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**MASTER OF PUBLIC POLICY
CAPSTONE PROJECT**

The Analysis of the Relationship between Immigrant's Dominant Language Fluency and Earnings

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Executive Summary

This project examines and analyzes how a Canadian immigrant's dominant language fluency affects their earnings. The statistical methods of analysis used were Ordinarily Least Squares, random effects and fixed effects to estimate coefficients and relationships. The panel data used is the 1971 Longitudinal Survey of Immigrants in Canada (LSIC)¹ from the Public Use Microdata File. The results of the analysis showed that dominant language fluency affects earnings differently in different countries. As the level of fluency increases so does the earnings of the immigrant. In particular, full fluency in the dominant language has a positive relationship with earnings.

The project finds that an earnings premium is paid to immigrants with full fluency in the dominant language. Policy recommendations include:

- Improving immigrant's access to fund for the purpose of improving their language human capital
- TFW's applying for permanent residency should be required to show proof of fluency in the dominant language
- Improvement on how the point system allots points to other human capital factors that signals an immigrants ability to acquire language capital.

This project is limited by the data used as it is dated. The relationship between language fluency probably has significantly changed over the last three decades. Having access to newer data would most likely result in adjustments to the policy recommendations.

¹ An effort was made to acquire the newer version of the survey, 2002 LSIC; however, due to time constraints, this project does not include analysis on the data.

Introduction

Immigration is the movement of non-native population into a land with the purpose of settlement (Dictionary.com, 2013). Immigration to Canada is not a new phenomenon; what has recently changed has been the volume and composition of immigrants. One of the biggest changes in Canadian immigration occurred in 1971. This was due to policy change whereby preference was no longer given to Caucasians. Another more recent policy change that is having a big impact on Canadian immigration is the Temporary Foreign Workers (TFW) program. The TFW program is different from traditional immigration; the purpose of a traditional immigrant is settlement, for a TFW, settlement is not always the end goal.

Immigration is very important for Canada to sustain its economic growth. As Canada's population grows older, the demographic dependency ratio or dependency burden is "projected to rise to 84 dependants for every 100 people of working age by 2056" (Statistics Canada, 2012). While immigration is an important factor in maintaining a lower dependency burden, concern has been expressed about some of the effects of increased immigration on labour markets, health care, and the sustainability and overall well-being of Canadians. The government is also concerned about immigrant assimilation and standard of living.

The purpose of this paper is to examine and analyze the relationship between immigrant's fluency in the dominant language and earnings using the 1971 Longitudinal Survey for Immigrants in Canada (LSIC).² The statistical technique used to estimate coefficients were

² An effort was made to acquire the newer version of the survey, 2002 LSIC; however, due to time constraints, this project does not include analysis on the data.

Ordinarily Least Squares (OLS), random effects and fixed effects. A model was developed where the log of earnings was regressed on dominant language fluency and other forms of human capital. The results were also compared to other fluency and earnings studies conducted in the UK, States and Australia. In terms of earnings, immigrant's coming from nations with the same native language does as well as the native-born population. Immigrant's earning decreases as their level of fluency in the dominant language declines.

Why It Matters

According to Fortin, Lemieux and Torres, immigrants who arrived in the 1970s earn at par with native-born Canadians. However, immigrants who arrived during the 1990s earn around 30% less than native-born Canadians (Nicole Fortin, 2012). In addition, immigrant unemployment rates are also much higher than native-born Canadians (Dawn Dejardins, 2011). Economic studies have suggested different reasons why immigrant and native-born wage gap and unemployment gap have been steadily increasing. Economists attribute the widening of the gaps to differences in human capital, country of origin, abilities or knowledge of the English language. It can be argued that governments should fund English language programs for recent immigrants to Canada as they are not only beneficial to immigrants but to the Canadian labour market as well.

The government has instituted several different policy solutions as there is no central causation for the wage and unemployment gap. One of these solutions is the English as a Second Language (ESL) Program. There are two varieties of the ESL program- one community

based, the other academic based. Academic programs are offered via universities and colleges across Canada. In Calgary, the program is offered by Bow Valley College, SAIT, Mount Royal University and University of Calgary. These programs cost from around \$3000 for a two semesters or 12 weeks program. For foreign students, some of these would cost an upwards of \$10,000.

Table 1. Tuition fees for ESL Program in the Academic Setting

School	Program	Tuition	Time Frame
University of Calgary	ESL	\$3,050	13 weeks
Mount Royal College	ESL	\$3,150	12 weeks
SAIT	English Language Foundation (ELF)	\$5,200	32 weeks
Bow Valley College	English for Academic Purpose	\$4,143	8 weeks
	Post-Secondary Preparation for International Learners	\$4,505	16 weeks

*Source: Websites of: University of Calgary, Mount Royal College, SAIT, Bow Valley College.

For most immigrants, it can be assumed that they choose to come to Canada for economic reasons. Thus, they would neither have nor would be willing to spend \$10,000 to learn English. The government has provided, through various communities and non-profit organizations, English language instructions for these immigrants. These programs are numerous and can be accessed by any immigrant. The English classes are held on weekends or evenings in various communities to give immigrants better access. However, these programs and their certificates are not accepted in the academic setting.

This poses a problem to immigrants who want to pursue further education or skills upgrading. Labour economics teaches that one way to increase lifetime wages is through obtaining more education (at least up to a certain point).

Literature Review

Canadian Immigration

Going back to Mackenzie King (the longest serving Prime Minister in Canadian History, spanning a period from 1921 to 1945) immigration policy in Canada was motivated by a desire to build a new industrialized state. Mackenzie King believed that immigration is a privilege and only the people allowed entry should be beneficial to the host country. This belief system motivates the immigration system that is still in use today in Canada. The Canadian point system delineates the policies and procedures to accepting or denying economic entrants into the country (Whitaker, 1991). The policy came into effect in 1967. At this time Canada opted for the point system, whereas the United States pursued a policy of family reunification (The Applied History Research Group, 1997). The change in immigration policy allowed a host of immigrants from Asia and South America to come to Canada. This represented a marked change from the policy that preceded the point system “White-Settler Colony” where Europeans were preferred (Foster Immigration, 2009).

