The determinants of self-employment among immigrant and native-born workers in Canada

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Abstract

Using 2011 National Household Survey data, this study examines how human capital and demographic factors influence self-employment decisions among native-born individuals and immigrants from different places of birth in Canada. The personal characteristics (age, gender, marital status, educational attainment and language ability) are crucial in explaining the self-employment decision. The results confirm that older age and marital status have positive impact on self-employment for both males and females. Moreover, the place of birth affects the incidence of being self-employment for both genders. Immigrants from Northern and Western Europe, Eastern Europe, West Central Asia and Other Eastern Asia show higher propensities to be self-employed than their Canadian-born counterparts. The rate of self-employment for other immigrants groups vary differently when the demographic and human capital variables are taken into consideration. This paper also examines the different impacts of determinants, such as level of education, geographical region and language proficiency on the self-employment choices of immigrants and native-born workers.

1. Introduction

Canada is a culturally diversified country of immigration that provides huge opportunities and challenges to newcomers. According to the 2011 Canadian National Household Survey (2011), immigrants account for 20.6 percent of the overall population and about 2,155,000 people migrated to Canada from 2001 to 2011 (Chui and Flanders, 2013). Therefore, as a component of the Canadian population, it is important to understand the way immigrants integrate into the Canadian labour force.

Many studies have examined immigrants' wage performances that followed policy changes such as the introduction of the "point system" in 1967 and the 1978 skill worker category under the "business" class. Those policy changes influenced, for example, immigrants' occupational composition (Green and Green, 1995). Recent immigrant cohorts experienced more difficult assimilation into the labour market than older ones (Bloom, Grenier and Gunderson, 1995). Other researches also showed that immigrants' performance in self-employment is affected by policy (Schuetze, 2005) and that demographic factors influence immigrants' self-employed inclination (Li, 2001) and economic return to self-employment (Frenette, 2004).

Given the tendency of many immigrants to become self-employed, some empirical studies have paid attention to the performance of the self-employed. On the one hand, these increasing trends in self-employment among immigrants resulted from the Canadian immigration policy. The "points system" was introduced to attract skilled workers to Canada. Later, in order to attract potential investors, there was the "business" class (which included entrepreneurs and self-employed) under the skilled worker immigration policy in 1978. From 1980 to 2001, the share of immigrants from the "business" class rose from 6% to 13% (Schuetze, 2005). In addition, according to the Immigration IMDB Category Profiles based on the Longitudinal Immigration Database (2008), from 1980 to 2010, seven percent of the immigrants were under the business immigrant scheme, and the share of the self-employed immigration was 17 percent among this scheme. They were mostly immigrants from Hong Kong, the U.K., Germany, the Netherlands, Mainland China and France. Therefore, immigration policy contributed to the increase of the immigrant self-employment rate. Furthermore, until the 2000s, the share of self-employed immigrants was 19 percent, compared to 15 percent for the domestic-born (Hou and Wang,

2011).

The limited wage employment opportunities during economic recessions also account for the growth of self-employment (Picot and Heisz 2000; Moore and Mueller, 2002). During the 1980s and 1990s, there were declining job opportunities, and the number of self-employed among individuals, both immigrants and non-immigrants, rose from 442,380 to 969,373 between 1982 and 1998 (Kuhn and Schuetze, 2001) and about 115,110 individuals move to the self-employment sector in 2008 and 2009 (LaRochelle-Côté, 2010).

Since there is an increasing number of individuals who participate in self-employment, it is worthwhile to study which factors contribute to different self-employment choices between immigrants and Canadian-born workers. Therefore, the purpose of this paper is to focus on the factors which influence immigrants' self-employment propensity. This paper uses the 2011 Canadian National Household Survey data. One interesting feature is that the survey provides data after the financial crisis. The main finding of this paper is that the place of birth affects the probability of being self-employment for both genders. Immigrants from Northern and Western Europe, Eastern Europe, West Central Asia and Other Eastern Asia are more inclined to be self-employed than Canadian-born citizens.

The paper is organized as follows. The next section is a literature review that discusses the determinants of self-employment propensity among immigrants and native-born workers. Section three presents a description of the data and of the variables, and it introduces the model specifications used in the paper. The empirical results and discussion are shown in section four. In addition, robustness checks based on the previous models are presented in section five. The last section is the conclusion.

2. Literature review

Numerous researchers have analyzed the self-employed performance among immigrants and native-born workers. Some studies reported that demographic characteristics are associated with the choice of self-employment. For instance, Li (2001) emphasized the crucial role of such factors with the help of the Canadian longitudinal immigration data base from 1980 to 1995.

Factors such as age, education and years since immigration display a positive effect on their choices. Well-educated or older immigrants are more likely to opt for self-employment. Moreover, male immigrants are more inclined to own their businesses than female immigrants. In particular, among the immigrants groups, Li found that immigrants from the Western economies, such as those from Europe and the United States, are relatively more likely to be self-employed. Since that research used the Longitudinal Immigration Data Base, which only provides information on immigrants, it does not compare the choices of the native-born to those of the immigrants.

Using the 2001 Canadian Ethnic Diversity Survey, Nakhaie, Lin and Guan (2009) pointed out that social capital (such as "associations' participation", "trust" and "religious participation") helps to explain the self-employment decision of different ethno-racial minorities. In order to illustrate the effect of that factor, the authors used four separate models to show how ethno-racial groups vary in their self-employment choices, first when adding age and gender, then adding language and generation, and in the last two model adding ethnic identity and social capital, which includes religious attendance and family connection. They found that when the language variables are included, the negative effect on visible minorities' self-employment propensity is significant and that the incidence of self-employment for Western and Northern Europe is not different from that of Canadian-born individuals. In addition, social capital does not necessarily provide more business opportunities for the minority groups; only those with strong social capital networks are advantaged in the labour market. Furthermore, their findings showed that demographic characteristics, such as age and gender, play an essential role in immigrants' choices. The ethno-racial origin also relates to self-employment choices. Compared to ethno-racial origins from Europe, Canada and Britain, which have self-employment rates of 20.1%, 16.9%, 15.8% respectively, the visible minorities have a lower self-employment rate of 13.4%. They also pointed out that the minority immigrants are more likely to start their businesses in the low skills "distribution sectors" such as trade and other services, which provide low economic returns, while the Canadians and Europeans are more likely to enter in the agriculture and the higher skills self-employment.

Fairlie, Zissimopoulos and Krashinsky (2010) used cross sectional data from three developed

countries, the United States, Canada and the United Kingdom, to study three immigrant groups, the Chinese, the Indians and the Other Asians. They presented evidence that self-employment was more common among immigrants than among the native-born. For Canada, they concluded that educational attainment had a positive and significant effect on individuals' business performance. Moreover, they found that among the other Asian immigrant groups, the rates of self-employment for immigrants from the Philippines, Vietnam and India are lower than those of the domestic-born.

In addition to the effects of demographic and human capital characteristics, two other main hypotheses have been proposed to explain why immigrants may decide to be self-employed: *ethnic enclave* and *block mobility*.

Using 1970 and 1980 US Census data, Borjas (1986) found that older cohorts of immigrants had higher probability of being self-employed, which shows a positive assimilation effect. Ethnic enclaves were measured by the language or cultural background share in the community and they were found to be an important explanation of immigrants having a higher self-employment rate than the natives.

Using a different approach, Ley (2006) surveyed 90 businessmen from Hong Kong, Taiwan and Korea living in Vancouver to see which factors accounted for business success. The author found that education and language fluency play a positive role on the success of an enterprise. Furthermore, the "country of origin" has an impact on success. Surprisingly, the Koreans are less likely to take the advantage of their ethnic enclave than immigrants from Hong Kong and Taiwan, but the Koreans gain higher economic returns because they are more engaged in Canadian local business, rather than international trade with their home country. Regarding the location of business, an unexpected finding is the higher return from other areas in Greater Vancouver than in Vancouver or Richmond. Therefore, the author concluded that the ethnic enclave economy has negative effect on economic return.

