (-6.00) | (-5.87) |
| Home second | -0.150*** | -0.148*** | -0.110*** | -0.107*** |
| | (-8.84) | (-8.69) | (-6.56) | (-6.37) |
| Linguistic distance | | -0.0465* | | -0.0555** |
| | | (-2.35) | | (-2.80) |

Notes: 1) t statistics in parentheses

2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3) Other control variables include age, age squared, marital status, region, years since immigration, education level, place of birth, work status and working weeks.

The next regressions add linguistic distance (LD) for the immigrants in Canada except Quebec. Table 10 shows the coefficients of languages of work before and after adding the linguistic distance variable for males and females. The coefficient of linguistic distance is negative, indicating that the larger the distance between the home language and English, the smaller the wage, which is consistent with the literature that I reviewed earlier. After adding this variable, the coefficients of the other variables stay almost the same, so linguistic distance has little influence on those variables.

**Table 11 The effects of languages of work on the wages of immigrants in Toronto, Vancouver and the rest of Canada (ROC) after adding Linguistic Distance**

| Languages of work | Toronto | | Vancouver | | The ROC | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| **Only home** | -0.279*** | -0.153*** | -0.270*** | -0.269*** | -0.134* | -0.141* |
| | (-7.38) | (-4.10) | (-6.30) | (-6.11) | (-1.97) | (-2.20) |
| **English second** | -0.311*** | -0.238*** | -0.405*** | -0.343*** | -0.387*** | -0.425*** |
| | (-6.28) | (-4.46) | (-7.16) | (-6.26) | (-5.23) | (-4.54) |
| **Both languages** | -0.206*** | -0.157*** | -0.281*** | -0.155** | -0.131 | -0.239*** |
| | (-4.80) | (-3.95) | (-4.80) | (-2.90) | (-1.75) | (-3.59) |
| **Home second** | -0.161*** | -0.110*** | -0.138*** | -0.117*** | -0.134*** | -0.0896* |
| | (-6.74) | (-4.75) | (-3.94) | (-3.48) | (-3.97) | (-2.45) |
| **Linguistic distance** | -0.0707* | -0.0983*** | -0.0256 | -0.0913* | -0.0514 | 0.0154 |
| | (-2.46) | (-3.46) | (-0.58) | (-2.11) | (-1.41) | (0.40) |

Notes: 1) t statistics in parentheses

2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3) Other control variables include age, age squared, marital status, years since immigration, education level, place of birth, work status and working weeks.

Table 11 shows the coefficients of languages of work variables after adding a linguistic distance variable for males and females in Toronto, Vancouver and the ROC. These coefficients are of the same order of magnitude as in the previous regressions for immigrants in Toronto, Vancouver and the ROC. The negative relationship between linguistic distance and earnings is still significant for immigrants in Toronto and for females in Vancouver. However, it is not significant in the rest of Canada and for males in Vancouver. The other coefficients remain almost exactly the same when I add linguistic distance, indicating linguistic distance has little effect on other variables.

In summary, the main findings of these regressions are: 1) increases in age and years since immigration lead to higher wages; 2) immigrants with more education earn more; 3)

full-time work status and more working weeks increase earnings; 4) immigrants get the highest wages by working in English only and earn the least by using their home language most often and English on a regular basis; 5) using more English and less home language at work improves immigrants' earnings; 6) the effects of on earnings of not using English at work are larger for males than for females; and 7) immigrants whose home language is closer to English receive higher wages.

## 5. Conclusion

Unlike the majority of earlier studies which have paid attention to the economic returns to language proficiency, I focused in this paper on the languages used at work. Specifically, I explored the effects of languages of work on earnings for immigrants in Canada except Quebec with the 2011 National Household Survey Public Use Microdata. Those results have implications for immigrants when they are looking for jobs. The languages of work are categorized as exclusively English, exclusively home language, home language most often/English regularly, both languages equally and English most often/home language regularly. In addition, I estimated the effects of linguistic distance on earnings.

