# The labor market of recent immigrants from Mainland China and Hong Kong in Toronto and Western Canada

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## *Abstract*

*Hong Kong and Mainland China are two major sources of recent immigrants of Chinese origin who joined Canada during two different periods, mainly before 1997 in the case of Hong Kong, and in the 2000s in the case of Mainland China.. This paper uses the 2006 census to investigate the performances of male and female immigrants from those two areas in the labor markets of Toronto, Vancouver, Calgary and Edmonton. Based on cross-sectional data regressions, the paper examines how immigrants perform in the labor market in terms of entry and assimilation effects. Two models are set up, one where the assimilation effect is the same for all groups, and the other one where it differs. In general, the numbers of years to catch up for both males and females are smaller when different assimilation rates are assumed, and most of the time, Hong Kong immigrants take less time than those from Mainland China. In addition, large entry effect can be offset by a high assimilation pace; therefore, the assimilation effect plays an important role in the catching up process of immigrants, especially for males.*

# I Introduction

Canada is a nation which is rich in immigrants. Immigrants have made a great contribution to the development and cultural fabric of the country. Since Canada has been experiencing a decline in the birthrate, which has led to an aging population, it needs to attract immigrants from other countries to stabilize the population and the labor force. Today, when we walk through Canadian cities, we see people of any different races. The foreign-born individuals have influenced Canada's education system, technology of production, and labor market structure.

According to the census, the population of immigrants in Canada reached almost 6.2 million in 2006, accounting for 19.8 percent of the total population (Citizenship and Immigration Canada, 2012). There are over 200 ethnic groups in Canada. They used to be dominated by immigrants from European countries, but today, the ethnic composition has shifted from Europe towards Asia. A demographic transformation is taking place in Canada. In the recent decades, Asia, and especially the countries in East and South Asia, such as Mainland China, Hong Kong, India and the Philippines, has become the top new source of immigration. Back in the 1990s, the immigrants from Western countries such as the United Kingdom, Italy, the United States, as well as those from Hong Kong, were still among the most important groups. However, in ten years, this situation has completely turned over; mainland China, India and the Philippines have become the top source immigration to Canada.

As two major sources of Chinese immigration to Canada in different periods, Mainland China and Hong Kong have two quite disparate histories. For example, the Hong Kong

political system was based on the United Kingdom system, as it is the case in Canada, while mainland China had a totally different system. In addition, English is a language that is used by most Hong Kong citizens, which makes it much easier for them to master this language skill after immigration than the immigrants from Mainland China. Clearly, those different backgrounds have an impact on how these two groups fare in the Canadian labor market. Therefore in this paper, I will focus on the performances of immigrants from mainland China and Hong Kong in the Canadian labor market.

This paper consists of six parts. In the next part, I discuss the background of Mainland China and Hong Kong immigrants in Canada. In part III, a brief overview of the pertinent literature about the economic performance of immigrants is presented. Part IV describes the data set and introduces the basic regression models. In part V, firstly, it presents the empirical strategy, which is based on earnings regressions that estimate immigrants' entry and assimilation effects based on the public use microdata file of the 2006 Canadian Census. Secondly, it presents the empirical results. Toronto and Vancouver used to be the main intended destination of those immigrants. Now, Alberta, and especially the cities of Calgary and Edmonton, has become another popular destination, so I will focus on the performances of immigrants from Mainland China and Hong Kong in those destination labor markets as well. The immigrants from Mainland China and Hong Kong will be compared to immigrants from other areas and to the Canadian-born individuals. Part VI consists of the conclusion.

## II Background of Mainland China and Hong Kong immigrants in Canada

Chinese immigration to Canada has a long history. The first record of Chinese people

visiting North America dates to 1788, as thirty to forty male workers were employed to build the first European-type vessel. Seventy years later, a large numbers of Chinese immigrants began to settle in British Columbia during the Fraser Canyon Gold Rush. In the 1880s, the building of the Canadian Pacific Railway depended on a lot of Chinese labor, and thereafter many Chinese began to move eastward (Wikipedia, 2012).

Although the history of Chinese immigration to Canada can be traced back to the late 19th century, the civil rights of the Chinese were restricted by the Canadian government over a long period. The Chinese Immigration Act, which forbade the Chinese enter Canada for 24 years, was repealed in 1947. That is why Chinese immigration barely increased during the first half of the twentieth century. Another problem is that the Chinese community during this period mainly consisted of married men who could not be reunited with their wives and children. During the Cold war, up to the 1950s and 1960s, the relationship between China and Canada was antagonistic because they belonged to the opposed camps. Migrating into Canada was hard for Mainland Chinese; people had first to overcome difficult legal and political obstacles to get to a place like Hong Kong, from where they could apply to come to Canada (Li, 1998). The ascension of Pierre Trudeau as Prime Minister in 1968 ended up this cold relationship. The Chinese and Canadian governments reached an agreement in 1973 that allowed Mainland Chinese to reunite with their relatives who had migrated to Canada before 1949. This agreement started a new chapter of Chinese immigration to Canada.

With this new start, Chinese Canadians filled out 6,000 visa applications forms for about 15,000 Chinese relatives to immigrate into Canada. However, compared to the large scale immigration from Hong Kong, the total number of Mainland China migrants was relatively

small in the 1970s and most the 1980s. Between 1973 and 1982, there were almost 85,000 Chinese from Hong Kong who migrated to Canada, compared to only 20,000 people from Mainland China (Yu, 2008). In 1984, the British and the Chinese governments reached the agreement that Hong Kong would return to Mainland China in 1997, which also provided the economic and political prerequisite for Hong Kong emigration.

According to Figure 1, we can see that the numbers of immigrant arrivals from Hong Kong and Mainland China moved in two opposite directions during the late 1980s and the early 1990s. In the early 1980s, the annual number of Hong Kong immigrants was less than 10,000 (Citizenship and Immigration Canada, 2012), but from 1987 onwards, the volume of Hong Kong annual immigration rapidly expanded, jumping to 30,000 in 1990 and peaking

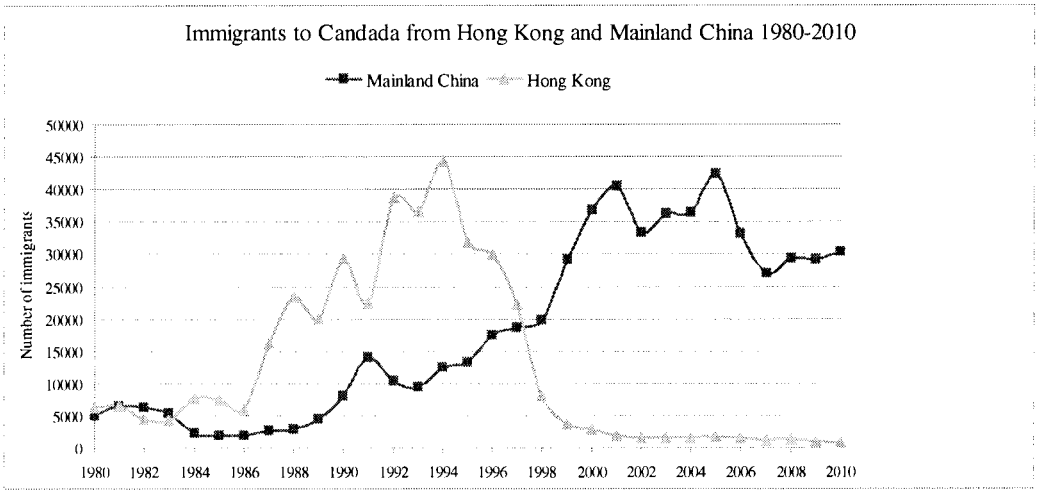


Figure 1 Immigrant to Canada from Hong Kong and Mainland China, 1980-2010
Source: Citizenship and Immigration Canada, 2012

in 1994 when 44,000 people migrated from Hong Kong to Canada. Since 1995, as the handover of Hong Kong to Mainland China was coming, the number of arrivals from Hong Kong declined every year, falling from 30,000 in 1996 to 8,000 in 1998, to less than 2,000

since 2001. In contrast, the number of immigrants from Mainland China was around 5,000 in the first four years of the 1980s and never surpassed 5,000 per year in the late 1980s, while Mainland China migrants increased to more than 10,000 in the early 1990s. After July 1994, the Chinese citizens were allowed to work in foreign countries. A large numbers of highly-skilled mainland workers migrated abroad, and Canada was one of their choices. After that, annual immigration from Mainland China continued to rise, reaching nearly 20,000 in 1998 and over 40,000 in 2001.

Compared to the situation during the 1980s and mid-1990s, the positions of Hong Kong and Mainland China were totally reversed in the 2000s. From 2002 to 2005, there were only around 1,500 people emigrating from Hong Kong to Canada each year. The amount kept decreasing to 1,489 in 2006, and it was less than 1,000 persons in 2010. On the contrary, the annual migration from Mainland China to Canada was more than 30,000 in the 2000s, except for the years from 2007 to 2009, and it peaked to 42,292 in 2005. The lowest value was 27,013 in 2007, more than 20 times larger than the number of Hong Kong immigrants.