Contrasting with the ethnic enclave effect**,** the block mobility hypothesis relates to a lack of job opportunities that forces immigrants to start their own businesses to survive in the labour market.

Based on the 1991 Canadian census, Li (1997) provided evidence on the differences in earnings from self-employment and wage employment among five groups: "visible minority immigrants", "white immigrants", "native-born visible minorities", "native-born white Canadians" and “aboriginal peoples”. He suggested that, compared to the domestic-born, immigrants are more likely to participate in self-employment, but that the visible minority status and the immigrants status have negative effect on self-employment earning. Furthermore, the economic return in the wage sector is lower than in the self-employment sector. Therefore, he concluded that the higher return in self-employment than in wage employment, as well as the blocked mobility effect, lead the visible minority immigrants to choose self-employment.

The self-employment performance of females was examined with the use of interviews in Alberta by Hughes (2003). The interviews were done by the author and his assistants in 1999 and a sample of 61 women interviewees was drawn from the Alberta women enterprise community and organizations. About two-thirds of the respondents were aged over 45, were married and over 50% of them had a high level of education. Immigrants account for 33% of those women. They author found that women were pushed into self-employment, not only because of a narrow push effect which includes job loss and limited job opportunities, but also because of unsatisfactory work environment and work stress.

Hou and Wang (2011) combined data from several Canadian censuses, the Labour Force surveys and the Survey of Self-Employment to present an overview of the immigrants’ self-employment situation in Canada during the recent years. The characteristics of the self-employed among the Canadian-born and the immigrants are analyzed. The young, the unmarried and those without children are less likely to be self-employed. The proportion of immigrants who hold a university degree is larger than that of non-immigrants in the self-employment and wage employment sectors and females are less inclined to be self-employment than males. In order to examine the push and pull effects behind self-employment, the authors employed the Canadian Survey of Self-Employment and found that the share of immigrants who enter into self-employment “by choice” is 50%, which is less than that of the domestic-born (60%). This finding can be explained by a lack of job options in the labour market that forces immigrants to become self-employed involuntarily. In contrast, those who enter into self-employment voluntarily are more

attracted by the entrepreneurial advantages.

In addition to discussing the odds of being self-employment, some researchers have focused on the difference in the return to self-employment between the natives and immigrants. Frenette (2004) used the 1981, 1986, 1991 and 1996 Canadian census data and showed that the population of immigrants who start their businesses grew faster than that of the natives. However, comparing the economic returns to self-employment of the immigrants and the native-born, he found that the earnings of immigrant are less than those of the native-born.

Business environment is another potential factor to which attention should be paid. Razin and Langlois (1996) used 1991 Canadian census data to focus on immigrant ethnic groups' performance among 25 metropolitan areas in Canada. Compared with the mainstream immigrants groups that are classified by "race, religion or appearance" (such as European origin immigrants) and the less entrepreneurial groups (Latin Americans and Filipinos) who are crowded in the major metropolitan areas to start businesses, they surprisingly found that the non-European immigrant cohorts and most entrepreneurial groups (such as the Jews, the Koreans and the Greeks) prefer "peripheral metropolitan areas" to start their businesses; this is because other job opportunities are limited in peripheral metropolitan areas that restrict them to be self-employed and there is less business competition than in the larger metropolitan areas that attracts those groups to be self-employed. They also pointed out that community size and economic activity in the region should be taken into account when ethnic entrepreneurs' self-employment rate is measured.

Using census data from 1961, 1971, 1981 and 1991, Mata and Pendakur (1999) discussed immigrants' business choices associated with level of education. Compared to similar immigrants who have a low level of schooling, native-born males have lower odds of self-employment. Self-employed industry choices are also related to the level of education. Canadian-born workers or immigrants with a university certificate are more likely to serve in the business sector. In contrast, those with low education normally do low skill work, such as work in consumer services and the construction sector. However, they found that immigrants who have a university certificate are less likely to start a business than their Canadian-born counterparts.

Since that paper focused on immigrants' industry choices, there is no comparison between different immigrants groups.

Kuhn and Schuetze (2001) pooled data from the 1982 to 1998 Canadian Surveys of Consumer Finances to show the dynamics of immigrants and Canadian-born workers' performance in the labour market. The main finding is that due to the unbalanced position of the Canadian labour market and the decreasing job opportunities during the period, a larger fraction of men who received wages were pushed into self-employment; also, an increasing number of females entered the self-employment sector.

To summarize, there are numerous researches that have been done on the self-employment outcomes of immigrants in Canada. Some have debated on the push and pull effects, while others were concerned about self-employment performance in a particular region. In this paper, following Li (2001), Nakhaie and Lin and Guan (2009), I will show how different factors, such as basic human capital and geographical location, contribute to the decision to be self-employed. Furthermore, some researchers have focused mainly on the male performance in the labour market, while others did research on ethnic groups. Therefore, this study will add to the previous literature by discussing the self-employment performance of Canadian-born and immigrants groups based on gender and place of birth.

3. Data and descriptive statistics

3.1 Data and variables

This study is based on the 2011 Canadian National Household Survey (NHS) Public Use Microdata File (PUMF). The file includes 887,012 observations representing about 2.7% of the overall population in Canada. In addition to demographic characteristics of individuals, such as age, sex, education and marital status, it provides information on the place of residence and the place of birth, which allows comparisons of the performances between immigrants and native-born individuals.

This paper mainly focuses on the individuals aged from 15 to 64 years and captures their choices to be self-employment or employed. Since this paper compares the Canadian-born workers and

the immigrants only, the non-permanent residents are excluded. Also, I have dropped individuals who live in Northern Canada because they account for only 0.36% of the population and immigrants who live in that region represent only 0.11% in the total sample (only five Canadian-born individuals and no immigrants chose to be self-employment in the restricted sample). The relevant variables with missing value are also dropped from the sample. With those exclusions, the final sample contains 464,898 observations, out of which 79.8% are native-born Canadians and 20.2% are immigrants.

The dependent variable of this study is self-employment. According to Statistics Canada (2011), the definition of self-employment is based on the class of worker. Therefore, the individuals who reported that they were in 2010 "self-employed without paid help (incorporated)," "self-employed with paid help (incorporated)," "self-employed without paid help (unincorporated)," or "self-employed with paid help (unincorporated)," as well as "unpaid family worker", are defined as self-employed. This definition is similar to the one of previous studies (see, for example, LaRochelle-Côté, 2010). The outcome variable equals one if an individual reported to be self-employed, and it equals zero if he/she reported to be a wage worker. Since this paper only focuses on the self-employed workers and wage employees, the individuals who did not work are excluded from the sample. In the final sample, about 9.6 percent of the workers, or 44,770 individuals, reported being self-employed, out of which 22.8 percent were foreign-born and 77.2 percent were native-born individuals. Females accounted for 37.1 percent, or 16,605 observations, and males accounted for 62.9 percent, or 28,165 observations of the self-employed sample.

The propensity of self-employment is related to one's characteristics, such as age, education, marital status, as well as other important factors which include business opportunities in the place where one locates. As a result, a series of independent variables are described as follows.

For the age variables, I created categorical variables for 10 year age groups, with individuals aged 15 to 24 years old being the reference group. It is expected that older individuals are more likely to choose self-employment since they tend to gain more skills or capital resources to invest in their own business (Borjas, 1986; Li, 2001). Marital status variable is taken into account in the

study since marital status has an effect on employment. Moreover, Borjas (1986) argued that married self-employed individuals reduce the risk of shirking by their employees, because it can solved by having their spouses working with them. I use a dummy variable that is equal to one if an individual is legally married (and not separated) or living common law, while it is equal to zero if an individual has never been legally married, is separated, divorced or widowed (and not living common law).