The main findings are that age, years since immigration and education improve the earnings of immigrants. Females benefit more than males from obtaining a higher certificate. Also, immigrants with full-time work status and with more work weeks can earn more. To a large extent, those results are similar to the previous studies that used language proficiency.

The dominant role of English in the workplace plays a critical role in the determination of immigrants' earnings in Canada outside Quebec. Economic benefits are important in their decisions to choose the language in which they work. My results suggest that immigrants would do better by working exclusively in English. For males born in China and India, the penalties for not using English at work are particularly high. This is true mainly for immigrants working in Toronto and Vancouver. For immigrants who do not use English exclusively at work, using more English at work is necessary to get higher wages, but using a little home language could reduce the loss. Immigrants who use their home language mostly at work and English regularly are the most disadvantaged, which may due to the inferior economic status of some of these immigrants. Because I also focus on home language at work, I find that, the higher the distance between home language and English, the less immigrants will earn.

It was noted in the introduction of this paper that the acquisition of language skills constitutes an investment in human capital. Consequently, knowing more than one language brings more human capital to a person, which should lead to higher earnings. However, the results of this paper show that it was not the case for the immigrants who use their home language at work. One possible reason may due to the lack of English proficiency for those whose home language is not English. Grenier and Nadeau (2011) note that immigrants who speak English at home in Toronto are probably more fluent in English than those whose home language is not English. Therefore, immigrants who know and use at work different languages may not have as a good command of English as those who do

not, leading to lower earnings. Another reason may be due to the nature of the jobs. Immigrants who speak more than one language may work in lower-paying jobs. Further studies are needed to address that question.

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# Appendix

**Table A1a Language score based on home language**

| Home language | language score |
|---|---|
| Italian | 2.5 |
| Spanish | 2.25 |
| Portuguese | 2.5 |
| German | 2.25 |
| Russian | 2.25 |
| Polish | 2 |
| Slavic | 2.25 |
| Other European languages | 2.23 |
| Arabic | 1.5 |
| Other Afro-Asiatic and African languages | 2.11 |
| Panjabi | 1.75 |
| Other Indo-Iranian languages | 1.75 |
| Chinese | 1.375 |
| Austro-Asiatic languages | 2 |
| Tagalog (Pilipino, Filipino) | 2 |
| Other East and Southeast Asian language | 1.36 |
| All other languages | according to birthplace |

*Source: Chiswick & Miller (2001, 2005).* Language scores are based on the difficulty for native-born English-speaking Americans to learn a foreign language.

**Table A1b Language score based on birthplace**

| Place of birth | Language score |
|---|---|
| Central America | 2.25 |
| Jamaica | |
| other Caribbean and Bermuda | |
| South America | |
| Germany | 2.25 |
| Poland | 2 |
| Italy | 2.5 |
| Portugal | 2.5 |
| Other Northern and Western Europe | 2.23 |
| Other Eastern Europe | |
| Other Southern Europe | |
| Eastern Africa | 2.11 |
| Northern Africa | |
| Other Africa | |
| China | 1.375 |
| Hong Kong | |
| Other Eastern Asia | 1.89 |
| West Central Asia and the Middle Asia | |
| Philippines | 2 |
| Other Southeast Asia | 1.91 |
| India | |
| Pakistan | |
| Other Southern Asia | |

*Source: Chiswick & Miller (2001, 2005).* Language scores are based on the difficulty for native-born English-speaking Americans to learn a foreign language.