The Department of Manpower and Immigration Canada established nine categories where immigrants can earn a total of 100 points. These categories were: personal qualities, education and training, demand for applicant’s skills, age, arrange employment, knowledge of either English or French, relatives in Canada and arranged employment (The Applied History

Research Group, 1997). These categories were given different points allotment. During 1967, the economic immigrant required 50 points to be allowed entry into Canada.

Table 2: The Canadian Point System

Categories	1967	1986	1993	Present
Education	20	12	15	25
Experience	--	8	8	15
Vocational Training	10	15	17	--
Age	10	10	10	12
Arranged Employment	10	10	10	10
Language	10	15	14	28
Personal Suitability	15	10	10	10
Occupational Demand	15	10	10	--
Others	10	10	6	--
Passing Mark	50	70	67	67

*Source: (Green, Alan & Green, David, 2004) and (Citizenship and Immigration Canada, 2006).

The point system has evolved substantially as the allotment of points for each category changed. The points allotted for each characteristic have been altered to reflect research on human resources and immigrant assimilation. The point system has transformed the composition of immigrants. This made assimilation into the host country more difficult as the cultures of the new immigrant diverged greatly from the host country culture. To solve the assimilation problem, the government has altered the weights of each category in the point system to capture potential immigrants that would a better fit not only to the Canadian labour market but also the Canadian society in general.

The total number of points possible is still 100; however, the passing mark has noticeably gone up 17 points to 67 from the original 50 (Citizenship and Immigration Canada, 2006). What has also substantially increased are the points allotted to language skills, from 10 points in the 1967 to 28 points in the present. The point system reflects the results of research on the different human capital that improves immigrant assimilation into the host country.

Researchers from social science, language and business believe language abilities of an immigrant matter greatly.

There are two kinds of research on language: demand and supply. Most of the studies focus on the supply side of the market. The suppliers or the immigrants decide on how much language knowledge to acquire to maximize their utilities. On the other hand, the demand side or the firms decide what the trade-offs are on hiring a worker with limited language knowledge compared to a worker who is fluent in the dominant language. The demand side of the research studies how companies structure their hiring techniques to attract certain types of workers. “Workers with limited English proficiency face a triple whammy [...]: reduce employment opportunities, reduced ability to use non-language skills, and forgone wage gains from an inability to obtain jobs requiring English skills” (Maxwell, 2010). This study concludes that although there is a need for non-language skills most jobs require a use of language skills in conjunction with non-language skills.

There are two kinds of studies conducted on the supply side, those conducted by language scientists and those by social scientists (Chiswick, Barry and Miller, Paul, 2001). Most of these studies examine the age at migration and the duration of stay in the host country. Studies on entry wage gap and how fast or slow immigrants get wages at par with the natives are rampant (Borjas, 1993). Bleakley and Chin concluded that individuals who migrated at a younger age experience positive effects of English language knowledge to their wages (2004). Dustmann also found that duration of stay in the host country greatly affected earnings of the immigrant (1999). Empirical research has found that immigrant earnings grow rapidly and that

in ten to fifteen years, they overtake native earnings. However, since this empirical research utilizes cross-section data, the validity of the conclusions has been questioned (Borjas, 1989).

The studies mentioned above examined cross-sectional data from Australia, United Kingdom, Canada, USA, Israel and Germany. The most common methodology used is simple OLS. A problem with this approach is that it suffers from bias. The methodologies used to correct for the bias are two-stage least squares (instrumental variable), probit model and simultaneous equations. These methodologies are used to correct for the bias coming from unobserved heterogeneity (Borjas, 1989; Borjas, 1994; Dustmann, Christian and van Soest, Arthur, 2001). There are two kinds of bias that come from unobserved heterogeneity: upward and downward bias. The upward bias causes OLS estimates to overstate the effects of language fluency on earnings (Dustmann, Christian and van Soest, Arthur, 2001).

On the other hand, the downwards bias can be caused by two things: negative correlation from unobserved heterogeneity and misclassification error (Chiswick, Barry and Miller, Paul, 1995; Dustmann, Christian and van Soest, Arthur, 2001). Negative correlation of unobserved heterogeneity does not consider the probable increase in unobserved ability of individuals who forgo present earning to engage in language education. Misclassification error in the language variable occurs because language evaluation is subjective. Since these surveys are based on self-evaluation, errors can either be random or time persistent (Dustmann, Christian and van Soest, Arthur, 2001). However, by using IV estimates Chiswick and Miller also presented another problem. Their results were not stable since their standard errors were large. Their estimates had large standard errors.

A solution to this problem is to use longitudinal or panel data. Panel data have both a cross-section and time series dimension (Dougherty, 2007). Panel data offers a solution to the bias caused by unobserved heterogeneity and it reveals dynamics that is difficult to detect in cross section data, and they have a large number of observations (Dougherty, 2007). The panel data used in the empirical analysis undertaken in this paper is the 1971 Longitudinal Survey of Immigrants in Canada (LSIC).³

Language as Human Capital

The model of language attainment starts with the assumption that language skills are a form of human capital investment (Chiswick, Barry and Miller, Paul, 2001). Human capital is “the accumulation of prior investments in education, on-the-job training, health, and other factors that increase productivity” (McConnell, Brue, & Macpherson, 2008). For language to be considered human capital it has to be productive, embodied within the person and created at a cost (Chiswick, Barry and Miller, Paul, 2001).

The productivity enhancement from language skills comes from either the increase in wages or the decrease in costs of communication (Chiswick, Barry and Miller, Paul, 2001). Improvement in language skills may also result in improvements of non-language skills (Dustmann, Christian and van Soest, Arthur, 2001). There is complementarity between language skills and other forms of human capital, which gives rise to the heterogeneity problem discussed above. The second requirement is that the language capital is embodied within the person. Fluency and literacy in the dominant language cannot be taken away from the individual. Lastly, acquisition of language capital must have a cost to the partaking individual.