Apart from marital status, the presence of children, as a potential factor in family composition, may have an implication for self-employment preference. To measure the impact of children in the individuals' decision, dummy variables for individuals who reported having children in their family will be coded as follows: (1) child aged 0 to 5, (2) aged 6 to 14, or (3) aged 15 and over; the reference group is the one with no children.

As one of the important components of human capital and a determinant of one's performance in the labour market, educational attainment influences self-employment outcome. I divide the level of education into five categories based on highest education level one's completed: (1) no certificate, (2) high school diploma (reference group), (3) trades certificate and college certificate, (4) university certificate or bachelor degree, (5) above bachelor.

One of the key factors that is linked to educational quality is the location of the study. I divide the location of study into two categories. One category includes the individuals who received their post-secondary outside Canada, the U.S. or Europe (since those countries share similar educational systems); the other category includes those who received their education within Canada, the U.S. or Europe; I also put those without a post-secondary certificate into the later groups in the reference category since location of study is defined only for those with post-secondary education.

In order to understand the impact of language ability in the market, language is coded into two categories. The individuals who speak at least one of the Canadian official languages are coded as zero, while those know neither English nor French are coded as one.

Two geographic variables, region and census metropolitan area, which are connected to the business environment and employment opportunities, are associated with the probability of being self-employed. Among the regions, Quebec, Ontario, Alberta and British Columbia are identified separately. Manitoba and Saskatchewan are grouped together. The last group is the Atlantic Provinces which include Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick. Ontario is the reference. Regarding the census metropolitan area variables, Montreal, Toronto, Vancouver, Ottawa, Calgary and Edmonton are identified individually. Those six census metropolitan areas are of interest because they attract many immigrants and may provide a better platform to start an enterprise. Two other dummy variables are created for the other census metropolitan areas and for non-census metropolitan areas (reference group).

To specify the differences among immigrants who were born in different countries or regions, I classify respondents into 15 groups based on place of birth: Canada, the United States, the United Kingdom, Mainland China, Hong Kong, India, and the Philippines, are considered individually. Immigrants from the regions of West Central Asia and the Middle East[1], and Other Eastern Asia[2] are also identified separately. Then, the Other America region includes Central America, Jamaica, other Caribbean and Bermuda, and South America. Immigrants from Germany and other Northern and Western Europe define the group Northern and Western Europe. Eastern Europe comprises Poland and Other Eastern Europe. Italy, Portugal and Other Southern Europe define the group Southern Europe. Africa includes Eastern Africa, Northern Africa and other Africa. Other Southeast Asia, Pakistan and other southern Asia and Oceania are combined to define Other Asia and Oceania.

Besides place of birth, the number of years since immigration is an indicator that shows how long immigrants have been in Canada. Like the age variable discussed before, I expect that the longer the immigrants stay in Canada, the more they are able to gain resources and knowledge to participate in self-employment. This variable is defined as 2011 minus the year of immigration

[1] According to 2011 NHS Public Use Microdata File, West Central Asia and the Middle East include other Asia includes Afghanistan, Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, West Bank and Gaza Strip (Palestine), Yemen

[2] According to 2011 NHS Public Use Microdata File, other Asia includes Japan, Korea (North), Korea (South), Macao Special Administrative Region, Mongolia and Taiwan.

(YRIMM) and it is set to zero for the Canadian-born. I then transform this variable by subtracting 10 years to it. By doing so, the effects of the place of birth dummy variables on self-employment are evaluated instead of as at the time of entry. This is a better way to compare self-employment propensities of immigrants groups to those of the Canadian born. The coefficient of years since immigration is not affected by this transformation.

Religion may be related to social capital, which implies a connection between individuals and religious groups. I distinguish four main groups: (1) Christian and Jewish (Anglican, Baptist, Catholic, Christian Orthodox, Lutheran, Pentecostal, and Presbyterian, United Church, Other Christian and Jewish); 2) Muslim; (3) Other religions (Buddhist, Hindu, Sikh and Other religions); and (4) no religion (reference group).

3.2 Descriptive statistics

Table 1 presents the self-employment rate of immigrants and native-born individuals by place of birth. The self-employment rate for all immigrants (10.9%) is higher than that for Canadian-born individuals (9.3%). Concerning the different immigrant groups, it can be seen that most immigrants have a higher proportion of individuals engaged in self-employment than Canadian-born citizens, the exception being those from Other America, Africa, the Philippines and Other Asia and Oceania. The groups with the highest self-employment rates are those from the U.S., Northern and Western Europe and Other Eastern Asia, with rates of 14.7%, 17.3% and 20.0% respectively. Although the Philippines are one of the largest sources of immigrants, with about 8.7 percent of all immigrants in our sample, individuals born in the Philippines have a lowest self-employment rate (3.1%) for both females and males. This is similar to the result found in Fairlie, Zissimopoulos and Krashinsky (2010). One possible explanation is that most immigrants from the Philippines migrate to Canada under the Live-in Caregiver Program, so they are employed by families and engaged as caregiver or nannies.

Comparing the genders, females have lower rates of self-employment than males for all the birth places except the Philippines. This can be explained by the situation that males may have more opportunities to do business than females. About 11.3 percent of Canadian-born males are engaged in self-employed, compared to only 7.2 percent of females. Particularly large gender

differences in self-employment rates are found for immigrants from India, West Central Asia and the Middle East, Southern Europe, and Other America. Maybe those female immigrants are required to spend more time doing family care than other females because of their traditional cultures. In contrast, immigrants from the U.S. and Hong Kong show a small difference between male and female participation in self-employment.

Table 1. Self-employment rate, age15-64, by place of birth and gender, 2011

	Total (%)	Males (%)	Females (%)	Sample size
Whole sample	9.6	11.8	7.3	464,898
Canada	9.3	11.3	7.2	370,867
All immigrants	10.9	13.7	7.8	94,031
United States	14.7	15.9	13.6	2,771
Other America	6.9	9.2	4.7	11,813
United Kingdom	13.5	16.0	10.6	6,038
Northern and Western Europe	17.3	20.0	14.1	4,432
Eastern Europe	13.1	16.8	9.2	7,105
Southern Europe	14.1	18.8	8.0	6,310
Africa	9.0	10.9	6.3	6,873
Mainland China	12.2	15.2	9.3	8,135
Hong Kong	12.5	13.9	11.1	3,921
Philippines	3.1	3.1	3.1	8,205
India	10.2	14.4	5.2	8,900
West Central Asia and the Middle East	14.0	18.4	8.1	6,280
Other Eastern Asia	20.0	23.0	17.1	2,872
Other Asia and Oceania	8.4	10.2	6.1	10,376

Source: 2011 NHS Public Use Microdata, Canada

3.3 Model specifications

The outcome analyzed in this study is self-employment, which is a binary variable. The logistic regression model to estimate the probability of self-employment has been used by some researchers (Li, 2001; Frenette, 2004; Nakhaie, Lin and Guan, 2009). Although the logistic regression model has been used in previous researches, I use the linear probability regression

model with robust standard errors. I estimated my models with a logistic regression and got similar results (see section 5 below). Therefore, the linear regression results will be presented and analyzed in this study. The coefficients can be interpreted directly as the effects of unit changes in the independent variables on the probability of being self-employed. In order to observe how self-employment probabilities of immigrants groups vary after controlling for a set of demographic and geographic variables, I set three specifications. The first one includes only dummy variables for the places of birth and provides the raw differences in self-employment among the groups. The second one adds all the demographic and geographic variables discussed earlier. From the previous discussion, comparisons between Canadian born individuals and immigrants groups by place of birth are evaluated after 10 years in Canada. The third specification provides a clearer understanding of the impact of different characteristics that contribute to the self-employed decisions of immigrants and Canadian-born individuals. Therefore, I use the immigrant status variable to divide the sample in two groups. In this specification, the variables for place of birth, years since immigration and location of study are excluded so that the immigrants and the Canadian-born have the same specification.