Table 1 shows the distribution of Mainland China and Hong Kong immigrants across nine metropolitan areas of Canada in 1996 and 2006. We can see that Mainland China and Hong Kong immigrants highly preferred the large urban centers for settlement. Toronto and Vancouver are the most favorite areas. In 1996, 72.9 percent of Mainland China immigrants chose Toronto and Vancouver over other areas, while 82.5 percent of Hong Kong migrants did the same; those proportions were similar in 2006. The other popular choices are Montreal, Calgary and Edmonton. The proportion of Mainland China immigrants in Montreal rose by 0.3 percentage points from 1996 to 2006, but the proportion of Hong Kong

immigrants declined by 0.8 percentage points. During the same period, the percentage of immigrants in both groups increased in Calgary, while it decreased a bit in Edmonton. Still,

Table 1 Distribution of Mainland China and Hong Kong immigrants by census metropolitan area, 1996 and 2006

| | Mainland China | | | | Hong Kong | | | |
|---|---|---|---|---|---|---|---|---|
| CMA | 1996 | | 2006 | | 1996 | | 2006 | |
| | No. | % | No. | % | No. | % | No. | % |
| Toronto | 92352 | 40.2 | 191120 | 39.9 | 115358 | 46.5 | 103090 | 47.2 |
| Vancouver | 75243 | 32.7 | 137245 | 29.3 | 89440 | 36.0 | 75775 | 34.5 |
| Montreal | 16272 | 7.1 | 34475 | 7.4 | 8591 | 3.5 | 5265 | 2.7 |
| Calgary | 10156 | 4.4 | 24710 | 5.4 | 10739 | 4.3 | 10195 | 4.4 |
| Edmonton | 10302 | 4.5 | 14630 | 3.3 | 8737 | 3.5 | 6735 | 3.3 |
| Ottawa | 7353 | 3.2 | 15000 | 3.2 | 3895 | 1.6 | 2965 | 1.7 |
| Winnipeg | 4405 | 1.9 | 4060 | 1.1 | 2330 | 0.9 | 1360 | 0.8 |
| Victoria | 3167 | 1.4 | 4355 | 1.0 | 1383 | 0.6 | 1195 | 0.6 |
| Hamilton | 2002 | 0.9 | 4900 | 1.2 | 1711 | 0.7 | 995 | 0.5 |
| Subtotal | 221252 | 92.5 | 430495 | 92.2 | 242183 | 95.7 | 207575 | 96.4 |
| Other regions | 17873 | 7.5 | 36445 | 7.8 | 10993 | 4.3 | 7855 | 3.6 |
| Canada | 239125 | 100.0 | 466940 | 100.0 | 253176 | 100.0 | 215430 | 100.0 |

Source: 1996 Canadian Census and 2006 Canadian Census

%: the percentage of how many Mainland or Hong Kong immigrants in each metropolitan area accounted its total immigrants to Canada.

Other regions are the some other metropolis areas, such like Halifax, Saskatoon, London.

Calgary and Edmonton are important destinations for those immigrants, and the combined total of the two metropolitan areas is greater than the one in Montreal. Therefore, along with the most favored areas of Toronto and Vancouver, Calgary and Edmonton will be examined in this study, but Montreal will not. The focus will be on Toronto and on Western Canada.

Looking at the last row of Table 1, we can see that the total number of Mainland China immigrants in 2006 is twice as large as in 1996, which is the result of the huge amount of new immigration during that period. One puzzling fact, however, is that the total number of Hong Kong immigrants declined by almost 40,000 between 1996 and 2006. This is due

mainly to return migration. As mentioned previously, the political uncertainty that preceded the handover of Hong Kong to Mainland China triggered a huge number of Hong Kong citizens to migrate into Canada in the period between 1991 and 1997. This was true especially for the immigrants applying in the business class the ones applying in the family and skilled worker classes being less affected.

Ley and Kobayashi (2004) mentioned that, after they migrated to Canada, the businesses of the entrepreneurs and investors did not develop as they expected because of the far more regulated business culture compared with the one they were used to and lack of language skills. The skilled worker class of immigrants felt that the job opportunities were getting worse, and their average wages were much lower than those of the Canadian-born. There was also a suggestion that some of the immigrants were looking strategically for the security of Canadian citizenship, and that they would return to Hong Kong once it had been obtained. Thus, fewer than expected job opportunities and worse anticipated business development primarily encouraged some Hong Kong immigrants to return to their homeland.

Another point of view is provided in a paper by Ma and Tian (2006). Hong Kong return migrants with transitional human capital received higher income and promotion when they went back to Hong Kong. Deng (2007) compared the stayers and returnees among Hong Kong immigrants and concluded that the returnees who hold a Canadian passport with better education experienced more rapid promotions and implemented their goals faster in Hong Kong. As a consequence, many migrants chose to shuttle between Hong Kong and Canada regularly rather than staying in Canada. Therefore, fewer job opportunities, worse business development and better socioeconomic wellbeing at home pushed some Hong Kong

immigrants to return. This explains why the total number of Hong Kong immigrants in 2006 was lower than the number in 1996.

## III An overview of the pertinent literature

Many immigrants from various ethnic and cultural communities have relocated to developed countries, bringing to their new country their educational and work experience that was obtained in their home country. The human capital of an individual, based on education and work experience, is generally regarded as a critical determinant of his or her earnings (Friedberg, 2000).

Because the credentials associated with the levels of education and work experience received in developed countries are more recognized and valued than those acquired in developing countries, many immigrants either suffer a long period of unemployment or are under-employed, meaning that they are working in jobs in their new countries that are below their educational qualification (Green, 1999). Most newcomers earn lower wages than native-born workers with the same age and education levels when they start working in the host economy. With the passage of time, as the immigrants gain work experience, the wage gap narrows and the rate at which the foreign-born catch up to the earning levels of the native-born is referred to as the assimilation rate. The length of time that takes for immigrants to assimilate to the native-born levels is an issue that has been widely researched.

Chiswick (1978) found that immigrants face earnings disadvantages initially in the U.S. market, but that eventually they match or even exceed those of the native born. He used

1970 U.S. census data to compare the earning of foreign-born and native-born white men. His empirical methodology is based on a linear regression function of the logarithm of earnings on a vector of human capital characteristics and other control variables, which include years of schooling, years of experience, marital status, years since immigration, and some dummy variables which are coded 1 for a foreign-born person and 0 for a native-born person. In his analysis, the growth rate of immigrants' earnings was high, especially during their first few years in the country. As a result, the earnings reached the same level as those of the native-born after ten to fifteen years, and they even surpassed them afterwards.

After the release of Chiswick's study, a large number of researches followed his theoretical framework to analyze immigrant populations. Borjas (1985) revised Chiswick's conclusion by improving the empirical methodology. He used 1970 and 1980 U.S. census data to distinguish between the assimilation effect, the rate at which immigrant economic performance "catches up" relative to the native born, and the cohort effect, which captures the possibility that cohorts of immigrants arrived at various points in times differ in quality. He concluded that the assimilation effect differs among immigrant cohorts and that the earnings of an immigrant cohort rose at a much lower rate than that calculated by purely cross-section analysis. It perhaps takes a much longer period for most immigrant groups to overtake the natives.

Baker and Benjamin (1994) used the Canadian censuses of 1971, 1981 and 1986 to study the annual earnings growth of male immigrants. They reached similar conclusions: recent immigrants earned much lower wages than their predecessors, and their assimilation rate was very low for most cohorts, convergence with the native born is probably hardly

attainable.

Bloom, Grenier and Gunderson (1995) used the same censuses as Baker and Benjamin to explore immigrants' assimilation; they borrowed Chiswick's immigrant earnings equation with the addition of cohort-specific effects following Borjas's research. Cross-sectional regressions and pooled regressions were estimated to analyze the performance of both male and female immigrants from different regions of origin. Their research suggested that more recent cohorts of immigrants had more difficulty in catching up with the Canadians. For example, for the cohort that arrived before 1965, taking fifteen years to complete assimilation was a normal period for all males and females from different regions of origin. The length of time to complete assimilation became longer and longer afterward. Also, assimilation of the immigrants from Asia, Africa, and Latin America was much harder than assimilation of immigrants from Europe and the United States after the 1970s. The authors concluded that more research was required to understand the various causes contributing to the declines in immigrant assimilation, which include the three reasons pointed out by them: immigration policy changes derived from preferred skills to family class; increased discrimination because there were more people belonging to visible minorities; and reduced absorptive capability of the labor market due to the effect of prolonged recession.

Grant (1999) examined the earnings growth of males aged 16-64 by incorporating 1991 Census data to the previous ones. She found new evidence of immigrant assimilation by applying the method of Baker and Benjamin (1994). The assimilation rate of immigrants who arrived in 1981-1985 is 17 percent, which is higher than the zero assimilation rate of their first five years, and there was almost no entry earning changes between the early 1980s

and the late 1980s. Grant emphasized that she was unable to explain the turnaround based on the observable characteristics recorded in the census data, and that further research was needed.