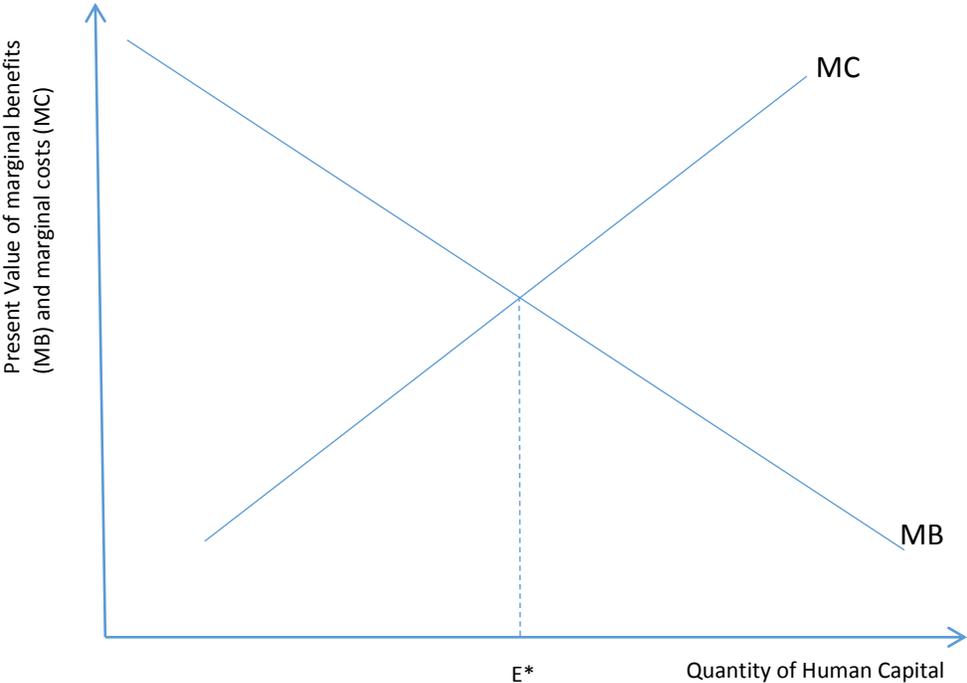
³ An effort was made to acquire the newer version of the survey, 2002 LSIC; however, due to time constraints, this project does not include analysis on the data.

Learning a new language carries both direct and indirect costs. Direct costs include tuition fees, books and all school associate cost. Indirect cost or opportunity cost, the next best alternative the individual could have done if it did not pursue language education, include forgone earnings.

Human Capital Investment

Should the individual invest in the improvement of their language capital? The same decision process applied to physical capital investment can be applied to human capital investment. A person should invest in human capital improvements if the present value of all the benefits is greater than the present value of all the cost. The decision rule for optimal human capital investment should be that the individual should invest to maximize the net present value of their lifetime earnings.

Figure 1. Decision Rule for Optimal Human Capital Investment



*Source: (Benjamin, Gunderson, Lemieux, & Riddell, 2007)

The decision rule should be to invest until the equilibrium point is reached at point E*, where the marginal benefits equals marginal costs. The net benefit, the difference between benefit and cost, is maximized where MB equals MC. Marginal benefit is the benefit to the individual participating in a one unit increase of the quantity of human capital. Marginal cost is the net cost to the individual participating in a one more unit of human capital. As the individual acquires additional education the marginal cost increases. On the other hand, the marginal benefit will experience diminishing returns as the quantity of human capital rises. This can be interpreted as the most crucial investments in human capital happen at a relatively young age. This is also supported by numerous empirical analyses.

The benefit to increasing human capital is increased productivity which translates to higher wages. The cost is both direct and indirect. The costs are also higher while the benefits are smaller as the individual increase in age. However, costs are not the only determinants to language proficiency.

Determinants of Language Proficiency

Acquisition of host country language skills can be costly and time consuming. There are four determinants of language proficiency: exposure, efficiency, economic incentives and wealth (Chiswick, Barry and Miller, Paul, 1995; Chiswick, Barry and Miller, Paul, 2001).

$$\text{Language Proficiency} = f(\text{exposure}, \text{efficiency}, \text{economic incentives}, \text{wealth})$$

Exposure

“Exposure refers to the learning by doing and the formal instruction aspects of acquiring fluency in the destination language” (Chiswick, Barry and Miller, Paul, 1995). Exposure to the

host country language happens either pre and/or post immigration. Post immigration exposure is made up of two components: the duration of exposure and the intensity of the exposure at the host country (Chiswick, Barry and Miller, Paul, 1995; Chiswick, Barry and Miller, Paul, 2001).

Exposure pre-immigration can happen when there is formal education in the host country language. In the Philippines, for example, schools offer English language instruction in various university courses. Multilingual countries like India, who uses English as a lingua franca improves English language proficiency. Exposure to languages similar to the host language also improves proficiency. Linguistic distance is “the extent to which language differs from each other” (B. Chiswick & Miller, 2005). The immigrant learns the new language faster when the linguistic distance is shorter. The linguistic distance between German and English is smaller when compared to Chinese and English. Thus, a native German speaker will learn English faster than a native Chinese speaker.

Duration of exposure also plays a role in language acquisition. It would make more sense for an individual to invest in host country language acquisition if they intend to stay in the host country. Emigration or return migration affects the lifetime benefits of acquiring a country specific human capital (Borjas, 1989). Language capital is no different; if the language being learned is English then there is still benefit to human capital acquisition as long as the home country finds this capital beneficial. However, if the language being acquired is Hebrew for example, there would be little home country benefit to acquiring this human capital.

Intensity of exposure is the quantity of language capital in the duration of stay in the host country. Intensity of exposure is dependent on two things: home environment and the

outside or “neighbourhood” environment. Intensity is improved if the home environment uses the dominant language. The propensity of the dominant language being used also depends on the nationality of the wife. However, the presence of children has ambiguous results. The neighbourhood environment also influences the intensity of language exposure. In the North East of Calgary where many immigrants settle, English is not as widely spoken as some other areas in Calgary. According to Evans (1986) a large presence of a certain immigrant group lowers the fluency rate of the host country language. There is a higher propensity for intra-culture marriage and networks being built.