Specification 1:

Self-employment $=\alpha_0+\alpha_1$*place of birth$+\mu$

Specification 2:

Self-employment $=\alpha_0+\alpha_1$ *place of birth$+\ \alpha_2$*(years since immigration-10) $+\alpha_3$*age group$+\alpha_4$*female$+\alpha_5$*marital status$+\alpha_6$*presence of children$+\alpha_7$*education level$+$ α_8* location of study $+\alpha_9$ *language$+\alpha_{10}$*region$+\alpha_{11}$*census metropolitan area$+\alpha_{12}$*religion$+\mu$

Specification 3 (for the immigrants and the Canadian-born separately):

Self-employment$=\alpha_0+\alpha_1$*age group$+\alpha_2$*marital status$+\alpha_3$*presence of children$+\alpha_4$*highest education level $+\alpha_5$*knowledge of official language$+\alpha_6$*region$+\alpha_7$*census metropolitan area$+\alpha_8$*religion$+\mu$

The variables were defined in section 3.1. For the variables that have more than two categories, the regression coefficients are vectors. For all specifications, I regress with the whole sample and

for males and females separately.

4. Empirical Results

4.1 Regression of self-employment status for the total sample

Table 2 shows the results for the two specifications of the binary choice model regression for the total sample, the first column showing the raw differences without any control variables (specification 1), and the second column with the control variables (specification 2). The first specification shows little explanatory power, but it provides a basis of comparison with the second specification which emphasizes how the incidence of self-employment changes after adding more variables in the regression.

Table 2. Regression of self-employment status for the total sample

	(1)	(2)
Place of birth		
(Reference: Canada)		
U.S.	0.053***	0.010
	(0.007)	(0.007)
Other American	-0.024***	-0.050***
	(0.002)	(0.003)
U.K.	0.041***	-0.017***
	(0.004)	(0.005)
Northern and Western Europe	0.080***	0.026***
	(0.006)	(0.006)
Eastern Europe	0.037***	0.011**
	(0.004)	(0.004)
Southern Europe	0.048***	-0.006
	(0.004)	(0.005)
Africa	-0.004	-0.030***
	(0.003)	(0.004)
Mainland China	0.028***	-0.001
	(0.004)	(0.004)
Hong Kong	0.032***	-0.009
	(0.005)	(0.005)
Philippines	-0.062***	-0.082***
	(0.002)	(0.003)
India	0.008**	-0.027***
	(0.003)	(0.004)
West Central Asia and the Middle East	0.047***	0.026***
	(0.004)	(0.005)

Other Eastern Asia	0.107***	0.080***
	(0.007)	(0.007)
Other Asia and Oceania	-0.010***	-0.046***
	(0.003)	(0.003)
Years since immigration-10 years		0.001***
		(0.000)
Age		
(Reference: Age 15-24)		
Age 25-34		0.024***
		(0.001)
Age 35-44		0.057***
		(0.001)
Age 45-54		0.081***
		(0.001)
Age 55-64		0.118***
		(0.002)
Female		-0.043***
(Reference: Male)		(0.001)
Marital status		
(Reference: Non married)		
Married		0.025***
		(0.001)
Presence of children		
(Reference: No children)		
Child 0-5		0.009***
		(0.001)
Child 6-14		0.016***
		(0.001)
Child 15-over		-0.003**
		(0.001)
Highest education level		
(Reference: High school)		
No certificate/ degree		0.005**
		(0.001)
Trade College certificate		0.001
		(0.001)
University certificate /Bachelor degree		0.004**
		(0.001)
Above Bachelor		0.023***
		(0.002)
Location of study		
(Reference: within Canada/ the U.S./ Europe or No post-secondary degree)		
Study outside Canada/ the U.S./ Europe		0.002
		(0.003)

Knowledge of official language		
(Reference: both/English/French)		
Non English Or French		-0.012*
		(0.006)
Region		
(Reference: Ontario)		
Quebec		-0.002
		(0.002)
Manitoba and Saskatchewan		0.013***
		(0.002)
Alberta		0.032***
		(0.003)
British Columbia		0.029***
		(0.002)
Atlantic		-0.031***
		(0.002)
Large Census Metropolitan Area		
(Reference: Non Census Metropolitan Area)		
CMA Montreal		0.001
		(0.002)
CMA Toronto		0.008***
		(0.002)
CMA Vancouver		-0.014***
		(0.003)
CMA Ottawa		-0.020***
		(0.002)
CMA Calgary		-0.024***
		(0.003)
CMA Edmonton		-0.046***
		(0.003)
CMA Other		-0.024***
		(0.001)
Religion		
(Reference: No Religion)		
Religion Christian		-0.007***
		(0.001)
Religion Muslim		0.003
		(0.003)
Other Religion		-0.002
		(0.003)
constant	0.093***	0.048***
	(0.000)	(0.002)
R-squared	0.004	0.038
F-statistics	F(14,464883) = 154.54	F(45,464852) = 464.47

Observations	464,898	464,898

Notes: Robust standard errors of coefficients in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
The place of birth effect in column (2) is evaluated after 10 years of immigration.

From the first specification showing the raw differences, compared to the Canadian-born individuals, the probability of self-employment is significantly negative for immigrants from Other America, the Philippines, and Other Asia and Oceania. For instance, the likelihood of being self-employment for the Philippines immigrants is about 6.2 percentage points lower than that of the Canadian-born workers. In contrast, immigrants from Other Eastern Asia and Northern and Western Europe have respectively a 10.7 percentage point and an 8 percentage point higher chance of being self-employed. Those results are the same as those in table 1. The reason why immigrants from Other Eastern Asia are more likely to be self-employed than native-born individuals is perhaps because they include immigrants from Korea, which had a high 41.3% rate of business ownership in 2001 (Fairlie, Zissimopoulos and Krashinsky, 2010).

When looking at the coefficients of place of birth in the second specification, I find that the estimated coefficients of the immigrant groups change. Immigrants from the U.S., for example, have a 5.3 percentage points higher probability of being self-employed after 10 years than the Canadian-born population in the first specification, while the difference between these two groups disappears in the second specification. The same result is also found for immigrants born in Southern Europe, Mainland China, Hong Kong and India. This variation can be interpreted by the fact that the characteristics (such as age, level of education and language ability) between immigrants groups and native-born individuals are different. In addition, compared to native-born individuals, the incidence of self-employment for African immigrants shows no significant difference in the first specification, while there is a significant negative effect if other variables are included. One interesting finding is that immigrants from Northern and Western Europe, Eastern Europe, West Central Asia, Other Eastern Asia show a significant positive coefficient even after including other demographic variables, suggesting that these immigrants are more likely to participate in self-employment than non-immigrant individuals. Therefore, the differences reflect the fact that the personal characteristics and immigrants groups' culture influence the decision of self-employment as well as some potential obstacles that exist in some

immigrants groups.

The positive significant coefficient of years since immigration suggests that the longer the immigrants stay in Canada, the more likely they are to be self-employed. The effect is significant but small. Specifically, if one has been in Canada for an additional year, the probability of being self-employed increases by 0.1 percentage points. Consistently with previous findings, the positive relationship between self-employment and immigrants' landing duration can be interpreted by the fact that they can obtain more human capital and resources to integrate into the labour market (Li, 2001). European immigrants are the main groups that migrated to Canada before the 1970s (Chui and Flanders, 2013), which may explain why European countries are more inclined to be self-employed than other groups.