**Table A2 Education level based on the highest certificate, degree or diploma**

| Education level | Highest certificate, degree or diploma obtained |
|---|---|
| No certificate, diploma or degree | No certificate, diploma or degree |
| High school diploma or equivalent | High school diploma or equivalent |
| Postsecondary degree below university level | Trades certificate or diploma (other than apprenticeship) |
| | Registered Apprenticeship certificate |
| | College, CEGEP or other non-university certificate or diploma from a program of 3 months to less than 1 year |
| | College, CEGEP or other non-university certificate or diploma from a program of 1 year to 2 years |
| | College, CEGEP or other non-university certificate or diploma from a program of more than 2 years |
| Below bachelor degree | University certificate or diploma below bachelor level |
| Bachelor degree | Bachelor degree |
| Above bachelor level | University certificate or diploma above bachelor level |
| | Degree in medicine, dentistry, veterinary, medicine or optometry |
| | Master's degree |
| | Earned doctorate degree |

**Table A3 Mean and Standard deviation of the variables for males and females (standard deviations for the dummy variables are not necessary)**

| Variables | Male n= 29,797 | | Female n= 29,092 | |
|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation |
| **Employment wages (log value）** | 10.597 | 0.889 | 10.261 | 0.930 |
| | | | | |
| **Geographic variables** | | | | |
| **Province/regions** | | | | |
| Ontario (reference) | 0.643 | | 0.643 | |
| Atlantic and Northern Canada | 0.006 | | 0.004 | |
| Central Canada | 0.033 | | 0.030 | |
| British Columbia | 0.198 | | 0.211 | |
| Albert | 0.122 | | 0.112 | |
| | | | | |
| **Demographic variables** | | | | |
| **Age** | | | | |
| Age | 45.326 | 10.399 | 44.910 | 10.281 |
| $age^2$ | 2162.595 | 936.395 | 2122.580 | 921.126 |
| **Marital status** | 0.808 | | 0.746 | |
| | | | | |
| **Immigration variables** | | | | |
| **Years since immigration** | 21.107 | 13.592 | 21.136 | 13.393 |
| **Place of birth** | | | | |
| North America(reference) | 0.090 | | 0.105 | |
| South America | 0.043 | | 0.047 | |
| Europe | 0.264 | | 0.250 | |
| Africa | 0.052 | | 0.043 | |
| China | 0.089 | | 0.096 | |
| India | 0.114 | | 0.107 | |
| Philippines | 0.081 | | 0.118 | |
| other Asia | 0.257 | | 0.224 | |
| Ocean | 0.009 | | 0.010 | |
| | | | | |
| **Language ability** | | | | |
| **Languages of work** | | | | |
| Only English(reference) | 0.862 | | 0.857 | |
| Only home | 0.032 | | 0.033 | |
| English second | 0.017 | | 0.016 | |
| Both languages | 0.019 | | 0.023 | |
| Home second | 0.070 | | 0.071 | |

| | | | | |
|---|---|---|---|---|
| **Linguistic Distance** | | | | |
| LD | 0.397 | 0.273 | 0.394 | 0.270 |
| | | | | |
| **Labour activity** | | | | |
| **work status** | | | | |
| Full-time | 0.928 | | 0.805 | |
| **weeks worked** | | | | |
| Working weeks (log value) | 3.770 | 0.393 | 3.712 | 0.474 |
| | | | | |
| **Education variables** | | | | |
| **Education level** | | | | |
| no diploma (reference) | 0.099 | | 0.089 | |
| high school diploma | 0.196 | | 0.203 | |
| Postsecondary degree below university level | 0.247 | | 0.253 | |
| Below bachelor degree | 0.071 | | 0.086 | |
| Bachelor degree | 0.216 | | 0.234 | |
| Above bachelor degree | 0.171 | | 0.135 | |