Efficiency

Efficiency refers to “the extent which a given amount of destination-language exposure produces language fluency” (Chiswick, Barry and Miller, Paul, 1995). The rate of absorption between children and adults differ greatly. There is no certain age when there is a drastic change in the absorption rate. However, the cost to children to acquire new language/s is smaller than the cost to adults.

The absorption rate of adults increases with more educated adults. “This may arise because the more educated have a greater mastery of mother tongue and are more efficient in learning new concepts and new terminology” (Chiswick, Barry and Miller, Paul, 1995). Higher levels of schooling in the Philippines required an international language component. Most of the university courses were taught in the English medium.

Another factor that affects the efficiency of language acquisition is linguistic distance. The greater the linguistic distance between the mother tongue and the host country language, the less efficient the immigrant will be at acquiring the dominant language. It would be more

difficult for native English speaker to learn Chinese than for a native Japanese speaker to learn Chinese. The linguistic distance between Chinese and Japanese is not only shortened by the speech patterns but also by the written aspect of the language.

Economic Incentives

Economic incentives to language acquisition depend on the cost of increasing dominant language fluency and the potential benefits of higher wages due to increased knowledge in the dominant language. Other elements that would be beneficial for the individual who has a higher level of fluency would be higher employment rate and lower cost of communication (Chiswick, Barry and Miller, Paul, 1995).

Economic incentives are also affected by the individual's length of stay in the host country. If the individual plans to permanently move to the host country then the economic incentives are much higher when compared to an individual temporarily moving to the host country. This is very important aspect for Canada as the rate migration for Temporary Foreign Workers (TFWs) category is rapidly increasing with the new accelerated labour market opinion policy. Conversely, refugees have a higher economic incentive to procure knowledge in the dominant language when compared to other immigrant classes since the probability of return migration for this group is smaller. Though, the refugee class was excluded from the empirical analysis that follows since the number of respondents was small in comparison to all the other immigrant groups.

The language being acquired also matters in economic incentives. If the language is an international language like English or French then the human capital no longer is country specific. Even with emigration, there are still economic benefits to be had when an immigrant

learns English especially if the native country values English language knowledge. This is evident in the amount of Asian students in English universities. Not all of these students will remain in the host country, a portion of them will return to their native country. Since their native countries value English language knowledge the benefits to learning this human capital does not go to zero if the probability of emigration is 100%. The situation would be different if a Canadian is temporarily reassigned to the Philippines. The economic incentive of learning Filipino is small since the Canadian labour market does not value knowledge of the Filipino language.

Economic incentive is also affected by the linguistic distance. The cost of language acquisition increases as the further away the native language is to the dominant language. The time it will take a German person to learn English will be far shorter than it will take a Chinese person to learn English given the same level of schooling and age. Thus, the cost of learning the dominant language will be higher for the Chinese person compared to the German. Also, the German can experience the benefits far longer.

Wealth Effects

“Greater wealth may be associated with a higher level of schooling” (Chiswick, Barry and Miller, Paul, 2001). An individual with greater wealth has more access to funds, making the cost of funds lower for that individual. This engenders more investment in human capital since it lowers his cost; all else equal the net present value of his investment will be greater.

Empirical Analysis

The data used in this project is the 1971 LSIC⁴ from the Public Use Microdata File. The statistical analysis was limited to adult male immigrants to center on immigrants who are fully attached to the labour market. The OLS technique was used to examine the relationship between wages and different forms of human capital. Additionally, it was also used to explore the role of linguistic distance and immigrant earnings. Panel data analysis was conducted with fixed effects and random effects regressions.

Data and Descriptive Statistics

The data used in this study is the 1969-1971 Longitudinal Survey of Immigrants in Canada (LSIC)⁵. The longitudinal survey was taken in four waves: wave 1- six months after arrival, wave 2-one year, wave 3-two years and wave 4-three years. The three year longitudinal survey followed immigrant head of households. The head of households is defined as the “husbands when the household consisted of a husband and wife with or without children” (Gleeson, 1976). The mean age of an immigrant arriving at years 1969 to 1971 was 30.55 slightly higher than the mean age of a Canadian was 30.26 in the 1971 Census of Canada. The survey excluded any person immigrating who was not in the labour force; retired and student immigrants were excluded.

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Table 3. Top Fifteen Countries where Immigrants Come From