Considering the coefficients of the other variables, the age groups variables have increasing positive and significant coefficients compared to the reference category of 15 to 24, which means that age has a positive influence on self-employment decision for individuals. In order to examine if the age effect is robust, I also used the mid-points of age groups to get a continuous variables of age and found that the age variable was significantly positive. Specifically, individuals aged 35 to 44 have a 5.7 percentage points higher probability to be self-employed than individuals aged 15 to 24 years old. Self-employment propensity increase with age as expected, since one can obtain more experience and network resources.

Females are 4.3 percentage points less likely to be self-employed than males. Males are more inclined to start a business than females, perhaps owing to their entrepreneurial ambition or the attraction for higher economic returns. The effects on males and females will be analyzed separately in the following sub-section. The coefficient of marital status is positive and significant for the total sample. Married individuals are 2.5 percentage points more likely to choose self-employment than their non-married counterparts. This result is consistent with the expectation that married people have access to initial economic capital or share their business ideas.

For the presence of children, compared to individuals without a child in the family, individuals

with children aged 0 to 5 and 6 to 14 have higher probabilities of self-employment. Interestingly, having children aged 15 or over reduces the likelihood of self-employment. One possible interpretation is that a child at 0 to 14 years old need more care and concern by their parents, and that parents take advantage of the flexible working hours allowed by self-employment.

Considering the educational attainment, individuals without a certificate or degree have a higher probability of being self-employed than the reference groups of high school diploma. In addition, there is no significant difference between holding trade college certificate and holding a high school diploma. However, the probability of being self-employed is enhanced by 2.3 percentage points for an individual who holds a degree above bachelor level, which is consistent with the previous finding that there is a positive significant effect for individuals who received a postgraduate degree (Nakhaie, Lin and Guan, 2009). One possible reason is that highly educated individuals are more likely to use their knowledge to design their marketing strategy or grasp a business niche by using data analysis, therefore, the incidence of self-employment may be higher for well-educational individuals. In addition to educational quality, the effect for location of study can also be examined. Compared with those who studied within Canada, the U.S., or Europe, and without post-secondary degree, the coefficient is positive but not statistically significant for those who studied elsewhere.

Regarding language, the results indicate that individuals who know neither English nor French have a 1.2 percentage points lower probability to be self-employed than those who have a good command of at least one of the Canadian official languages (at the 10% significance level). A possible explanation is that communication with fluent English or French is essential skill when running a business, which can help one gain more business information and provide a better service to consumers.

With respect to the geographic variables, the regional effects are analyzed first. Compared to those living in Ontario, individuals living in the Atlantic Provinces have lower probabilities of self-employment, while those living in Manitoba and Saskatchewan, Alberta, British Columbia have higher probabilities of self-employment. There is no significant difference for those living in Quebec. Relative to people not living in census metropolitan areas, the probabilities of being

self-employed for individuals living in Toronto and Montreal are larger, although Montreal is not statistical significant; the other large census metropolitan areas have a significantly negative effect. Compared to individuals living in non-census metropolitan areas, the likelihood of being self-employed decreases by 4.6 percentage points and by 1.4 percentage points for individuals living in Edmonton and Vancouver respectively, while it increases by 0.8 percentage points for those living in Toronto. As the largest metropolitan area, Toronto provides the economic resources and built up ethnic communities for newcomers. In addition, some ethnic minorities' immigrants, such as the Chinese and the Indians, may prefer to set up their businesses in the enclave economy by providing retail trade and food services because they have linguistic or cultural advantages with their customers. Those two immigrants groups are also inclined to use their transnational networks in their businesses (Kariv et al., 2009). On the other hand, the lower likelihood of being self-employed in the other large census metropolitan areas, such as Vancouver, may be due to the fact that enterprises in those census metropolitan areas have higher operating costs than in the non-census metropolitan area, where there is less competition and more business opportunities.

One interesting finding is that compared with people with no religion, Christians have a significantly lower self-employment probability.

4.2 Regression of self-employment status for males and females separately

Table 3 aims at providing a better understanding of the differences in self-employment decisions between males and females. The signs of many coefficients show similar patterns to those of the whole sample. Therefore, I will focus mainly on differences between males and females in this sub-section.

Table 3. Regression of self-employment status for males and females

	Males		Females	
	(1)	(2)	(3)	(4)
Place of birth (Reference: Canada)				
U.S.	0.045***	-0.010	0.063***	0.032***
	(0.010)	(0.010)	(0.009)	(0.009)
Other American	-0.021***	-0.055***	-0.025***	-0.045***

	(0.004)	(0.004)	(0.003)	(0.003)
U.K.	0.046***	-0.025***	0.034***	-0.005
	(0.007)	(0.007)	(0.006)	(0.006)
Northern and Western	0.087***	0.023**	0.068***	0.032***
Europe	(0.008)	(0.009)	(0.008)	(0.008)
Eastern Europe	0.055***	0.021**	0.020***	0.002
	(0.006)	(0.006)	(0.005)	(0.005)
Southern Europe	0.075***	0.004	0.008	-0.023***
	(0.007)	(0.007)	(0.005)	(0.006)
Africa	-0.004	-0.037***	-0.009*	-0.021***
	(0.005)	(0.005)	(0.005)	(0.005)
Mainland China	0.039***	0.005	0.020***	-0.007
	(0.006)	(0.006)	(0.005)	(0.005)
Hong Kong	0.026***	-0.027***	0.039***	0.009
	(0.008)	(0.008)	(0.007)	(0.007)
Philippines	-0.082***	-0.108***	-0.041***	-0.061***
	(0.003)	(0.004)	(0.003)	(0.003)
India	0.031***	-0.007	-0.020***	-0.051***
	(0.005)	(0.006)	(0.004)	(0.005)
West Central Asia and	0.071***	0.043***	0.008	0.001
the Middle East	(0.006)	(0.007)	(0.005)	(0.006)
Other Eastern Asia	0.117***	0.085***	0.099***	0.075***
	(0.011)	(0.011)	(0.010)	(0.010)
Other Asia and	-0.012**	-0.055***	-0.011**	-0.035***
Oceania	(0.004)	(0.005)	(0.004)	(0.004)
Years since		0.001***		0.0004***
immigration-10 years		(0.000)		(0.000)
Age				
(Reference:				
Age 15-24)				
Age 25-34		0.036***		0.015***
		(0.002)		(0.002)
Age 35-44		0.077***		0.041***
		(0.002)		(0.002)
Age 45-54		0.109***		0.055***
		(0.002)		(0.002)
Age 55-64		0.153***		0.081***
		(0.003)		(0.002)
Marital status				
(Reference:				
Non married)				
Married		0.025***		0.022***
		(0.002)		(0.001)

Presence of children (Reference: No children)		
Child 0-5	0.005*	0.013***
	(0.002)	(0.002)
Child 6-14	0.015***	0.015***
	(0.002)	(0.001)
Child 15-over	0.001	-0.007***
	(0.002)	(0.001)
Highest education level (Reference: High school)		
No certificate/ degree	0.003	0.004*
	(0.002)	(0.002)
Trade College certificate	-0.007***	0.009***
	(0.002)	(0.001)
University certificate /Bachelor degree	0.003	0.002
	(0.002)	(0.002)
Above Bachelor	0.016***	0.025***
	(0.003)	(0.002)
Location of study (Reference: within Canada/the U.S./ Europe or No post-secondary degree)		
Study outside Canada/ the U.S./ Europe	-0.003	0.008*
	(0.004)	(0.003)
Knowledge of official language (Reference: both/English/French)		
Non English Or French	-0.028**	0.004
	(0.009)	(0.007)
Region (Reference: Ontario)		
Quebec	-0.006*	0.002
	(0.002)	(0.002)
Manitoba and Saskatchewan	0.023***	0.003
	(0.003)	(0.002)
Alberta	0.035***	0.029***
	(0.004)	(0.004)
British Columbia	0.032***	0.027***
	(0.003)	(0.003)
Atlantic	-0.038***	-0.024***
	(0.003)	(0.002)