After the 1967 "point system" was implemented to determine the eligibility of applicants to immigrate into Canada, age at immigration became an important variable under consideration. Schaafsma and Sweetman (2001) did the first detailed study of the effect of age at immigration on earnings based on Canadian data. They used the censuses of 1986, 1991 and 1996 and treated each census year as a separate cross-section. The results suggested that immigrants who arrived later in life experienced low returns to both foreign labor market experience and education. The paper also observed that immigrants who arrived in their late teens, near the transition between high school and post-secondary transition, had lower earnings than those who arrived either slightly earlier or later. Therefore, there might be a need to help young immigrants who arrived in their mid or late teen years in making the transition to post-secondary education.

Recently, Aydemir and Skuterud (2005) used five censuses from 1981 to 2001 to examine the same question. They distinguished between Canadian and foreign experience and education and they analyzed the effect of years since immigration on the different cohorts based on Chiswick and Borjas' methodologies. They found that the decreasing returns to foreign labor market experience may lead to the shrinking in the entry earning for both immigrant males and females, but that foreign education played no role. Moreover, the shift in the degree of knowledge of the official languages and the composition of mother tongues that resulted from the change of the source countries from traditional European

countries to non-traditional Asian countries was another cause of the earnings decline.

Based on previous research, Green and Worswick (2009) investigated the sources of declines in entry earnings for immigrants in the 1980s, the 1990s and the early 2000s using the Immigrant Database (IMDB) and a series of representative surveys to compare cohorts of immigrants to native-born workers who entered the labor market at the same time. They use the variable of the years since entering the Canadian labor market (YSE) rather than the years since migration (YSM) because the native born also needed an equivalent definition of YSE. They found that declines in entry earnings were faced by native born new entrants as well as immigrants. After removing the effects of changes in the Canadian labor market that are not specific to immigrants, they found that a decline in returns to foreign experience, associated with the shift in the immigration source country composition, is critical in the explanation of the declines in entry earnings among immigrant cohorts. They suggested that an increase in the educational attainment of immigrants probably prevented immigrants' entry earnings from declining further.

There are also a few studies that focused on Chinese immigrants specifically. Song (2004) used the 1996 Canadian Census data and borrowed the theoretical framework and empirical methodology of Bloom, Grenier, and Gunderson (1995) to examine how immigrants from Mainland China and Hong Kong, as well as three other comparison groups, fare in the labor market of Toronto and Vancouver. She specified and estimated two regression models and obtained predictable results. The male Hong Kong immigrants performed better in terms of earnings than Mainland China immigrants in Toronto and Vancouver, which may be due to some unobserved factors. For the women, in Toronto, Hong

Kong immigrants still did better than Mainland China immigrants, but the finding in Vancouver was completely opposite. Moreover, immigrants coming from Europe, the U.S and Hong Kong took less time to assimilate than other Asian immigrants groups.

Using data from the 2001 Census of Canada, Li and Dong (2007) investigated whether Chinese immigrants who receive wages and who are entrepreneurs in the enclave economy of Canada do better or worse than their counterparts in the mainstream economy. They chose the landed immigrants of Chinese origin, in the age group 25-64 who came to Canada prior to 2000, worked with positive amount of combined wages and salaries and self-employed income and resided outside the Atlantic Provinces and the Territories. They separated the estimated regressions for male and female Chinese immigrants, and specified into the subgroups depending on whether the immigrants are from Mainland China, Hong Kong, or Southeast Asia.

The analysis uses the language at work as a proxy to measure participation by Chinese immigrants in the enclave or mainstream economy. The authors found Chinese immigrants who worked in the enclave economy earned much less than their counterparts in the mainstream economy. Salaried Chinese workers earned more than the self-employed ones in the mainstream economy, but in the enclave economy, in some cases, some self-employed individuals earned more than salaried workers. The findings are similar for men and women.

Based on the theoretical framework and empirical methodology of Bloom, Grenier, and Gunderson (1995), with the exception that the cohort effect will not be estimated in this paper because I use only the 2006 census, and similarly to Song (2004), I am going to examine the performance of Mainland China and Hong Kong immigrants in the Canadian

labor market.

## IV Empirical framework: Data and Model

### 1. The data

The data used in this study are taken from the public use microdata file of the 2006 Canadian census. Since Mainland China and Hong Kong are important sources of Canadian immigration in two different periods, and since the most popular metropolitan areas for them to settle down include Toronto, Vancouver, Calgary and Edmonton, I want to focus on the performances of males and females in those two particular groups, in the age group 25-64 with positive wages and salaries. The most recent immigrants who arrived in 2005 and 2006 are dropped to make sure we got the exact information about their incomes. Also because of the small sample number of Mainland China and Hong Kong immigrants contained in the public use 2006 Canadian Census data for Calgary and Edmonton, the two metropolitan areas will be combined into one labor market in this analysis. Although some of the Mainland China and Hong Kong immigrants also live in Montreal, this metropolitan area is excluded to focus on Toronto and Western Canada. Other groups like immigrants from Europe, Asia, Africa, and South America are also included for comparison purposes.

### 2. Model

The theoretical framework and the empirical methodology are based on Bloom, Grenier, and Gunderson (1995). However, as in Song (2004), cohort effects are not separately identified because only one census is used to estimate the regressions. Borrowing the

regression models of Song (2004), I first estimate the model to examine the entry effect and assimilation effect:

(1) $y = X\beta + \alpha_1 \text{CHINA} + \alpha_2 \text{HK} + \alpha_3 \text{ASIA} + \alpha_4 \text{EUROUS} + \alpha_5 \text{AFRSA} + \delta \text{ YSM}$

where

y = natural logarithm of earnings;

X = vector of human capital determinants related to earnings and other control variables, given in Table A1.

CHINA, HK, ASIA, EUROUS and AFRSA are dummy variables representing the place of birth of the immigrants. CHINA and HK are the Mainland China and Hong Kong immigrant groups respectively. Immigrants in the group ASIA consist of the individuals from West Central Asia and the Middle East, the Philippines, India, Pakistan, other countries from Eastern, Southeast and Southern Asia. Immigrants from the U.S., the U.K., Germany, Poland, Italy, Portugal, other Northern and Western Europe, other Eastern, Southern Europe and the Oceania are included in the EUROUS group. The AFRSA group contains the immigrants from Eastern Africa, Northern Africa, other Africa, South America, Jamaica, Central America and other Caribbean and Bermuda.

The variable YSM defines the number of years since migration. The assumption for the estimation of Regression model (1) is that the coefficient of YSM is the same for all groups. However, the qualities of immigrants differ across regions and the coefficients are likely to be different; so in my second model, I use interaction terms between YSM and each group of immigrants to account for the fact that the five immigrant groups do not have the same assimilation rate.

(2) $y = X\beta + \alpha_1 CHINA + \alpha_2 HK + \alpha_3 ASIA + \alpha_4 EUROUS + \alpha_5 AFRSA + \delta_1 YSMCHINA + \delta_2 YSMHK + \delta_3 YSMASIA + \delta_4 YSMEUROUS + \delta_5 YSMAFRSA$

where

y and X have the same definitions as in Model (2) and

YSMCHINA = years since immigration for Mainland China migrants = YSM * CHINA

YSMHK = years since immigration for Hong Kong migrants = YSM * HK

YSMASIA = years since immigration for Asian migrants excluding Mainland China and Hong Kong migrants = YSM * ASIA

YSMEUROUS = years since immigration for European, US, and the Oceania migrants = YSM * EUROUS

YSMAFRSA = years since immigration for African, South American, Central American, Jamaica, and other Caribbean and Bermuda migrants = YSM * AFRSA

The main factors when I examine Mainland China and Hong Kong immigrants' performance in the labor market are the entry and assimilation effects. In Bloom, Grenier and Gunderson (1995), the entry effect is defined as the estimated earning difference between immigrants and otherwise comparable Canadian-born individuals at the time when they arrive; we expect it to be negative because of the lack of language proficiency and of Canadian labor market background information. The assimilation effect is the average change in relative immigrants' earnings every year after they migrate to Canada which is expected to be positive.

In Model (1), the coefficient $\alpha_i$ is the entry effect for each immigrant country of origin and the $\delta$ is the assimilation effect which is assumed the same across countries. Implied

years to attaining equality are the estimate of the total years immigrants are expected to take to catch up the earnings of natives: assuming $\alpha_i < 0$ and $\delta > 0$, the implied years to equality is calculated as $-\alpha_i/\delta$. In Model (2), the assimilation effect is represented by $\delta_i$ (i=1, 2, 3, 4, 5 for five immigrant groups respectively). Implied years to equality in this model is calculated by $-\alpha_i/\delta_i$.

### 3. Description of variables

The LNWAGE is the natural logarithm of wages and salaries in 2005. In the data, the wages that are rounded to $1 (if less than $500), and the wages over $200,000 are considered to be outliers and are dropped to reduce the fluctuation of wages. Out of the total sample, 23.8 percent of the observations are dropped because they have zero wages. Out of the observations with positive wages, 2.2 percent are dropped because they are outliers. The observations with 0 weeks worked in 2005 or 0 hours worked in previous week are dropped as well since they are deemed to be out of the labor force.