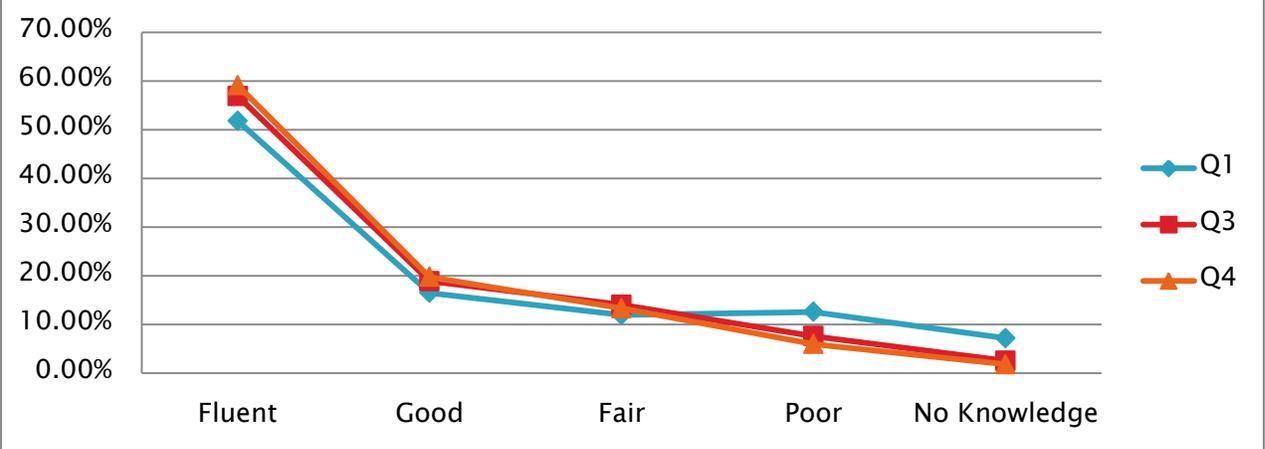
Country of Birth	Concentration	Mean Education	Mean Age	Mean Experience	Mean Earnings Since Arrival (6 months)	Mean Monthly Earnings, First Job
England	11.26%	12.39	31.2	2.09	\$3,722.55	\$658.53
U.S.A	8.40%	15.16	31.6	0.14	\$4,506.00	\$842.49
Italy	7.03%	6.71	27.8	0.57	\$1,639.49	\$305.74
Greece	5.44%	7.88	28.2	0.42	\$1,188.28	\$272.00
India	5.31%	13.25	31.1	0.54	\$2,410.47	\$450.98
Yugoslavia	4.49%	7.95	29.8	0.75	\$1,343.37	\$325.96
Scotland	3.52%	11.48	30.9	2.77	\$3,455.23	\$596.22
China-Mainland	3.06%	10.65	35.2	0.22	\$1,308.08	\$300.18
Czechoslovakia	2.92%	11.25	31.7	0.74	\$1,480.07	\$379.33
Portugal	2.88%	4.73	31.7	0.22	\$2,164.69	\$394.51
Azores	2.65%	4.03	32.8	0.13	\$1,959.87	\$355.10
France	2.52%	11.74	29.3	1.56	\$2,889.95	\$505.60
Jamaica	2.39%	9.33	30.8	0.52	\$1,890.72	\$378.02
Germany	2.30%	11.10	30.4	0.68	\$3,343.78	\$585.82
Republic of the Philippines	2.05%	13.28	30.6	0.15	\$1,581.10	\$339.75

Although the policy of national preference has been changed, almost 20% of the immigrants that came to Canada in the years 1969-1971 still come from other English speaking countries. Eight of the fifteen countries come from developing nations. An American immigrant earned three times more than a Greek immigrant on their first job. The lowest earners of the top fifteen countries were Greece, China-Mainland and Italy; and the highest earners of the top

fifteen countries were USA, England and Scotland. Notice that the native language top three earners are similar to the host country, Canada. Countries with similar mean education Indian and the Republic of the Philippines have different mean earnings since arrival. Indians earn more than \$500 a Filipino with similar level of education; though, part of this difference can be explained by the difference in experience. More than three quarters of the immigrants have no work experience and only 2% of immigrants have more than nine years of work experience.

The four part survey contained questions on: employment, location, intentions, work, wages, length of employment, marital status, housing, view on Canadians and knowledge of the English or French language. The reported English knowledge is on an ordinal scale with five categories. The second wave was excluded from the analysis since the questionnaire did not ask immigrants to self-report on their language abilities.

Figure 2. Immigrants and Knowledge of English



During the 1970s, a fair amount of immigrants to Canada had abilities in the English language; more than eighty percent self-reported at least fair abilities in the English language.

Fifty-two percent of immigrants self-reported fluency in the English language in wave 1. Only six percent of the immigrants reported to have no knowledge of the English language. Figure 2 shows that the longer the cohorts are staying in Canada, the portion of the people being tested are more fluent. Furthermore, in waves 3 and 4, the amount of people with poor or no knowledge has decreased.

In table 4, it can be seen that the higher the level of English language knowledge, the higher the mean salary of the immigrant. For the first wave, an immigrant who is fluent in the English language had a mean wage of \$2972.92 while an immigrant who is good in the English language only had a mean wage of \$1870.51. There is a difference of \$1102.41; that is almost a sixty percent difference. The difference between a fluent speaker and immigration with no knowledge of the English language is also significant at \$1452.58; that difference is almost twice the mean wage of the non-English speaking immigrant.

Table 4. Mean wages since arrival according to knowledge of English

English Knowledge	Fluent	Good	Fair	Poor	No Knowledge
Wave 1					
Mean	2972.92	1870.51	1531.26	1500.84	1520.34
Standard Deviation	2254.25	1649.84	1387.87	1191.65	1047.65
Observations	5242	1482	1288	1251	603
Wave 3					
Mean	10345.03	7450.50	6939.02	6736.20	6964.70
Standard Deviation	7079.03	4349.89	3394.60	3135.86	3333.61
Observations	3656	1088	753	388	105
Wave 4					
Mean	12887.84	10064.25	9457.31	8661.08	9381.27
Standard Deviation	7957.66	4640.22	5350.90	4063.41	4840.08
Observations	3283	938	671	299	86

Wave 3 also presents similar trend. Immigrants with fluent abilities in the English language have a higher mean wage compared to all other levels of knowledge in the English language. An immigrant who is fluent in English has a mean wage of \$10,345.03 while an immigrant who is good in English has a mean wage of \$7450.50; there difference in mean wages is \$2894.54 or more than a thirty-eight percent premium of the immigrant who is good in English. Table 4 also shows that while the mean wages decline from one level of knowledge to another, an immigrant with no knowledge has consistently had higher mean wages in all three questionnaires when compared to an immigrant with poor knowledge of English.

Wave 4 also follows a similar pattern to previous questionnaires in that an immigrant with no knowledge of the English language has a higher mean wage when compared to an immigrant with poor knowledge of the English language. One possible explanation for this

anomaly is that an immigrant with no knowledge of English most likely settled within their own community where their mother tongue is spoken. Jobs these immigrants took were probably secured through referrals where the environment spoke their mother tongue. Another explanation would be that these immigrants became small business owners in their own communities where the lack of knowledge in the English language did not gravely affect their ability to earn at levels similar to an immigrant who spoke fair English.