Large Census Metropolitan Area (Reference: Non-Census Metropolitan Area)				
CMA Montreal		0.003		-0.001
		(0.003)		(0.002)
CMA Toronto		0.008**		0.008***
		(0.003)		(0.002)
CMA Vancouver		-0.015***		-0.013***
		(0.004)		(0.004)
CMA Ottawa		-0.026***		-0.015***
		(0.003)		(0.003)
CMA Calgary		-0.028***		-0.020***
		(0.005)		(0.004)
CMA Edmonton		-0.053***		-0.037***
		(0.005)		(0.004)
CMA Other		-0.030***		-0.018***
		(0.002)		(0.002)
Religion (Reference: No Religion)				
Christian and Jewish		-0.003		-0.011***
		(0.002)		(0.001)
Muslim		0.017***		-0.015***
		(0.005)		(0.004)
Other Religions		-0.002		-0.004
		(0.004)		(0.004)
constant	0.113***	0.030***	0.072***	0.024***
	(0.001)	(0.003)	(0.001)	(0.002)
R-squared	0.005	0.042	0.004	0.024
F-statistics	F(14,238559) = 110.77	F(44,238529) = 301.82	F(14,22630) = 52.20	F(44,226279) = 153.32
Observations	238,574	238,574	226,324	226,324

Notes: Robust standard errors of coefficients in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001
The place of birth effect in column (2) and (4) are evaluated after 10 years of immigration

Considering the raw difference between males and females based on place of birth, male immigrants show higher incidence of being engaged in self-employment than females when compared to those born in Canada. For instance, Indian males have a 3.1 percentage points higher probability to be self-employed than native-born males, while Indian females show a 2 percentage points lower probability of self-employment than their native-born counterparts. In contrast, female immigrants born in the U.S. and Hong Kong are more likely to be self-employed

than male immigrants from the same countries. When other variables are taken into consideration, the difference between males and females immigrants' propensity to be self-employed changes. Compared to Canadian-born males, only males born in Northern and Western Europe, Eastern Europe, West Central Asia and Other Eastern Asia have a higher incidence of being self-employed after adding the other demographic variables. Female immigrants from the U.S., Northern and Western Europe, and Other Eastern Asia have a positive significant coefficient. For instance, males born in Other Eastern Asia show a 8.5 percentage points higher probability of being self-employed than native-born males, while female immigrants from the same countries are 7.5 percentage points more likely to be self-employed. Furthermore, males and females from Northern and Western Europe show respectively a 2.3 and a 3.2 percentage points higher probability of being self-employed relative to the native-born. In addition, the likelihood of self-employment significantly increases by 4.3 percentage points for male immigrants born in West Central Asia, while there is no effect for females. In particular, consistently with the fact that they had the lowest self-employment rate (3%) as shown in table 1, the probability of self-employment is reduced by 10.8 and 6.1 points for the Philippines males and females respectively, relative to their Canadian-born counterparts.

Regarding the years since immigration, the significant positive effects are different for males and females. For instance, an additional year in Canada increase the probability by 0.1 percentage points for males, one time more than the effect for females, which is only 0.04 percentage points.

Considering the age variable, although the effect of age on the incidence of self-employment is significant positive for both males and females, the age effects on males are larger than those on females. For instance, males aged 55 to 64 years have a 15.3 percentage points higher chance of participating in self-employed than males aged 15 to 24 years, while this difference is only 8.1 percentage points for females.

Regarding the presence of children, the effects for males and females are different. For the presence of a child 0 to 5, the positive impact on a females is stronger than that on males, (1.3 and 0.5 percentage points respectively); for the presence of children between 6 and 14 years old, the probability of being self-employed increases by the same amount for males and females. This

result supports the findings of Arai (2000) that concluded that, compared to men, women take more stress and burden in family duties, causing them to use self-employment as a way to balance family and work when they have young children.

In terms of education, compared to an individual with a high school certificate, there is a positive effect on both males and females with an above bachelor degree, but the effect of holding higher educational level on females is larger than that on males. If an individual holds a degree above bachelor level, the likelihood of being self-employment increase by 2.5 percentage points for a female but by only 1.6 percentage points for a male. Trade college certificate has significantly negative impact on males, whereas it has a positive impact on females. This result may suggest that women with that education level face more barriers than men if they want to find a job in the wage labour market, which pushes them into self-employment. In addition, the location of study has a positive coefficient for females, which implies that women who gained their degree outside Canada, Europe or the U.S. increase by 0.8 percentage points their probability of self-employment (significant at the 10% level). This effect does not hold for male. Owning a Canadian post-secondary certificate seems to be more critical for females than for males when looking for a paid job. Not having a Canadian post-secondary certificate is a potential push factor to self-employment for female immigrants. This finding is similar to those of previous research. For instance, Man (2004) found that, because a lack of "Canadian experience" and when they have a "foreign degree", Hong Kong female immigrants with skill in their home country cannot find the job in Canada and are pushed to the self-employment sector.

Compared to those who know at least one of the Canadian official language, males who know neither English nor French face a barrier in their participation into the self-employment sector, the probability of being self-employed being reduced by 2.8 percentage points. However, women do not suffer such a disadvantage, perhaps because they have a higher likelihood to work in the low-skill self-employment sector.

Regarding the geographic region, the effects for males and females are similar, with the exception that males have an increased likelihood of being self-employed on Manitoba and Saskatchewan, while females in those provinces are not different from the reference province of

Ontario. One possible explanation is that the proportion of males that participates in the primary industry in Saskatchewan larger than that of females.

In terms of religion, male Muslims have a significantly higher probability of being self-employed, while the opposite holds for females. This difference may be associated with the Muslim traditional culture.

4.3 Regression of self-employment status for Canadian-born and immigrants separately by gender

In my last analysis shown in Table 4, I attempt to see if there are differences in the determinants of self-employment between Canadian-born and immigrant males and females. To do so, I run separate regressions for the Canadian-born and the immigrants. To have the same specification for both groups, the immigrant specific independent variables are excluded.

Table 4. Regression of self-employment status for Canadian-born and immigrants by gender

	Males		Females	
	Canadian-born	Immigrants	Canadian-born	Immigrants
Age				
(Reference: Age 15-24)				
Age 25-34	0.034***	0.047***	0.016***	-0.001
	(0.002)	(0.005)	(0.002)	(0.004)
Age 35-44	0.076***	0.084***	0.042***	0.032***
	(0.002)	(0.006)	(0.002)	(0.004)
Age 45-54	0.109***	0.117***	0.056***	0.048***
	(0.002)	(0.006)	(0.002)	(0.004)
Age 55-64	0.157***	0.161***	0.082***	0.079***
	(0.003)	(0.006)	(0.002)	(0.005)
Marital status				
(Reference:				
Non married)				
Married	0.025***	0.022***	0.023***	0.021***
	(0.002)	(0.004)	(0.001)	(0.003)
Presence of children				
(Reference:				
No children)				
Child 0-5	0.003	0.005	0.015***	0.004
	(0.002)	(0.005)	(0.002)	(0.004)
Child 6-14	0.014***	0.012**	0.016***	0.007*
	(0.002)	(0.004)	(0.002)	(0.003)