The variable EDUC defines the number of years of educational attainment and is based on the highest certificate, diploma or degree obtained. Table A2 in the Appendix gives the detailed definition of variable EDUC. The variable of years since immigration, YSM, is measured based on the year of immigrations. I set the difference between 2006 and the immigration year to define YSM. The data on years of immigration in the census are given in single years after 1979 and in intervals before 1979 for those latter years. I take the mid-point of the interval as the year of immigration.

The Marital Status of the person has an impact as well; the variable MARRIED is set to

1 for the persons who are married or in common-law relationship, and to 0 for other marital statuses. Another essential factor here is language proficiency, which is defined based on the knowledge of the Canadian official languages. The variable LANGUAGE is coded to 1 if the individual masters at least one of the Canadian official languages, and to 0 for those who can speak neither.

The five different immigrant groups are defined by the data on place of birth of the respondent. Besides the Mainland China and Hong Kong immigrant groups, the ASIA, the EUROUS and the AFRSA groups are considered as three other comparison immigrant groups. The Canadian born are the reference group in the regressions.

The mean values of all the variables used in the regressions for Mainland China immigrants, Hong Kong immigrants and the Canadian-born individual are shown in Table 2 for Toronto, Table 3 for Vancouver and Table 4 for Calgary/Edmonton. These tables present the different levels of human capital determinants among those three groups.

In Table 2 we see that the average wage of males for Mainland China immigrants in Toronto is $40,800, and for Hong Kong immigrants is $52,300, which are both less than the average wages of Canadian-born, $58,400. For the females, the mean values of earnings are all below those of the males' and the earnings of Mainland China and Hong Kong immigrants are $30,400 and $38,800 which are lower than those of the native earnings well. In Table 3, the situation of the Vancouver labor market is similar to that of Toronto. For both males and females, the Canadian-born worker earns the highest wages, followed by the Hong Kong immigrants and the Mainland China immigrants. In Calgary/Edmonton, Table 4 shows that the wages of individuals in each group are larger than those in Vancouver and

Table 2 Mean and Standard deviation: Toronto

| | MEN | | | WOMEN | | |
|---|---|---|---|---|---|---|
| Variable | Mainland | Hong Kong | Canadian-born | Mainland | Hong Kong | Canadian-born |
| Wages | 40762 | 52275 | 58433 | 30411 | 38827 | 44527 |
| | (28830) | (33642) | (35521) | (22983) | (24405) | (26748) |
| EDUC | 15.02 | 14.73 | 13.93 | 14.22 | 14.31 | 14.27 |
| | (3.752) | (2.885) | (2.843) | (3.414) | (2.651) | (2.657) |
| EXP | 23.71 | 24.67 | 22.57 | 23.91 | 25.12 | 22.65 |
| | (10.75) | (10.74) | (10.56) | (10.44) | (10.41) | (10.86) |
| EXPSQ | 677.87 | 723.93 | 620.94 | 680.50 | 739.21 | 630.87 |
| | (578.15) | (534.00) | (528.35) | (557.14) | (513.28) | (529.46) |
| MARRIED | 0.871 | 0.735 | 0.647 | 0.815 | 0.673 | 0.619 |
| WKS0112 | 0.026 | 0.017 | 0.011 | 0.026 | 0.031 | 0.026 |
| WKS1326 | 0.041 | 0.024 | 0.031 | 0.093 | 0.047 | 0.047 |
| WKS2739 | 0.050 | 0.029 | 0.036 | 0.067 | 0.047 | 0.043 |
| WKS4048 | 0.169 | 0.150 | 0.114 | 0.189 | 0.147 | 0.125 |
| HRS0120 | 0.032 | 0.037 | 0.028 | 0.08 | 0.08 | 0.092 |
| HRS2130 | 0.039 | 0.029 | 0.034 | 0.060 | 0.081 | 0.097 |
| HRS3139 | 0.119 | 0.153 | 0.110 | 0.18 | 0.22 | 0.210 |
| HRS4549 | 0.076 | 0.119 | 0.105 | 0.05 | 0.08 | 0.078 |
| YSM | 11.72 | 18.56 | | 11.82 | 18.60 | |
| | 9.09 | (8.62) | | 8.754 | 8.326 | |
| LANGUAGE | 0.838 | 0.971 | 0.999 | 0.811 | 0.974 | 0.999 |
| N | 854 | 654 | 11226 | 820 | 617 | 11015 |

Source: the 2006 Canadian census data

The figures in parentheses are standard deviations

Table 3 Mean and Standard deviation: Vancouver

| | MEN | | | WOMEN | | |
|---|---|---|---|---|---|---|
| Variable | Mainland | Hong Kong | Canadian-born | Mainland | Hong Kong | Canadian-born |
| Wages | 34272 | 43335 | 54097 | 25075 | 33122 | 38035 |
| | (27091) | (29672) | (33385) | (18148) | (22913) | (22430) |
| EDUC | 14.50 | 14.31 | 13.67 | 13.39 | 14.03 | 13.99 |
| | (3.529) | (2.926) | (2.748) | (3.373) | (2.540) | (2.621) |
| EXP | 26.36 | 25.21 | 23.96 | 25.78 | 25.66 | 23.92 |
| | (10.39) | (10.27) | (10.68) | (10.58) | (10.04) | (11.02) |
| EXPSQ | 802.69 | 740.65 | 687.95 | 776.31 | 758.69 | 693.40 |
| | (579.01) | (506.16) | (545.96) | (579.62) | (508.37) | (554.97) |
| MARRIED | 0.863 | 0.691 | 0.655 | 0.750 | 0.689 | 0.614 |
| WKS0112 | 0.03 | 0.02 | 0.013 | 0.024 | 0.024 | 0.025 |
| WKS1326 | 0.07 | 0.03 | 0.036 | 0.092 | 0.055 | 0.055 |
| WKS2739 | 0.06 | 0.03 | 0.043 | 0.092 | 0.034 | 0.055 |
| WKS4048 | 0.21 | 0.19 | 0.143 | 0.240 | 0.198 | 0.167 |
| HRS0120 | 0.040 | 0.034 | 0.038 | 0.111 | 0.111 | 0.124 |
| HRS2130 | 0.05 | 0.03 | 0.043 | 0.111 | 0.099 | 0.123 |
| HRS3139 | 0.10 | 0.13 | 0.115 | 0.141 | 0.178 | 0.228 |
| HRS4549 | 0.08 | 0.10 | 0.095 | 0.054 | 0.055 | 0.067 |
| YSM | 15.07 | 19.63 | | 13.60 | 19.67 | |
| | (11.38) | (9.76) | | (10.33) | (9.31) | |
| LANGUAGE | 0.797 | 0.961 | 1.000 | 0.764 | 0.969 | 1.000 |
| N | 546 | 408 | 5725 | 533 | 415 | 5232 |

Source: the 2006 Canadian census data

The figures in parentheses are standard deviations

Table 4 Mean and Standard deviation: Calgary/Edmonton

| | MEN | | | WOMEN | | |
|---|---|---|---|---|---|---|
| Variable | Mainland | Hong Kong | Canadian-born | Mainland | Hong Kong | Canadian-born |
| Wages | 42299 | 49353 | 58231 | 29405 | 40995 | 39650 |
| | (32538) | (32686) | (34950) | (22124) | (37928) | (26978) |
| EDUC | 15.10 | 14.11 | 13.32 | 13.99 | 13.40 | 13.63 |
| | (3.779) | (3.228) | (2.790) | (3.465) | (2.978) | (2.709) |
| EXP | 24.12 | 27.35 | 23.76 | 24.43 | 28.65 | 24.39 |
| | (11.42) | (10.69) | (10.72) | (11.33) | (9.51) | (10.78) |
| EXPSQ | 711.36 | 861.06 | 679.30 | 724.14 | 910.26 | 710.93 |
| | (632.20) | (559.06) | (550.31) | (619.61) | (503.49) | (547.55) |
| MARRIED | 0.92 | 0.841 | 0.677 | 0.865 | 0.773 | 0.657 |
| WKS0112 | 0.03 | 0.027 | 0.011 | 0.045 | 0.018 | 0.025 |
| WKS1326 | 0.05 | 0.035 | 0.031 | 0.135 | 0.082 | 0.055 |
| WKS2739 | 0.07 | 0.035 | 0.042 | 0.071 | 0.073 | 0.048 |
| WKS4048 | 0.17 | 0.115 | 0.135 | 0.110 | 0.209 | 0.145 |
| HRS0120 | 0.03 | 0.018 | 0.027 | 0.110 | 0.145 | 0.112 |
| HRS2130 | 0.03 | 0.009 | 0.025 | 0.052 | 0.055 | 0.100 |
| HRS3139 | 0.08 | 0.133 | 0.077 | 0.148 | 0.136 | 0.197 |
| HRS4549 | 0.10 | 0.088 | 0.099 | 0.05 | 0.100 | 0.068 |
| YSM | 13.50 | 22.84 | | 14.39 | 23.47 | |
| | (11.362) | (10.32) | | (11.56) | (9.97) | |
| LANGUAGE | 0.92 | 0.982 | 0.9999 | 0.92 | 0.964 | 1 |
| N | 177 | 113 | 8676 | 155 | 110 | 7613 |

Source: the 2006 Canadian census data

The figures in parentheses are standard deviations

that the males' wages follow the same pattern as individuals in Toronto and Vancouver. There is a surprise for females, however, the average earnings of Hong Kong immigrants is higher than that of the natives, which may be due to their small sample size.