Empirical Results

The dependant variable in this analysis is the log of monthly earnings in each wave. Monthly earnings were calculated from earnings from the last year divided by twelve. The panel data was weakly balanced; nonetheless, no more than one-third of the values were missing. Through multiple imputations the missing values were completed. The multivariate normal regression method was used to impute missing ages; truncated regression was used to impute the missing values for the variables describing education, vocational training and experience since these continuous variables were restricted with the range.

The robust regressions in table 5 use OLS. Independent variables consisted of education, vocational training, experience, a marriage dummy and English language knowledge. The reference group for English language knowledge were the immigrants who were

(1) fluent.

$$\log w = \beta_0 + \beta_1 Educ + \beta_2 Voc + \beta_3 Exper + \delta_1 Good + \delta_2 Fair + \delta_3 Poor + \delta_4 None + \delta_5 Marriage Dummy + \varepsilon,$$

where $\log w$ denotes the monthly earnings of an immigrant; the β s are the coefficients of different human capital that affect earnings; δ s are the coefficients of different dummy variables; and ϵ is the error term.

It is to be noted that fluency is not the same as literacy. Fluency is the ability to speak the language and communicate with neighbours. To obtain higher education, literacy in the dominant language is needed (Dustmann, Christian and van Soest, Arthur, 2001). The regressions were decomposed to show the effects of the independent variables over the first few years of the immigrant's life in Canada.

As expected, education, vocational training and experience all have a positive relationship with earnings in both regression with and without the marriage dummy variable. A marginal increase in education is associated with a 2.82% increase in wages. A marginal increase in vocational training increases the wage by 3.21%; and a marginal increase of experience increases the wage by 1.70%. The signs of the coefficients for English knowledge that is less than fluent are negative. This is to be expected as the returns of having lower knowledge in the dominant language should be smaller.

Table 5. Comparison of returns to Human Capital between single and married immigrants.

	Wave 1		Wave 3		Wave 4	
Education	0.0282***	0.0278***	0.0441***	0.0430***	0.0360***	0.0354***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Vocational Training	0.0321***	0.0307***	0.0180***	0.0162**	0.0110*	0.0097*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)
Experience	0.0170***	0.0157***	0.0237***	0.0223***	0.0216***	0.0206***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Good English Knowledge	-0.1560***	-0.1203***	-0.2183***	-0.1827***	-0.1138***	-0.0935***
	(0.024)	(0.024)	(0.020)	(0.019)	(0.018)	(0.017)
Fair English Knowledge	-0.2105***	-0.1677***	-0.1390***	-0.1270***	-0.0854***	-0.0809***
	(0.025)	(0.024)	(0.022)	(0.022)	(0.021)	(0.021)
Poor English Knowledge	-0.2626***	-0.2340***	-0.1359***	-0.1492***	-0.1319***	-0.1449***
	(0.028)	(0.027)	(0.029)	(0.029)	(0.033)	(0.032)
No English Knowledge	-0.1875***	-0.1940***	-0.0591	-0.0943*	-0.0662	-0.0756
	(0.039)	(0.038)	(0.047)	(0.047)	(0.054)	(0.053)
Marriage Dummy	No	Yes	No	Yes	No	Yes
Constant	5.4571***	5.3233***	5.8621***	5.6887***	6.1232***	5.9738***
	(0.034)	(0.034)	(0.029)	(0.031)	(0.0286)	(0.029)
Observations	4589	4589	5870	5858	4988	4986
R-squared	0.1343	0.1727	0.1625	0.1999	0.1345	0.1633

Notes: *p<0.05; **p<0.01; ***p<0.001

1. Robust Standard errors are in parentheses.
2. Immigrants who are fluent in the language were the reference group in the regressions.

Generally, as the knowledge of English declines, so do the earnings of the immigrant. An immigrant with a good English knowledge earned 16.60% less than an immigrant who was fluent in English. An immigrant with a poor knowledge of English earned 26.26% less than a fluent English speaking immigrant. However, an immigrant who has no knowledge of the English language earned more than an immigrant with poor English knowledge; this reversal was not expected. This observation was consistent in all the three waves.

The returns to education and experience increased in waves 3 and 4 when compared to wave 1; on the other hand, the coefficient of vocational training has decreased by almost half. The immigrants showed higher returns for the education accumulated in waves 3 and 4. The premium for fluency in English has also increased in the third wave. An immigrant with good English knowledge earned 21.83% less than an immigrant who is fluent in English. This is an increase of more than six bases points from wave 1. Regressions with the marriage dummy variable resulted in smaller coefficients when compared to the regression without the marriage dummy variable in all three waves.

The purpose of Table 6 is to examine the presence and effects of linguistic distance. In theory linguistic distance affects the four determinants of language fluency. Thus, linguistic distance or the lack thereof should be examined as these can improve policy choices through targeting certain group of immigrants; Improve “bang for your buck”. The other purpose of Table 6 is to at examine how exposure of the dominant language, English, in the home environment affects earnings.

The regression is decomposed by immigrant categories in waves 1 and 3. The waves were chosen for the availability of data as the survey questions varied to some degree every wave. Independent immigrants are economic immigrants who are subject to the point system. Sponsored immigrants are close relatives of a permanent resident or citizen of Canada. Nominated immigrants “have the skills, education and work experience needed to make an immediate economic contribution to the province or territory that nominates them” (CIC).

Six months after arrival, native German speakers in all immigrant categories have a positive relationship with earnings. The positive relationship is also observed for native Dutch speakers. According to Chiswick and Miller, both these languages have low difficulty in learning the English language (2004). Native Chinese speaker in all immigrant categories have a negative relationship to earnings. This is to be expected as native Chinese speakers have high difficulty in learning the English language. Immigrants who have English language problems also experience negative effects on their incomes.

In general, the coefficients for the third wave have the same signs except for independent native Dutch speakers; however, this coefficient is not significant at the 5% level. The coefficients for native German speakers were still positive and the Chinese speakers still negative in all the immigrant categories. Independent immigrants who had language problems experienced a larger negative effect from -25.77% to -37.89%. Another coefficient that changed signs was the effects of speaking English at home. For sponsored immigrants, the coefficient had a negative sign in the first wave and a positive signed coefficient for the third wave.