Child 15-over	0.002	0.000	-0.007***	-0.006*
	(0.002)	(0.004)	(0.001)	(0.003)
Highest education level (Reference: High school)				
No certificate/ degree	0.005*	-0.006	0.005*	-0.005
	(0.002)	(0.006)	(0.002)	(0.005)
Trade College certificate	-0.007***	-0.002	0.008***	0.011**
	(0.002)	(0.005)	(0.002)	(0.004)
University certificate/ Bachelor degree	0.006**	-0.012**	0.001	0.007*
	(0.002)	(0.005)	(0.002)	(0.003)
Above Bachelor	0.032***	-0.009	0.026***	0.030***
	(0.004)	(0.005)	(0.003)	(0.005)
Knowledge of official language (Reference: both/English/French)				
Non English Or French	-0.013	-0.025**	-0.009	0.007
	(0.051)	(0.010)	(0.040)	(0.008)
Region (Reference: Ontario)				
Quebec	-0.006**	-0.015	0.001	-0.010
	(0.002)	(0.016)	(0.002)	(0.014)
Manitoba and Saskatchewan	0.025***	-0.034***	0.003	-0.010
	(0.003)	(0.008)	(0.003)	(0.006)
Alberta	0.035***	-0.002	0.030***	-0.011
	(0.004)	(0.019)	(0.004)	(0.018)
British Columbia	0.029***	0.056***	0.027***	0.016
	(0.003)	(0.014)	(0.003)	(0.011)
Atlantic	-0.039***	-0.034	-0.024***	-0.012
	(0.003)	(0.019)	(0.002)	(0.019)
Large Census Metropolitan Area (Reference: Non- Census Metropolitan Area)				
CMA Montreal	0.002	-0.025	-0.002	-0.023
	(0.003)	(0.018)	(0.002)	(0.016)
CMA Toronto	0.004	-0.031**	0.004	-0.036***
	(0.003)	(0.011)	(0.002)	(0.009)
CMA Vancouver	-0.018***	-0.067***	-0.014***	-0.041***
	(0.005)	(0.015)	(0.004)	(0.012)

CMA Ottawa	-0.021***	-0.084***	-0.011***	-0.078***
	(0.004)	(0.013)	(0.003)	(0.011)
CMA Calgary	-0.027***	-0.042*	-0.015**	-0.042**
	(0.005)	(0.018)	(0.005)	(0.016)
CMA Edmonton	-0.050***	-0.076***	-0.033***	-0.061***
	(0.005)	(0.018)	(0.005)	(0.016)
CMA Other	-0.028***	-0.077***	-0.015***	-0.082***
	(0.002)	(0.011)	(0.002)	(0.009)
Religion (Reference: No Religion)				
Christian and Jewish	-0.004*	-0.019***	-0.010***	-0.034***
	(0.002)	(0.004)	(0.002)	(0.004)
Muslim	0.001	0.007	-0.011	-0.035***
	(0.010)	(0.006)	(0.008)	(0.005)
Other Religions	-0.007	-0.018***	0.003	-0.040***
	(0.006)	(0.005)	(0.005)	(0.004)
constant	0.029***	0.076***	0.021***	0.086***
	(0.003)	(0.011)	(0.002)	(0.010)
R-squared	0.041	0.029	0.022	0.023
F-statistics	F(28,189705) = 359.82	F(28,48811) = 81.79	F(28,181104) = 189.39	F(28, 45162) = 45.40
Observations	189,734	48,840	181,133	45,191

Notes: Robust standard errors of coefficients in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regarding the age variable, it is interesting to note that the age effects for the male immigrants are larger than those for the male non-immigrants. For instance, compared to an individual who is aged 15 to 24 years old, if one is an immigrant who is aged 25 to 34, he is 4.7 percentage points more likely to engaged in self-employment, while the difference is only 3.4 percentage points for a Canadian. However, we have the opposite situation for Canadian-born and immigrant women regarding the age effects.

The impact of the presence of children is different between the native-born and immigrant women. Surprisingly, compared to those without any child, native-born women with a child aged 0 to 5 are 1.5 percentage points more likely to be self-employed, while there is no difference for female immigrants. It could be further argued that the positive effect on female with a child in table 3 only holds for the Canadian-born women. One possible interpretation is that females are driven by different motivations when setting up their businesses. Female immigrants may be

pushed to self-employment because of limited job opportunity, while Canadian-born females are attracted by the time flexibility to take care their very young children. In addition, the impacts for males who have a child aged 6 to 14 years old are similar for both immigrants and native-born. The marital status variable shows a similar positive effect on immigrant and domestic-born workers.

Compared to a high school certificate, we found that a level of education above bachelor considerably increases the likelihood of self-employment. However, it is surprising to see this effect does not hold for male immigrants. Moreover, male immigrants have 1.2 percentage point lower probability to be self-employed if they hold a bachelor degree. It is probably because high educational background helped them to build their career in the wage sector. In contrast, educational background plays a key role for female immigrants. If a female immigrant holds a bachelor degree or an above bachelor degree, she has a 0.7 and a 3.0 percentage points higher incidence of being self-employed than one who has a high school certificate.

With respect to language proficiency, male immigrants who are not competent in the Canadian official languages are 2.5 percentage points less likely to be self-employed than that master at least one of the Canadian official languages, which further confirms that they face a linguistics obstacle when they enter into the self-employed sector. It is no surprise to find that the language is not a main factor that influences the decision for Canadian-born citizens because almost all of them have a better knowledge of English or French.

In term of the geographic indicators, compared with respondents who live in Ontario, the native-born males are more likely to be self-employed in Manitoba and Saskatchewan, Alberta, British Columbia, while the immigrants are only inclined to start businesses in British Columbia. For instance, the probability of being self-employed for male immigrants living in British Columbia is about 5.6 percentage points higher than that of those living in Ontario; in contrast, it increase by only 2.9 percentage points for native-born with the similar comparison. Male immigrants are more likely to run businesses in Ontario and British Columbia than other provinces maybe because of the larger enclave economic communities and linguistic environment advantages in these two provinces. It is also interesting to note that Canadian males are more likely to start

businesses in Manitoba and Saskatchewan because they are more likely to engage in primary industry, while the effect is reversed for male immigrants. The estimated coefficients for female immigrants are statistically insignificant, indicating that the region does not influence their choices; in contrast, there are positive effects for Canadian-born females who reside in Alberta and British Columbia. The coefficients of the census metropolitan areas are negative for both males and females and they are larger for the immigrants than for the native-born, suggesting that the geographic factor weighs more for immigrants. Particularly, the result that the likelihood of being self-employed in Toronto is lower than that in non-census metropolitan areas for both male and female immigrants is rather unexpected. This could be interpreted by the situation that this specification only focus on immigrant status, and that it does not represent the diversity among the different immigrants groups. This may explain the apparent inconsistency with the results of Table 3.

It term of religion, the results further identity that the Christian and Jewish religions affect negatively the probability of being self-employed for all individuals; this is also true for the Other religions group for the immigrants.

5. Robustness checks

In order to check whether the relationships between the immigrants groups and their self-employment propensities are robust, three checks are provided. The results are briefly discussed here (but they are not presented in tables).

The first one involves replacing the linear probability model with the logistic regression model. I found that the statistical significant levels and the signs of the coefficients are the same, but the marginal effects of the place of birth dummy variables change a little compared to the coefficients estimated with the linear probability model. For instance, the significant positive coefficient of the Other Eastern Asia immigrants is 0.080 in table 2, while using the logistic regression model, the marginal effect of the Other Eastern Asia immigrants is 0.055. The coefficients of African immigrants are -0.030 and -0.024 in the linear probability model and logistic regression model respectively. For male and female immigrants born in the Other Eastern Asia, the coefficients are 0.085 and 0.075 respectively in table 3, while they are 0.061 and 0.046

in the logistic regression model. However, immigrants born in Other Eastern Asia, West Central Asia, Northern and Western Europe, Eastern Europe are still more inclined to self-employment than the non-immigrants population in the logistic regression model.

Secondly, I added years since immigration squared in the regression and the coefficients of place of birth were stable. The coefficient of the years since immigration squared for males was -0.00003, indicating that the positive effect of years since immigration becomes smaller with time. For females, this coefficient was not significant.