In all these three labor markets, the Mainland China male immigrants always have the highest educational attainment; however, the situation of the females is different. In Toronto the Hong Kong and Mainland China female immigrants have almost the same years of schooling, at around 14.2 years. The same average educational level is observed in Vancouver. The average schooling years of Mainland China and Hong Kong female immigrants are 13.4 and 14.0 years in Calgary/Edmonton; and the level for the Canadian-born is in the middle, at 13.6 years.

Hong Kong immigrants in Toronto and Calgary/Edmonton have the longest working experience for both men and women. The women even have longer experience than men, and the Canadian-born always have the shortest experience. In Vancouver, the average working experience of Mainland China immigrants is 26.4 years for men and 25.8 years for women, which are the longest among the three groups. For the average years since immigration, compared to the Mainland China immigrants, as expected, immigrants from Hong Kong came to Canada earlier, so they have a longer period since migration in all three labor markets for both males and females.

The language variable measures the Canadian official language proficiency among individuals in the three labor markets. The closer the mean of language equal to 1, the better the language proficiency of individuals. Not surprisingly, the immigrants from Hong Kong have better proficiency than Mainland China immigrants for both males and females. In

Toronto and Vancouver, the language mean values of the male and female Hong Kong immigrants are around 0.97, meaning that their language proficiencies are almost perfect. In contrast, only four out of five Mainland China immigrants in Toronto are fluent in official language, and three quarters of them in Vancouver have good language proficiency. The gap between their mean values becomes smaller in Calgary/Edmonton, the average levels of Mainland China immigrants for both males and females increases, and the one of Hong Kong immigrants remains the same. This may be due to the fact that fewer Mainland China immigrants lived here. They speak the native language more than those in Toronto and Vancouver, where Cantonese is more useful than English sometimes for Chinese origin immigrants.

## V Empirical results and interpretations

### V.1. Results of the model with the same assimilation rate for men

Table 5 shows the empirical results of the entry and assimilation effects of Model (1) for males. The complete results are listed in Appendix Table A3. In this model, all immigrants are constrained to have the same assimilation rate. For all the groups, the entry effects indicates that immigrants earn less than the native-born, and the common estimated assimilation effect is positive, which in consistent with our expectation.

In Toronto, male immigrants from Mainland China have an average 56 percent earnings disadvantage when they arrived in Canada compared with the Canadian-born. With the positive earnings growth rate of one percent every year after arrival, it would take them about 54 years to catch up with the earnings of native men. Hong Kong immigrant men have

Table 5 Entry and assimilation effects of Model (1), men

| effect *estimated coefficient* | Toronto | Implied years to equality | Vancouver | Implied years to equality | Calgary/ Edmonton | Implied years to equality |
|---|---|---|---|---|---|---|
| **Entry effect -α*100** | | | | | | |
| Mainland | 56.35 | 54.00 | 68.91 | 64.41 | 59.65 | 80.65 |
| | (-20.57) | | (-17.62) | | (-10.35) | |
| HK | 38.57 | 36.96 | 50.87 | 47.54 | 44.51 | 60.18 |
| | (-12.55) | | (-11.85) | | (-6.09) | |
| ASIA | 48.58 | 46.55 | 53.86 | 50.33 | 41.93 | 56.68 |
| | (-31.51) | | (-19.58) | | (-12.34) | |
| EUROUS | 33.74 | 32.33 | 37.85 | 35.37 | 27.03 | 36.55 |
| | (-16.19) | | (-10.49) | | (-6.34) | |
| AFRSA | 39.85 | 38.19 | 46.26 | 43.23 | 47.09 | 63.67 |
| | (-20.45) | | (-9.44) | | (-9.84) | |
| **Assimilation effect δ*100** | | | | | | |
| YSM | 1.04 | | 1.07 | | 0.74 | |
| | (17.14) | | (10.35) | | (5.97) | |

NOTES:

Coefficients estimated from Model (1), $y = X\beta + \alpha_1 CHINA + \alpha_2 HK + \alpha_3 ASIA + \alpha_4 EUROUS + \alpha_5 AFRSA + \delta YSM$.

Implied years to equality is calculated by $-\alpha_i/\delta$.

The figures in parentheses are the t-statistics.

The reference group is Canadian-born workers

Source: based on regression in Table A3

Full results are presented in Table A3

a smaller earnings disadvantage at entry, and they are projected to need 37 years to catch up with the Canadian-born men. Based on the entry effect, Hong Kong immigrants assimilate into the Toronto labor market before Mainland China immigrants.

In Vancouver, the earnings disadvantage relative to the Canadian-born is higher than in Toronto for both Mainland China and Hong Kong immigrants. With an earnings growth rate of 1.1 percent per year, it also takes them longer to catch up with the Canadian-born. The former has a 69 percent earnings disadvantage at the time of arrival in Canada and need about 10 years longer than individuals in Toronto for their earnings to converge to those of native men. The latter has a 51 percent earnings disadvantage and need 48 years, 11 year more than those in Toronto. Again, Hong Kong immigrants perform better in this market.

The longest estimated catch-up process for both the Mainland China and Hong Kong male immigrants is discerned in Calgary/Edmonton. Mainland China immigrants register a 60 percent earnings disadvantage on average when they arrived in Canada relative to the comparable Canadian-born men, and Hong Kong immigrants have a 45 percent earnings disadvantage. The earnings of these two immigrant groups grow at only 0.7 percent per year in this labor market, so they need 81 years and 60 years respectively to catch up to the earnings of native men.

Comparing with Song (2004) who used the same methodology with the 1996 census in Toronto and Vancouver, my results show a slightly shorter catch-up time for both groups.

I also included three other immigrant groups to compare to the Mainland China and Hong Kong immigrants: ASIA, EUROUS and AFRSA[1]. The EUROUS males have the

[1] The names of the dummy variables are used as the name of each comparison groups

smallest earnings disadvantage percentage across the five immigrant groups in all three labor markets, and they need less than 40 years to catch up. The men in the ASIA group perform better than the Mainland ones but worse than the Hong Kong ones, with the exception of Calgary/Edmonton, where they perform better than both. The entry effect of the AFRSA males is just a little stronger than the EUROUS males in Toronto and Vancouver. The men of AFRSA need 38 and 43 years to converge to the earnings of native men in Toronto and Vancouver, but they need 64 years in Calgary/Edmonton because of lower earning growth rate.

**V.2. Results of the model with the same assimilation rate for women**

The empirical results of the entry and assimilation effects listed in Model (1) for females are presented in Table 6. The complete results are in Appendix Table A4. Female immigrants also have similar assimilation processes in Toronto, Vancouver and Calgary/Edmonton where all of the entry and assimilation effects are in accordance with our expectations. The entry effects for women in every labor market are similar to those of men, but they have higher earning growth rate; as a consequence, all five immigrant groups of women spend fewer years than men to catch up to the earnings of the Canadian-born.

In Toronto, Mainland China immigrants have a 57 percent earnings disadvantage compared to the Canadian-born, and Hong Kong immigrants have a 44 percent disadvantage. Both of their earnings increase at 1.4 percent annually, taking 41 years for immigrants to assimilate into the market for the Mainland China immigrants and 32 years for Hong Kong immigrants. In Vancouver, Hong Kong immigrants also perform better than Mainland China

Table 6 Entry and assimilation effects of Model (1), women

| effect (estimated coefficient) | Toronto | Implied years to equality | Vancouver | Implied years to equality | Calgary/ Edmonton | Implied years to equality |
|---|---|---|---|---|---|---|
| Entry effect -α*100 | | | | | | |
| Mainland | 57.12 | 41.19 | 54.65 | 45.25 | 42.75 | 38.44 |
| | (-21.44) | | (-15.20) | | (-7.00) | |
| HK | 44.03 | 31.75 | 49.54 | 41.03 | 36.14 | 32.50 |
| | (-14.71) | | (-12.56) | | (-4.85) | |
| ASIA | 53.72 | 38.73 | 46.93 | 38.86 | 43.78 | 39.37 |
| | (-34.43) | | (-18.15) | | (-11.82) | |
| EUROUS | 49.26 | 35.52 | 40.21 | 33.30 | 38.36 | 34.49 |
| | (-24.21) | | (-11.55) | | (-8.24) | |
| AFRSA | 45.40 | 32.73 | 38.36 | 31.77 | 31.86 | 28.65 |
| | (-24.25) | | (-8.16) | | (-6.40) | |
| Assimilation effect δ*100 | | | | | | |
| YSM | 1.39 | | 1.21 | | 1.11 | |
| | (23.21) | | (11.83) | | (8.15) | |

NOTES:

Coefficients estimated from Model (1), $y = X\beta + \alpha_1 CHINA + \alpha_2 HK + \alpha_3 ASIA + \alpha_4 EUROUS + \alpha_5 AFRSA + \delta YSM$.

Implied years to equality is calculated by $-\alpha i/\delta$.

The figures in parentheses are the t-statistics.