Table 6. Effects of Language Abilities, Mother Tongue, Language used at home to the log of wage grouped on immigration category

	Wave 1			Wave 3		
	Sponsored	Independent	Nominated	Sponsored	Independent	Nominated
Native Dutch Speaker	0.8814*** (0.050)	0.0443 (0.051)	0.1515 (0.136)	1.1610* (0.488)	-0.0388 (0.049)	0.0362 (0.148)
Native German Speaker	0.3527* (0.174)	0.1484*** (0.046)	0.2296* (0.096)	0.5350** (0.175)	0.0612 (0.048)	0.2097*** (0.054)
Native Chinese Speaker	-0.2318 (0.128)	-0.0806 (0.055)	-0.1842*** (0.051)	-0.0907 (0.067)	-0.1214* (0.058)	-0.3100*** (0.049)
Language Problems	-0.2008* (0.084)	-0.2577*** (0.044)	-0.0410 (0.038)	-0.1087 (0.102)	-0.3789*** (0.060)	-0.0905** (0.034)
English Language at Home	-0.0537*** (0.085)	0.0393 (0.038)	0.010 (0.040)	0.1135 (0.090)	0.0672* (0.031)	0.0176 (0.032)
Constant	5.5693*** (0.090)	5.7377*** (0.036)	5.490*** (0.045)	6.0382*** (0.043)	6.3506*** (0.022)	6.0937*** (0.018)
Observations	239	2884	1192	303	3391	1618
R-squared	0.0920	0.0557	0.0191	0.1079	0.0522	0.0437

Notes: *p<0.05; **p<0.01; ***p<0.001

1. Robust Standard errors are in parentheses.

The purpose of the regressions in table 7 is to compare OLS coefficients with fixed effects and random effects regressions. New variable such as the square of education and experience were included. This allows the regression to permit the returns to age and schooling to vary with the level of school. It is expected that the coefficient experience^2 to be negative to express diminishing returns. The interaction variable, education and experience was also added to the regression to evaluate the impact of education and experience jointly to earnings.

$$(2) \quad \log w = \beta_0 + \beta_1 Educ + \beta_2 Educ^2 + \beta_3 Exper + \beta_4 Exper^2 + \beta_5 Educ * Exper + \beta_6 Voc + \delta_1 Good + \delta_2 Fair + \delta_3 Poor + \delta_4 None + \delta_5 Marriage Dummy + \delta_6 Candian Experience Dummy + \varepsilon,$$

The second OLS equation is similar to the first equation with a few addition variables. The regression shows that education acquired from a foreign country has a negative relationship with earnings on all the three waves. As expected, the lack of Canadian experience also has a negative relationship with earnings. An immigrant with lacking Canadian experience made 18.74% less than an immigrant with Canadian experience on the first six months of landing. Likewise, an immigrant who is married made 20.46% more than a single immigrant. In general, more knowledge in English is rewarded by higher earnings.

In general the coefficients of table 7 wave 1 are bigger in comparison to wave 1 coefficients in table 5. The exception is the experience coefficient, table 7 wave 1, but the difference is miniscule at 0.21%. An increase in one more unit of experience results in a 1.36% increase in earnings. A person with good English knowledge is paid 10.32% less than a fluent speaker in table 7, while table 5 shows a figure of -12.03%.

Table 7. Returns to human capital on English language abilities

	Wave 1 ¹	Wave 3 ¹	Wave 4 ¹	Fixed Effects	Random Effects
Education	-0.0213*	-0.0618***	-0.0459***	-0.0208	-0.0128
	(0.010)	(0.009)	(0.013)	(0.019)	(0.023)
Education^{^2}	0.0019***	0.0042***	0.0026*	0.0021	0.0016
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Vocational Training	0.0333***	0.0238***	-0.0075	0.0293*	0.0316***
	(0.005)	(0.005)	(0.009)	(0.006)	(0.002)
Experience	0.0136	0.0377*	0.0005	0.0576*	0.0230
	(0.017)	(0.015)	(0.031)	(0.007)	(0.036)
Experience^{^2}	-0.0032*	-0.0076***	-0.0033	-0.0072*	-0.0035**
	(0.001)	(0.001)	(0.003)	(0.001)	(0.005)
Education* Experience	0.0024**	0.0041**	-0.0053	0.0016	0.0017***
	(0.002)	(0.001)	(0.003)	(0.000)	(0.000)
Lack of Canadian Experience	-0.1874***	-0.2626***	-0.0669*	-0.1868*	-0.1867***
	(0.024)	(0.024)	(0.027)	(0.025)	(0.026)
Married	0.2046***	0.2358***	0.1212***	0.1783*	0.1798***
	(0.015)	(0.016)	(0.025)	(0.021)	(0.020)
Good English Knowledge	-0.1032***	-0.1700***	-0.0293	-0.1011	-0.0944**
	(0.024)	(0.019)	(0.027)	(0.028)	(0.031)
Fair English Knowledge	-0.1767***	-0.1871***	-0.0501	-0.1670**	-0.1613***
	(0.024)	(0.022)	(0.032)	(0.006)	(0.008)
Poor English Knowledge	-0.2837***	-0.2584***	-0.1381**	-0.2411*	-0.2358***
	(0.028)	(0.029)	(0.049)	(0.034)	(0.035)
No Knowledge	-0.2743***	-0.2852***	-0.2331**	-0.2322	-0.2206**
	(0.040)	(0.048)	(0.090)	(0.086)	(0.090)
Constant	5.6317***	6.2967***	6.4303***	5.4227***	5.4057***
	(0.064)	(0.055)	(0.0809)	(0.118)	(0.184)
Observations	4589	5858	1489	59234	59234
R-squared	0.1918	0.2448	0.0739	0.1666	0.1683

Notes: *p<0.05; **p<0.01; ***p<0.001

1. OLS regressions of equation (2).
2. Immigrants who are fluent in the English language were the reference group in the regressions.
3. This regression is only for fluency in the English Language. Regression for Questionnaire 1 includes controls for immigrant category; mother tongue; status of job and region of settlement that does not include Quebec. Regressions for Questionnaire 2 & 3 have similar controls except for marital status and Canadian experience since the data did not allow for this.
4. Robust Standard errors are in parentheses.