**Table A4 The effects of languages of work on the wages of immigrants for males and females, Canada outside Quebec**

| Log wages | Male | Female |
|---|---|---|
| age | 0.0532*** | 0.0437*** |
| | (14.47) | (12.01) |
| age$^2$ | -0.000584*** | -0.000462*** |
| | (-14.34) | (-11.32) |
| marital | 0.119*** | -0.00740 |
| | (10.11) | (-0.73) |
| Atlantic and Northern Canada | -0.0702 | -0.0935 |
| | (-1.24) | (-1.39) |
| Central Canada | -0.0313 | -0.0693** |
| | (-1.28) | (-2.72) |
| Alberta | 0.137*** | 0.0854*** |
| | (10.28) | (6.17) |
| BC | 0.0000933 | -0.0420*** |
| | (0.01) | (-3.82) |
| High school | 0.0427* | 0.129*** |
| | (2.55) | (7.43) |
| Postsecondary below university | 0.183*** | 0.279*** |
| | (11.25) | (16.41) |
| Below bachelor | 0.236*** | 0.412*** |
| | (11.13) | (19.84) |
| Bachelor | 0.385*** | 0.532*** |
| | (22.87) | (30.57) |
| University high | 0.470*** | 0.600*** |
| | (26.83) | (31.75) |
| Years since immigration | 0.00842*** | 0.00994*** |
| | (20.87) | (23.87) |
| South America | 0.00889 | -0.00621 |
| | (0.36) | (-0.26) |
| Europe | 0.0643*** | 0.0243 |
| | (3.88) | (1.54) |
| Africa | 0.0197 | 0.0471 |
| | (0.84) | (1.93) |
| China | -0.0946*** | -0.0520* |
| | (-4.46) | (-2.57) |
| India | -0.0502* | -0.0918*** |
| | (-2.57) | (-4.77) |
| Philippines | -0.0765*** | 0.00484 |
| | (-3.62) | (0.26) |
| Other Asia | -0.0744*** | -0.0554*** |
| | (-4.44) | (-3.37) |

| | | |
|---|---|---|
| Oceania | 0.108* | 0.0686 |
| | (2.29) | (1.50) |
| fulltime | 0.929*** | 0.778*** |
| | (54.35) | (69.79) |
| Log work weeks | 0.705*** | 0.701*** |
| | (62.96) | (75.29) |
| Only home | -0.258*** | -0.187*** |
| | (-10.05) | (-7.32) |
| English second | -0.362*** | -0.302*** |
| | (-10.93) | (-8.63) |
| Both languages | -0.218*** | -0.172*** |
| | (-6.95) | (-6.00) |
| Home second | -0.150*** | -0.110*** |
| | (-8.84) | (-6.56) |
| _cons | 5.455*** | 5.550*** |
| | (61.88) | (65.78) |
| N | 29797 | 29092 |
| R-squared | 0.320 | 0.394 |

Notes: 1) t statistics in parentheses

2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table A5 The effects of languages of work on the wages of immigrants in Toronto, Vancouver and the rest of Canada (ROC)**