The reference group is Canadian-born

Source: based on regression in Table A4

Full results are presented in Table A4

immigrants. With the lower earnings growth rate of 1.2 percent per year in Vancouver, Mainland China immigrants need around 45 years to catch up with the earnings of the native women, four years longer than the new arrivals in Toronto, but Hong Kong immigrants spend almost ten years longer to catch up. The best performances for these two groups are in Calgary/Edmonton. Although their wages grow at only 1.11 percent every year, they have the lowest earnings disadvantage among the three markets.

Females from the other three comparison groups are also worth discussing. The EUROUS women are no longer the group that spends the shortest time period to assimilate into the labor market. In Toronto, along with the immigrants from Hong Kong, the performance of AFRSA group is a little bit better than the EUROUS. The ASIA group performs a bit better than the Mainland China group in this labor market, taking 39 years to reach the level of wages of native women. The assimilation profiles for the females of EUROUS and the ASIA in Calgary/Edmonton are fairly similar to those in Toronto. The gap between the native and the AFRSA group is the smallest. The EUROUS need 2 years more than the Hong Kong immigrants to narrow the gap with the natives, and the ASIA group shows the slowest assimilation profiles, taking 39 years to catch up with the earnings of Canadian-born. The only difference among the immigrant groups in Vancouver is that the number of catch-up years of the ASIA immigrants is in the middle of the range for the five immigrant groups.

### V.3. Results of the model with the different assimilation rates for men

Table 7 lists the results of the second model for men. The complete results are listed in

Appendix Table A5. The assimilation rate is no longer constrained to be the same across the different immigrant groups in this model. In accordance to the expectation, immigrants earn less than the native-born, and the assimilation effect is positive for all immigrants in Toronto, Vancouver and Calgary/Edmonton.

In Toronto, compared to the Canadian-born men, the Mainland China group has a 62 percent earnings disadvantage at entry, which is offset by their relative high assimilation rate of 1.5 percent per year, so they need 41 years to catch up with the native born. The entry effect of Hong Kong migrants in Toronto in model (2) is 7.3 percent larger than in model (1) (45.89 percent minus 38.57 percent). With a 1.4 percent assimilation rate, this implies that they need 32 years to catch up. Among the other three immigrants groups, the wages of the ASIA group grow at the most rapidly rate, which implies they need only 34 years to converge to the earnings of native men. However, the smaller entry effect of new arrivals from the EUROUS and AFRSA are all counteracted by their smaller earning growth rate, and the number of years to reach equality is 35 and 42 years respectively.

The results are similar in Vancouver. The entry effect for the immigrants from Mainland China and Hong Kong are all stronger than in model (1). In that case Mainland China immigrants assimilate at 1.3 percent per year into the labor market and need more than 56 years catch up, and those from Hong Kong take almost 39 years at a 1.6 percent annual assimilation rate to catch up. The ASIA group spends the same amount of time as the Hong Kong group to assimilate. A similar result is found for the EUROUS and the AFRSA immigrants as well, but this is derived from substantially different entry effects and assimilation rates. The earnings disadvantage of the EUROUS group is 26.4 percent, which

Table 7 Entry and assimilation effects of Model (2), men

| effect *estimated coefficient* | Toronto | Implied years to equality | Vancouver | Implied years to equality | Calgary/ Edmonton | Implied years to equality |
|---|---|---|---|---|---|---|
| **Entry effect -α*100** | | | | | | |
| CHINA | 61.72 | | 72.82 | | 76.81 | |
| | (-14.92) | | (-12.96) | | (-9.02) | |
| HK | 45.89 | | 60.21 | | 36.74 | |
| | (-6.93) | | (-7.32) | | (-2.25) | |
| ASIA | 58.25 | | 61.52 | | 48.78 | |
| | (-28.21) | | (-16.32) | | (-9.89) | |
| EUROUS | 23.99 | | 26.36 | | 17.49 | |
| | (-9.19) | | (-5.73) | | (-3.31) | |
| AFRSA | 36.47 | | 47.57 | | 49.98 | |
| | (-11.78) | | (-5.66) | | (-6.61) | |
| **Assimilation effect δ*100** | | | | | | |
| YSMCHINA | 1.49 | 41.33 | 1.31 | 55.74 | 1.99 | 38.51 |
| | (5.55) | | (4.65) | | (4.19) | |
| YSMHK | 1.44 | 31.96 | 1.55 | 38.96 | 0.40 | 92.35 |
| | (4.46) | | (4.14) | | (0.61) | |
| YSMASIA | 1.72 | 33.93 | 1.55 | 39.69 | 1.15 | 42.32 |
| | (15.12) | | (8.06) | | (4.60) | |
| YSMEUROUS | 0.68 | 35.45 | 0.64 | 41.43 | 0.40 | 43.95 |
| | (7.99) | | (4.24) | | (2.38) | |
| YSMAFRSA | 0.87 | 41.86 | 1.14 | 41.77 | 0.89 | 56.18 |
| | (6.39) | | (3.19) | | (2.67) | |

NOTES:

Coefficients estimated from Model (2), $y = X\beta + \alpha_1 CHINA + \alpha_2 HK + \alpha_3 ASIA + \alpha_4 EUROUS + \alpha_5 AFRSA + \delta_1 YSMCHINA + \delta_2 YSMHK + \delta_3 YSMASIA + \delta_4 YSMEUROUS + \delta_5 YSMAFRSA$

Implied years to equality is calculated by $-\alpha_i/\delta_i$.

The figures in parentheses are the t-statistics.

The reference group is Canadian-born

Source: based on regression in Table A5

Full results are presented in Table A5

is less than the AFRSA at the time of entry, but its earning growth rate is 0.5 percent slower. There appears to be an outlier in the catch-up process in the labor market of Calgary/Edmonton, as Hong Kong immigrants take 92 years to catch up. However, the sample size is very small (only 113 individuals), and this number should not be given too much importance. The Mainland immigrants perform slightly better than the other groups, taking around 39 years to assimilate. The EUROUS and AFRSA groups have a lower earnings growth rates, especially the immigrants from the EUROUS. Thus, it takes them 44 and 56 years for them respectively to converge to the wages of the native men.

### V.4. Results of the model with the different assimilation rate for women

The results of model (2) for females are shown in Table 8. The complete results are listed in Appendix Table A6. The female immigrants from Asia except Hong Kong perform better than in Model (1), but those from the EUROUS group perform worse in all three labor markets.

In Toronto, the Mainland China females take 35 years to catch up. The entry effect of the Hong Kong females decreases compared to model (1), but the assimilation rate also decreased, so they take two more years than in model (1). Unlike the case with men, Mainland China women have a higher assimilation rate and a similar earnings disadvantage percentage, while Hong Kong women have a lower rate and disadvantage percentage. With the strongest entry effect and the highest earnings growth rate offsetting each other, the ASIA group takes 32 years, to catch up the Canadian-born women. The slowest one is the EUROUS group, which takes 38 years.

Table 8 Entry and assimilation effects of Model (2), women

| effect *estimated coefficient* | Toronto | Implied years to equality | Vancouver | Implied years to equality | Calgary/ Edmonton | Implied years to equality |
|---|---|---|---|---|---|---|
| **Entry effect -α*100** | | | | | | |
| CHINA | 61.43 | | 59.02 | | 45.87 | |
| | (-15.03) | | (-11.53) | | (-5.03) | |
| HK | 39.78 | | 61.70 | | 62.68 | |
| | (-5.97) | | (-8.04) | | (-3.64) | |
| ASIA | 62.32 | | 53.45 | | 49.79 | |
| | (-28.66) | | (-15.30) | | (-9.24) | |
| EUROUS | 42.45 | | 29.79 | | 28.89 | |
| | (-16.66) | | (-6.60) | | (-4.94) | |
| AFRSA | 43.56 | | 28.72 | | 36.97 | |
| | (-14.85) | | (-3.42) | | (-4.39) | |
| **Assimilation effect δ*100** | | | | | | |
| YSMCHINA | 1.75 | 35.08 | 1.52 | 38.94 | 1.32 | 34.86 |
| | (6.49) | | (5.38) | | (2.69) | |
| YSMHK | 1.16 | 34.30 | 1.83 | 33.80 | 2.24 | 27.99 |
| | (3.56) | | (5.21) | | (3.32) | |
| YSMASIA | 1.96 | 31.80 | 1.62 | 32.90 | 1.48 | 33.75 |
| | (16.72) | | (8.93) | | (5.36) | |
| YSMEUROUS | 1.13 | 37.46 | 0.81 | 36.94 | 0.77 | 37.45 |
| | (13.72) | | (5.36) | | (4.14) | |
| YSMAFRSA | 1.30 | 33.53 | 0.73 | 39.43 | 1.36 | 27.12 |
| | (10.45) | | (2.01) | | (3.77) | |

NOTES:

Coefficients estimated from Model (2), $y = X\beta + \alpha_1 CHINA + \alpha_2 HK + \alpha_3 ASIA + \alpha_4 EUROUS + \alpha_5 AFRSA + \delta_1 YSMCHINA + \delta_2 YSMHK + \delta_3 YSMASIA + \delta_4 YSMEUROUS + \delta_5 YSMAFRSA$

Implied years to equality is calculated by $-\alpha_i/\delta_i$.