The third check consists of removing five variables which may be less important: marital status, presence of children, knowledge of official language, location of study, religion. After dropping those variables, I found that the coefficients of place of birth are a little larger than those when the five variables are included in the model. For example, the coefficients of Northern and Western Europe become 0.026 and 0.037 for males and females respectively after those variables are excluded, while they were 0.023 and 0.032 in table 3. The results suggest that there is no significant variation on immigrant groups if these five variables are excluded, indicating that the immigrants' propensities of self-employment are largely influenced by the level of education and age and geographic variables.

Those three checks suggest that the estimated results of immigration groups' self-employment propensities in section 4 are robust to those changes in model specification.

6. Conclusion

This paper studied immigrants' and Canadian-born workers' self-employment decisions with the 2011 National Household Survey (NHS) public use Microdata file (PUMP). Various specifications were used to show how the propensity to be self-employed changes with human capital and geographic variables. The findings suggest that the self-employment decisions depend on different personal characteristics and places of origin. When compared to the non-immigrants, some immigrant groups are less likely to engage in the self-employment sector, while others are more likely to be self-employed. In general, the findings presented in this paper support those of the previous literature. There are four main findings in this paper.

First, individual personal characteristics, such as age, marital status and the presence of young children have positive relationships with self-employment decisions. Older and married individuals have a higher incidence of being self-employed than the young individual and the unmarried ones. Those with children in the family are more likely to be self-employed than those without a child, particularly the Canadian-born females.

Second, a high level of human capital enhances the likelihood of entering into self-employment. A degree above bachelor increases females and native-born males probability of starting their businesses. Moreover, the geographic environment is a contributory factor influencing self-employed choices. Native-born males living in Manitoba, Saskatchewan, Alberta and British Columbia have a higher incidence of being self-employed than those living in Ontario. Moreover, Ontario and British Columbia are more attractive to immigrants who want to set up a business than other provinces, perhaps because of the network advantages provided by the enclave economy.

Third, when human capital and demographic factors are not controlled for, the results show that many immigrants groups, with the exception of those from Other America, Africa, the Philippines, Other Asia and Oceania, have a higher self-employment rate than the Canadian-born. However, the propensity of immigrant groups to be self-employed varies differently after controlling for the personal characteristics. Only immigrants from Other Eastern Asia, West Central Asia, Northern and Western Europe, Eastern Europe are more likely to self-employment than the non-immigrants population after controlling for those variables. Compared to native-born individuals, immigrants from Other America, the Philippines, and Other Asia and Oceania are less inclined to be self-employed than the other immigrant groups. Furthermore, the positive effect of years since immigration suggests that immigrants can improve their integration in the Canadian labour market as they stay longer.

Finally, the factors that affect self-employed choices differ by gender. Males have a higher propensity to self-employment than females. Age, marital status and geographic location also have stronger effects on males than that on females. The absence of Canadian official language

proficiency is a potential negative factor that decreases the likelihood of self-employment for male immigrants. The effect of educational attainment and location of study on self-employment are stronger for females than for males. One interesting finding is that a high educational background enhances the likelihood of being self-employed for female immigrants, but it does not do the same for male immigrants. Compared to those who study in Canada, obtaining a credential from elsewhere increases the chance of self-employment for females. In addition, the comparison between native-born and foreign-born individuals shows that immigration status has a distinct effect on human capital and demographics variables that influence self-employment choices.

Self-employment, as an important channel of the contribution of immigrants to the Canadian labour market, is a topic that deserved to be paid attention. Many factors must be taken into consideration when explaining the self-employment choices of immigrants from various countries and of Canadian-born individuals. The combined effects of the enclave economy, personal characteristics and cultural networks determine that some immigrant groups are more inclined to be self-employed than others. In addition, the business geographic location that associates with the ethnic communities and market opportunities also matters in their choices. Self-employment may be a vital way for immigrants to overcome unfavorable conditions when they integrate into the Canadian labour market. This paper has provided an analysis of the factors that determine those choices.

References

Arai, A. B. (2000). 'Self-employment as a response to the double day for women and men in Canada.' *Canadian Review of Sociology, 37*(2), 125-142.

Bloom, D., Grenier, G., & Gunderson, M. (1995). 'The changing labour market position of Canadian immigrants.' *Canadian Journal of Economics, 28*(4), 987-1005.

Borjas, G. J. (1986). 'The self-employment experience of immigrants.' *Journal of Human Resources, 21*(4), 485-506.

Chui, T.W. L. & Flanders, J (2013). Immigration and ethnocultural diversity in Canada National Household Survey, 2011, Catalogue No. 99-010-X. Ottawa: Statistics Canada.

Fairlie, R. W., Zissimopoulos, J., & Krashinsky, H. (2010). 'The international Asian business success story? A comparison of Chinese, Indian and other Asian businesses in the United States, Canada and United Kingdom.' *International differences in entrepreneurship* (pp. 179-208).

Frenette, M. (2004). 'Do the falling earnings of immigrants apply to self-employed immigrants?' *Labour*, *18*(2), 207-232.

Green, A. G., & Green, D. A. (1995). 'Canadian immigration policy: The effectiveness of the point system and other instruments.' *Canadian Journal of Economics, 28*(4), 1,006-1041.

Hou, F., & Wang, S. (2011). 'Immigrants in self- employment.' *Perspectives on Labour and Income, 23*(3), 3-14.

Hughes, K. D. (2003). 'Pushed or pulled? Women's entry into self-employment and small business ownership.' *Gender, Work and Organization, 10*(4), 433-454.

'IMDB 2008 immigration category profiles research and evaluation.' *Citizenship and Immigration Canada,* 2012 March

Kariv, D. V., Menzies, T. A., Brenner, G. J., & Filion, L. (2009). 'Transnational networking and business performance: Ethnic entrepreneurs in Canada.' *Entrepreneurship and Regional Development, 21*(3), 239-264.

Kuhn, P. J., & Schuetze, H. J. (2001). 'Self-employment dynamics and self-employment trends: A study of Canadian men and women, 1982– 1998.' *Canadian Journal of Economics, 34*(3), 760-784.

LaRochelle-Côté, S. (2010). 'Self-employment in the downturn.' *Perspectives on Labour and Income, 11*(3), 5-13.

Ley, D. (2006). 'Explaining variations in business performance among immigrant entrepreneurs in Canada.' *Journal of Ethnic and Migration Studies, 32*(5), 743-764.

Li, P. S. (1997). ‘Self-employment among visible minority immigrants, white immigrants, and native-born persons in secondary and tertiary industries of Canada.’ *The Canadian Journal of Regional Science, 20*(1), 103-117.

Li, P. S. (2001). ‘Immigrants' propensity to self-employment: Evidence from Canada.’ *International Migration Review, 35*(4), 1106-1128.

Man, G. (2004). ‘Gender, work and migration: Deskilling Chinese immigrant women in Canada.’ *Women’s Studies International Forum, 27*(2), 135-148.

Mata, F., & Pendakur, R. (1999). ‘Immigration, labor force integration and the pursuit of self-employment.’ *International Migration Review, 33*(2), 378-402.

Moore, C., & Mueller, R. (2002). ‘The transition from paid to self-employment in Canada: The importance of push factors.’ *Applied Economics, 34*(6), 791-801.

Nakhaie, R., Lin, X., & Guan, J. (2009). ‘Social capital and the myth of minority self-employment: Evidence from Canada.’ *Journal of Ethnic and Migration Studies, 35*(4), 625-644.

Picot, G., & Heisz, A. (2000). ‘The performance of the 1990s Canadian labour market.’ *Canadian Public Policy*, 26(1), S7-S25.

Razin, E., & Langlois, A. (1996). ‘Metropolitan characteristics and entrepreneurship among immigrants and ethnic groups in Canada.’ *International Migration Review, 30*(3), 703-727.

Schuetze, H. J. (2005). ‘The Self-Employment Experience of Immigrants to Canada’. RIIM Working Paper Series. Paper No. 05-24. Vancouver Centre of Excellence.