| Log wages | Toronto | | Vancouver | | ROC | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| Age | 0.0446*** | 0.0460*** | 0.0591*** | 0.0260** | 0.0615*** | 0.0483*** |
| | (8.68) | (9.21) | (6.73) | (2.99) | (9.25) | (7.09) |
| $age^2$ | -0.000495*** | -0.000478*** | -0.000651*** | -0.000267** | -0.000655*** | -0.000525*** |
| | (-8.66) | (-8.50) | (-6.68) | (-2.71) | (-8.99) | (-7.01) |
| Marital | 0.0967*** | 0.00147 | 0.166*** | -0.00588 | 0.136*** | -0.0256 |
| | (5.99) | (0.11) | (5.86) | (-0.25) | (6.24) | (-1.23) |
| High school | 0.0512* | 0.160*** | 0.00969 | 0.0240 | 0.0461 | 0.134*** |
| | (2.16) | (6.47) | (0.23) | (0.58) | (1.62) | (4.48) |
| Postsecondary below university | 0.155*** | 0.289*** | 0.158*** | 0.230*** | 0.235*** | 0.292*** |
| | (6.68) | (11.97) | (3.65) | (5.50) | (8.67) | (9.93) |
| Below bachelor | 0.253*** | 0.444*** | 0.144** | 0.286*** | 0.263*** | 0.428*** |
| | (8.45) | (15.28) | (2.84) | (5.96) | (6.82) | (11.15) |
| Bachelor | 0.408*** | 0.571*** | 0.337*** | 0.375*** | 0.370*** | 0.560*** |
| | (17.24) | (23.30) | (7.83) | (8.82) | (12.66) | (18.28) |
| University high | 0.502*** | 0.627*** | 0.372*** | 0.449*** | 0.453*** | 0.641*** |
| | (20.50) | (23.79) | (8.12) | (9.65) | (14.93) | (18.98) |
| Years since immigration | 0.0104*** | 0.0110*** | 0.00980*** | 0.00975*** | 0.00462*** | 0.00872*** |
| | (17.35) | (18.52) | (9.94) | (9.46) | (6.88) | (11.89) |
| South America | -0.00630 | -0.0170 | 0.0578 | -0.134 | 0.0742 | 0.0535 |
| | (-0.20) | (-0.59) | (0.59) | (-1.51) | (1.51) | (1.08) |
| Europe | 0.0659** | 0.0269 | 0.0399 | 0.0667 | 0.0616* | 0.0326 |
| | (2.82) | (1.25) | (0.73) | (1.19) | (2.32) | (1.24) |
| Africa | 0.0165 | -0.00859 | -0.0297 | 0.190* | 0.0554 | 0.125** |
| | (0.51) | (-0.27) | (-0.40) | (2.41) | (1.42) | (2.76) |
| China | -0.0896** | -0.0852** | -0.173** | -0.0402 | -0.0294 | 0.0322 |
| | (-3.01) | (-3.08) | (-3.06) | (-0.70) | (-0.74) | (0.82) |
| India | -0.0744** | -0.140*** | -0.0736 | -0.0674 | 0.0106 | -0.00199 |
| | (-2.80) | (-5.57) | (-1.31) | (-1.17) | (0.30) | (-0.05) |
| Philippines | -0.0697* | -0.0405 | -0.152** | 0.0356 | -0.0689 | 0.0599 |
| | (-2.35) | (-1.61) | (-2.62) | (0.62) | (-1.89) | (1.77) |
| Other Asia | -0.0811*** | -0.0538* | -0.124* | -0.0696 | -0.0280 | -0.0278 |
| | (-3.58) | (-2.53) | (-2.38) | (-1.30) | (-0.95) | (-0.89) |
| Oceania | 0.180 | 0.0493 | -0.0112 | 0.0574 | 0.200* | 0.131 |
| | (1.75) | (0.46) | (-0.14) | (0.75) | (2.36) | (1.47) |
| Fulltime | 0.904*** | 0.842*** | 0.843*** | 0.706*** | 1.041*** | 0.726*** |
| | (37.17) | (51.25) | (22.68) | (28.58) | (33.09) | (37.60) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Log work weeks | 0.722*** | 0.683*** | 0.660*** | 0.696*** | 0.704*** | 0.732*** |
| | (45.69) | (52.81) | (25.87) | (32.69) | (34.74) | (42.36) |
| Only home | -0.283*** | -0.158*** | -0.271*** | -0.276*** | -0.137* | -0.141* |
| | (-7.50) | (-4.24) | (-6.32) | (-6.27) | (-2.01) | (-2.18) |
| English second | -0.315*** | -0.241*** | -0.407*** | -0.346*** | -0.391*** | -0.424*** |
| | (-6.36) | (-4.51) | (-7.20) | (-6.30) | (-5.29) | (-4.53) |
| Both languages | -0.210*** | -0.161*** | -0.283*** | -0.163** | -0.135 | -0.238*** |
| | (-4.89) | (-4.06) | (-4.84) | (-3.06) | (-1.80) | (-3.58) |
| Home second | -0.164*** | -0.116*** | -0.140*** | -0.122*** | -0.137*** | -0.0889* |
| | (-6.87) | (-4.99) | (-3.98) | (-3.61) | (-4.05) | (-2.43) |
| _cons | 5.582*** | 5.461*** | 5.620*** | 6.073*** | 5.231*** | 5.408*** |
| | (45.48) | (47.21) | (26.53) | (30.30) | (32.60) | (33.95) |
| N | 15308 | 15137 | 5139 | 5320 | 9350 | 8635 |
| R-squared | 0.317 | 0.396 | 0.344 | 0.384 | 0.303 | 0.394 |