The figures in parentheses are the t-statistics.

The reference group is Canadian-born

Source: based on regression in Table A6

Full results are presented in Table A6

In Vancouver, Mainland China immigrants take 39 years, less than in the first model as well, to converge to the earnings of the native females. The wages of Hong Kong immigrants grow at 1.8 percent per year, which totally compensated for the highest entry effect of 62 percent, so they take 34 years to assimilate into this labor market. There is no large difference in catch-up years among the other three immigrant groups. The most rapid one is for the ASIA group again, at 33 years, and the EUROUS and AFRSA immigrants take 37 and 39 years respectively.

In Calgary/Edmonton, the time period for the catch-up years for women across all five groups are shorter than those of men. The entry effect of women immigrants from the Mainland China is 46 percent, and the earnings rise at 1.3 percent per year. Although the ASIA immigrants have a larger entry and assimilation effects than Mainland China women, both assimilate in around 34 years. An interesting fact is that their number of catch-up years is similar to the one of model (1) as well. A comparable situation is observed between the AFRSA and Hong Kong immigrants, which have the same number of years to catch up.

## VI Conclusion

This paper investigated the performances of immigrants from Mainland China and Hong Kong in the labor markets of Toronto, Vancouver, Calgary and Edmonton. The data are taken from the 2006 Canadian Census. Summarizing the results obtained from the aforementioned tables, there are several conclusions.

When all immigrant men are assumed to face the same assimilation rate, the Mainland China males in all three labor markets need more than half a century to catch up with the

earnings of Canadian-born. In comparison, the Hong Kong immigrants take less time than the Mainland China immigrants. After controlling for different assimilation effects across the groups, the assimilation years shorten for all the groups, with the exception of the insignificant value for Hong Kong males in Calgary/Edmonton. Comparing between these two groups of Chinese origin immigrants, males from Hong Kong always need less time than arrivals from Mainland China to converge to the earnings of native men. This phenomenon can probably be explained by some unobservable characteristics of the Hong Kong immigrants, such as a better background knowledge of the Canadian culture than the Mainland China immigrants.

The female immigrants from Mainland China and Hong Kong assimilate more rapidly than the males in all labor markets when the assimilation rate is constrained to be the same. None of them needs more than half a century to converge to the earnings of the native-born women. After allowing for different assimilation rates, the situation becomes similar to that of the males in all the labor markets. The amount of time that is required to narrow the gap with the Canadian-born women declines by 3 to 7 years compared to the first model, with the only exception being that the result for Hong Kong females in Toronto. For the female immigrants from Mainland China and Hong Kong, the differences in implied years to equality between the two models in each labor market are smaller than those of the male groups.

As a general conclusion, we can see that the number of years required to catch up for all Mainland China and Hong Kong immigrants is smaller in the second model than in the first one. In addition, large entry effect can be offset by a high assimilation pace; therefore, the

speed of assimilation plays a vital role in the catching up process of immigrants, especially for males. Moreover, compared with the results in Song (2004), Hong Kong males who were still in Canada in 2006 perform better than those observed by Song in 1996 under the first model in Toronto and Vancouver, but worse under the second model in Vancouver. The number of years required by Hong Kong female immigrants who stayed in Canada is higher than those observed in 1996 in the two areas no matter under which model is estimated.

The performances of the other three immigrant groups in my results are a little bit different from those of Song (2004). She found that the EUROUS migrants tended to have the best performances and that the Asian migrants excluding Hong Kong tend to have the worst one. In my study, depending on gender and models, each of the five different immigrant groups was estimated to attain convergence to the earnings to those of the natives faster than the other four groups.

Overall, the results in this paper are basically consistent with the conclusion in Song's paper. With the same labor market conditions, personal human capital affects the immigrants differently. The immigrant groups who are able to assimilate into the labor market in the shortest time probably have the best possibilities of adaptation.

# Appendix

Table A1 Variable descriptions

| | |
|---|---|
| LNWAGE | logarithms of wages and salaries in previous year of Census |
| EDUC | education in years |
| EXP | work experience in years, calculated by age – 4 – EDUC |
| EXPSQ | experience squared |
| MARRIED | dummy variable for historical comparability indicator of marital status |
| WKS0112 | dummy variables for 1 to 12 weeks worked in previous year of census (reference: 49-52 weeks) |
| WKS1326 | dummy variables for 13 to 26 weeks worked in previous year of census (reference: 49-52 weeks) |
| WKS2739 | dummy variables for 27 to 39 weeks worked in previous year of census (reference: 49-52 weeks) |
| WKS4048 | dummy variables for 40 to 48 weeks worked in previous year of census (reference: 49-52 weeks) |
| HRS0120 | dummy variables for 1 to 20 hours worked for pay or self-employment in previous week of census (reference: 40-44 hours) |
| HRS2130 | dummy variables for 21 to 30 hours worked for pay or self-employment in previous week of census (reference: 40-44 hours) |
| HRS3139 | dummy variables for 31 to 39 hours worked for pay or self-employment in previous week of census (reference: 40-44 hours) |
| HRS4549 | dummy variables for 45 to 49 hours worked for pay or self-employment in previous week of census (reference: 40-44 hours) |
| CHINA | dummy variable for individuals born in Mainland China |
| HK | dummy variable for individuals born in Hong Kong |
| ASIA | dummy variable for individuals born in Asia areas excluding Mainland China and Hong Kong |
| EUROUS | dummy variable for individuals born in Europe, the U.S. and the Oceania |
| AFRSA | dummy variable for individuals born in Africa, South America, Central America area, Jamaica, and other Caribbean and Bermuda area |
| YSM | years since immigration (for immigrants) |
| YSMCHINA | the interaction of YSM and CHINA |
| YSMHK | the interaction of YSM and HK |
| YSMASIA | the interaction of YSM and ASIA |
| YSMEUROUS | the interaction of YSM and EUROUS |
| YSMAFRSA | the interaction of YSM and AFRSA |
| LANGUAGE | dummy variable for individual who can speak at least one of the Canadian official languages |

Table A2 The definition of variable EDUC

| EDUC | The highest degree individuals have |
|---|---|
| 8 | -None |
| 12 | -High school graduation certificate or equivalency certificate |
| 13 | -Other trades certificate or diploma |
| | -Registered apprenticeship certificate |
| | -College, CEGEP or other non-university certificate or diploma from a program of 3 months to less than 1 year |
| 14 | -College, CEGEP or other non-university certificate or diploma from a program of 1 year to 2 years |
| | -College, CEGEP or other non-university certificate or diploma from a program of more than 2 years |
| 15 | -University certificate or diploma below bachelor level |
| 16 | -Bachelor's degree |
| 17 | -University certificate or diploma above bachelor level |
| 18 | -Master's degree |
| 22 | -Degree in medicine, dentistry, veterinary medicine or optometry |
| | -Earned doctorate degree |

Table A3 Regression results of Model (1), men

| | Toronto | | Vancouver | | Calgary/Edmonton | |
|---|---|---|---|---|---|---|
| Variable | parameter | t-value | parameter | t-value | parameter | t-value |
| Intercept | 9.4824 | 185.69 | 9.3048 | 120.74 | 9.3555 | 85.59 |
| EDUC | 0.0518 | 30.96 | 0.0499 | 18.03 | 0.0563 | 22.66 |
| EXP | 0.0275 | 13.87 | 0.0385 | 11.52 | 0.0379 | 12.53 |
| EXPSQ | -0.00045 | -12.04 | -0.00062 | -9.72 | -0.00060 | -10.34 |
| MARRIED | 0.2123 | 18.86 | 0.1926 | 10.93 | 0.2292 | 14.49 |
| WKS0112 | -1.5673 | -39.83 | -1.4985 | -25.87 | -1.5414 | -24.82 |
| WKS1326 | -0.9916 | -38.79 | -0.8661 | -22.12 | -0.7695 | -19.46 |
| WKS2739 | -0.6029 | -24.79 | -0.5271 | -14.38 | -0.4357 | -12.64 |
| WKS4048 | -0.1960 | -14.34 | -0.1821 | -8.92 | -0.1261 | -6.41 |
| HRS0120 | -0.6522 | -23.17 | -0.6652 | -16.40 | -0.6955 | -16.29 |
| HRS2130 | -0.5715 | -21.19 | -0.6315 | -16.84 | -0.6433 | -14.50 |
| HRS3139 | -0.0323 | -2.14 | -0.0664 | -2.71 | -0.1830 | -6.98 |
| HRS4549 | 0.0658 | 4.19 | 0.0668 | 2.58 | 0.0453 | 1.95 |
| CHINA | -0.5635 | -20.57 | -0.6891 | -17.62 | -0.5965 | -10.35 |
| HK | -0.3857 | -12.55 | -0.5087 | -11.85 | -0.4451 | -6.09 |
| ASIA | -0.4858 | -31.51 | -0.5386 | -19.58 | -0.4193 | -12.34 |
| EUROUS | -0.3374 | -16.19 | -0.3785 | -10.49 | -0.2703 | -6.34 |
| AFRSA | -0.3985 | -20.45 | -0.4626 | -9.44 | -0.4709 | -9.84 |
| YSM | 0.0104 | 17.14 | 0.0107 | 10.35 | 0.0074 | 5.97 |
| LANGUAGE | 0.1757 | 4.31 | 0.1947 | 3.42 | 0.1062 | 1.06 |
| Adjusted $R^2$ | 0.2817 | | 0.2963 | | 0.2422 | |
| N | 23580 | | 9644 | | 10921 | |