Table 7 wave 3 shows that all the coefficients are smaller when compared to table 5 wave 3. Table 5 regressions showed that an immigrant with no English knowledge was paid more than an immigrant with poor English knowledge. This interesting result was not found in table 7 waves 3 and 4 regressions. An immigrant with poor English knowledge is paid 25.84% less and an immigrant with no English knowledge is paid 28.52% less than an immigrant fluent in English. The R-squared for both waves 1 and 3 were also higher in table 7.

The standard model used in panel data is

$$(3) \quad \log w_{it} = \beta_1 \sum_{j=2}^k \beta_j X_{ijt} + \sum_{p=1}^s \gamma_p Z_{pi} + \delta t + \varepsilon_{it},$$

Where w is the dependent variable earnings; X_j are the observed explanatory variables; Z_p are the unobserved explanatory variables. The index i refers to the immigrant, t refers to the year of arrival, and j and p are used to differentiate between different observed and unobserved explanatory variables. E_i is the error term in a standard econometric model (Torres-Reyna, n.d.).

There are two main approaches used to the fitting of models for panel data. First, the fixed effects model, more specifically within-groups fixed effects was used to estimate the coefficients. Here the mean values of the variables in the observations on a given individual were calculated and subtracted from the data for that individual to eliminate the unobserved effects (Dougherty, 2007). The standard fixed effect model is,

$$(4) \quad Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it},$$

Where Y_{it} is the earning of immigrant i at time t ; α_i is the unknown intercept for each immigrant; X_{it} is the observed explanatory variable of immigrant i at time t and β_1 is the coefficient. u_{it} is the error term for the equation (Torres-Reyna, n.d.).

The second approach used was the random effects model; this model was used to compare the coefficients of the random effects to the coefficients of the fixed effects model.

The standard random effect model is,

$$(5) \quad Y_{it} = \beta_1 X_{it} + \alpha + u_{it} + \varepsilon_{it},$$

Where the u_{it} is the between-entity error and ε_{it} is the within-entity error. The Hausman test was conducted to decide which model is a better fit. The null hypothesis, is the random effects model more appropriate to use? The result is significant and therefore the model to be used is the fixed effects (Torres-Reyna, n.d.).

Foreign education has a small negative relationship with earnings. Foreign vocational training and experience have a small positive relationship with earnings and both are significant at the 0.05 level. A married immigrant also gets paid 17.83% more than an immigrant who is single. An immigrant with good English knowledge is paid 10.11% less than an immigrant fluent in English. All the English language knowledge coefficients are smaller when compared to the coefficients of the OLS.

International Comparison

There have been a lot of studies on how language fluency affects earnings of immigrants. Countries that were studied included Israel, Germany, US, UK, Australia and Canada. Dustmann and Fabbri (2003) provided a view of the effects of language on earnings for the UK, United States, Canada, and Australia. Chiswick and Miller (1995) provided the partial effects of selected variables on dominant language fluency.

Table 8. Language, Earnings and Selected Variables, different countries

	UK	United States	Canada	Australia	
		1980	1981	1981	1986
OLS	0.229	0.169	0.122	0.053	0.083
	(0.116)	(0.013)	(0.050)	(2.54)	(4.75)
IV	0.271	0.571	0.414	-0.243	0.043
	(0.090)	(5.43)	(1.34)	(1.20)	(0.52)
Education	--	0.027	0.006	0.024	0.022
Age	--	-0.004	-0.001	-0.005	-0.005
Years since migration	--	0.014	0.005	0.009	0.008
Married	--	0.012	-0.001	-0.009	-0.009
Married, overseas	--	-0.035	-0.013	-0.039	--

1. Standard errors are in brackets
2. Source: Dustmann, 2000 and Chiswick and Miller, 1995.

Knowledge of the English language is most important in the UK and the US. A marginal increase in English language fluency results in an earnings increase of 22.90% in the UK and 16.9% increase in the US. Australia on the other hand only rewards a marginal increase on English fluency with an 8.30% earnings increase.

There are two determinants of language proficiency examined here- exposure and efficiency. Efficiency is examined by the variables education and age. Education and dominant language fluency have a positive relationship for all countries presented. Age and dominant language fluency have a negative relationship for all countries. As the age of immigration

increases, the efficiency of learning a new language diminishes. Exposure to language as measured by years since migration also have a positive relationship with fluency in the dominant language.

Policy Recommendations

There are three policy recommendations that stem from this research paper to help improve immigrant proficiency in English.

- (1) The first recommendation deals with the wealth effects. New immigrants have limited access to funds, which increases the cost of human capital acquisition. New immigrants have access to the federal loans program but not the provincial program which disburses more money. Furthermore, the federal loan disbursement is also very limited. The government should set up a special program which allows new immigrants access to more funds if they are engaging in English language improvement education.
- (2) The second recommendation deals with TFWs. TFWs are coming to Canada at a faster pace through the accelerated Labour Market Opinion processing. Most of the new TFWs are from Asian countries and bring with them lower levels of education. Granted they increase their human capital through country specific experience. However, English language skills and levels of education remain stagnant. Moreover, these TFWs apply for permanent residency after two years of working in Canada. These TFWs should be subjected to the same language requirements as

economic immigrants to Canada. An IELTS exam should become a requirement for TFWs applying for permanent residency.

- (3) The third recommendation deals with how the present point system accounts for other forms of human capital. The point system counts the years of schooling accumulated by the immigrant. However, it does not take into consideration if a degree has been awarded or not. A portion of the points allotted to education should be divided into two parts: one for years of schooling and the other for actual graduation. Years of schooling would be inconsequential if the immigrant is in school for longer because they have failed to pass a course. Inability to pass a course especially in the tertiary level could indicate a poor understanding of English since most universities across the globe deliver tertiary courses in English.

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