Notes: 1) t statistics in parentheses

2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table A6 The effects of languages of work on the wages of immigrants born in China and India**

| Log wages | China | | India | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Age | 0.0519*** | 0.0161 | 0.0445*** | 0.0489*** |
| | (3.87) | (1.30) | (3.89) | (4.38) |
| $age^2$ | -0.000581*** | -0.000145 | -0.000494*** | -0.000552*** |
| | (-3.84) | (-1.02) | (-3.88) | (-4.33) |
| Marital | 0.146** | 0.0184 | 0.0747 | -0.0770 |
| | (3.21) | (0.55) | (1.57) | (-1.86) |
| Atlantic and Central Canada | 0.284 | 0.309 | -0.386 | 1.002* |
| | (1.02) | (1.05) | (-1.15) | (2.44) |
| Central Canada | -0.147 | -0.143 | 0.123 | -0.177 |
| | (-1.50) | (-1.23) | (1.21) | (-1.67) |
| Alberta | 0.115* | 0.106* | 0.141*** | 0.103* |
| | (2.38) | (2.43) | (3.45) | (2.39) |
| BC | -0.0239 | -0.0252 | 0.0408 | -0.0461 |
| | (-0.72) | (-0.81) | (1.24) | (-1.47) |
| High school | -0.0367 | 0.0870 | 0.0430 | 0.00802 |
| | (-0.61) | (1.68) | (0.87) | (0.16) |
| Postsecondary below university | 0.0710 | 0.256*** | 0.272*** | 0.146** |
| | (1.07) | (4.57) | (5.21) | (2.78) |
| Below bachelor | 0.0921 | 0.357*** | 0.279*** | 0.363*** |
| | (1.24) | (5.88) | (4.69) | (6.21) |
| Bachelor | 0.370*** | 0.547*** | 0.404*** | 0.340*** |
| | (6.23) | (10.48) | (8.16) | (6.83) |
| University high | 0.504*** | 0.713*** | 0.507*** | 0.417*** |
| | (8.23) | (12.54) | (10.15) | (8.17) |
| Years since immigration | 0.0103*** | 0.0119*** | 0.0135*** | 0.0149*** |
| | (5.67) | (6.61) | (9.56) | (10.12) |
| Fulltime | 0.675*** | 0.749*** | 0.867*** | 0.593*** |
| | (11.94) | (20.27) | (14.57) | (17.06) |
| Log work weeks | 0.833*** | 0.731*** | 0.668*** | 0.796*** |
| | (23.62) | (26.30) | (19.77) | (28.62) |
| Only home | -0.361*** | -0.263*** | -0.140* | -0.0381 |
| | (-7.79) | (-5.62) | (-2.13) | (-0.59) |
| English second | -0.482*** | -0.488*** | -0.527*** | -0.309** |
| | (-7.12) | (-7.36) | (-5.24) | (-2.82) |
| Both languages | -0.272*** | -0.255*** | -0.325*** | -0.210** |

|  | | | | |
|---|---|---|---|---|
|  | (-3.41) | (-3.85) | (-4.87) | (-3.20) |
| Home second | -0.285*** | -0.199*** | -0.196*** | -0.125** |
|  | (-5.96) | (-4.77) | (-4.26) | (-2.68) |
| _cons | 5.202*** | 5.959*** | 5.729*** | 5.323*** |
|  | (17.03) | (21.63) | (21.83) | (21.80) |
| N | 2649 | 2779 | 3389 | 3124 |
| R-squared | 0.403 | 0.454 | 0.291 | 0.391 |

Notes: 1) t statistics in parentheses

2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$