Table A4 Regression results of Model (1), women

| | Toronto | | Vancouver | | Calgary/Edmonton | |
|---|---|---|---|---|---|---|
| Variable | parameter | t-value | parameter | t-value | parameter | t-value |
| Intercept | 9.0349 | 183.05 | 9.1451 | 125.13 | 9.0514 | 74.32 |
| EDUC | 0.0739 | 41.90 | 0.0660 | 23.45 | 0.0796 | 28.94 |
| EXP | 0.0306 | 16.47 | 0.0274 | 9.08 | 0.0272 | 8.85 |
| EXPSQ | -0.00046 | -12.73 | -0.00039 | -6.63 | -0.00038 | -6.34 |
| MARRIED | 0.0260 | 2.63 | 0.0560 | 3.65 | 0.0498 | 3.10 |
| WKS0112 | -1.5064 | -54.78 | -1.5440 | -35.86 | -1.5630 | -34.56 |
| WKS1326 | -0.8316 | -40.32 | -0.8953 | -29.58 | -0.8533 | -26.47 |
| WKS2739 | -0.5900 | -27.48 | -0.4895 | -15.93 | -0.5774 | -17.14 |
| WKS4048 | -0.1920 | -14.88 | -0.2208 | -11.83 | -0.1976 | -9.66 |
| HRS0120 | -0.7375 | -43.54 | -0.6694 | -28.51 | -0.7310 | -30.06 |
| HRS2130 | -0.5109 | -31.60 | -0.4243 | -18.26 | -0.4910 | -19.75 |
| HRS3139 | -0.0463 | -3.97 | -0.0199 | -1.09 | -0.0838 | -4.34 |
| HRS4549 | 0.0688 | 3.84 | 0.0968 | 3.22 | 0.0802 | 2.72 |
| CHINA | -0.5712 | -21.44 | -0.5465 | -15.20 | -0.4275 | -7.00 |
| HK | -0.4403 | -14.71 | -0.4954 | -12.56 | -0.3614 | -4.85 |
| ASIA | -0.5372 | -34.43 | -0.4693 | -18.15 | -0.4378 | -11.82 |
| EUROUS | -0.4926 | -24.21 | -0.4021 | -11.55 | -0.3836 | -8.24 |
| AFRSA | -0.4540 | -24.25 | -0.3836 | -8.16 | -0.3186 | -6.40 |
| YSM | 0.0139 | 23.21 | 0.0121 | 11.83 | 0.0111 | 8.15 |
| LANGUAGE | 0.1955 | 5.13 | 0.0986 | 1.88 | 0.0257 | 0.23 |
| Adjusted $R^2$ | 0.3791 | | 0.3902 | | 0.3550 | |
| N | 22589 | | 8932 | | 9521 | |

Table A5 Regression results of Model (2), men

| | Toronto | | Vancouver | | Calgary/Edmonton | |
|---|---|---|---|---|---|---|
| Variable | parameter | t-value | parameter | t-value | parameter | t-value |
| Intercept | 9.4892 | 185.92 | 9.3273 | 120.77 | 9.3677 | 85.63 |
| EDUC | 0.0519 | 31.00 | 0.0499 | 17.98 | 0.0567 | 22.79 |
| EXP | 0.0266 | 13.40 | 0.0378 | 11.28 | 0.0378 | 12.49 |
| EXPSQ | -0.00043 | -11.53 | -0.00060 | -9.44 | -0.00060 | -10.32 |
| MARRIED | 0.2143 | 19.05 | 0.1930 | 10.96 | 0.2293 | 14.51 |
| WKS0112 | -1.5603 | -39.68 | -1.4961 | -25.83 | -1.5339 | -24.70 |
| WKS1326 | -0.9850 | -38.55 | -0.8651 | -22.09 | -0.7653 | -19.35 |
| WKS2739 | -0.6001 | -24.69 | -0.5221 | -14.24 | -0.4306 | -12.49 |
| WKS4048 | -0.1929 | -14.13 | -0.1806 | -8.85 | -0.1259 | -6.41 |
| HRS0120 | -0.6510 | -23.16 | -0.6611 | -16.30 | -0.6939 | -16.26 |
| HRS2130 | -0.5740 | -21.30 | -0.6312 | -16.84 | -0.6451 | -14.55 |
| HRS3139 | -0.0326 | -2.16 | -0.0652 | -2.67 | -0.1852 | -7.06 |
| HRS4549 | 0.0664 | 4.23 | 0.0693 | 2.69 | 0.0450 | 1.93 |
| CHINA | -0.6172 | -14.92 | -0.7282 | -12.96 | -0.7681 | -9.02 |
| HK | -0.4589 | -6.93 | -0.6021 | -7.32 | -0.3674 | -2.25 |
| ASIA | -0.5825 | -28.21 | -0.6152 | -16.32 | -0.4878 | -9.89 |
| EUROUS | -0.2399 | -9.19 | -0.2636 | -5.73 | -0.1749 | -3.31 |
| AFRSA | -0.3647 | -11.78 | -0.4757 | -5.66 | -0.4998 | -6.61 |
| YSMCHINA | 0.0149 | 5.55 | 0.0131 | 4.65 | 0.0199 | 4.19 |
| YSMHK | 0.0144 | 4.46 | 0.0155 | 4.14 | 0.0040 | 0.61 |
| YSMASIA | 0.0172 | 15.12 | 0.0155 | 8.06 | 0.0115 | 4.60 |
| YSMEUROUS | 0.0068 | 7.99 | 0.0064 | 4.24 | 0.0040 | 2.38 |
| YSMAFRSA | 0.0087 | 6.39 | 0.0114 | 3.19 | 0.0089 | 2.67 |
| LANGUAGE | 0.1750 | 4.29 | 0.1777 | 3.11 | 0.0909 | 0.91 |
| Adjusted $R^2$ | 0.2835 | | 0.2959 | | 0.2429 | |
| N | 23580 | | 9644 | | 10921 | |

Table A6 Regression results of Model (2), women

| | Toronto | | Vancouver | | Calgary/Edmonton | |
|---|---|---|---|---|---|---|
| Variable | parameter | t-value | parameter | t-value | parameter | t-value |
| Intercept | 9.0416 | 182.93 | 9.1539 | 125.29 | 9.0796 | 74.26 |
| EDUC | 0.0737 | 41.72 | 0.0662 | 23.49 | 0.0795 | 28.87 |
| EXP | 0.0299 | 16.08 | 0.0268 | 8.87 | 0.0269 | 8.76 |
| EXPSQ | -0.00045 | -12.36 | -0.00038 | -6.39 | -0.00037 | -6.24 |
| MARRIED | 0.0268 | 2.72 | 0.0552 | 3.59 | 0.0500 | 3.11 |
| WKS0112 | -1.5028 | -54.68 | -1.5402 | -35.79 | -1.5611 | -34.51 |
| WKS1326 | -0.8292 | -40.21 | -0.8936 | -29.54 | -0.8533 | -26.46 |
| WKS2739 | -0.5881 | -27.41 | -0.4873 | -15.87 | -0.5764 | -17.11 |
| WKS4048 | -0.1904 | -14.76 | -0.2198 | -11.78 | -0.1979 | -9.68 |
| HRS0120 | -0.7365 | -43.51 | -0.6691 | -28.52 | -0.7305 | -30.05 |
| HRS2130 | -0.5093 | -31.52 | -0.4239 | -18.26 | -0.4901 | -19.71 |
| HRS3139 | -0.0457 | -3.93 | -0.0205 | -1.12 | -0.0833 | -4.31 |
| HRS4549 | 0.0689 | 3.84 | 0.0956 | 3.19 | 0.0805 | 2.73 |
| CHINA | -0.6143 | -15.03 | -0.5902 | -11.53 | -0.4587 | -5.03 |
| HK | -0.3978 | -5.97 | -0.6170 | -8.04 | -0.6268 | -3.64 |
| ASIA | -0.6232 | -28.66 | -0.5345 | -15.30 | -0.4979 | -9.24 |
| EUROUS | -0.4245 | -16.66 | -0.2979 | -6.60 | -0.2889 | -4.94 |
| AFRSA | -0.4356 | -14.85 | -0.2872 | -3.42 | -0.3697 | -4.39 |
| YSMCHINA | 0.0175 | 6.49 | 0.0152 | 5.38 | 0.0132 | 2.69 |
| YSMHK | 0.0116 | 3.56 | 0.0183 | 5.21 | 0.0224 | 3.32 |
| YSMASIA | 0.0196 | 16.72 | 0.0162 | 8.93 | 0.0148 | 5.36 |
| YSMEUROUS | 0.0113 | 13.72 | 0.0081 | 5.36 | 0.0077 | 4.14 |
| YSMAFRSA | 0.0130 | 10.45 | 0.0073 | 2.01 | 0.0136 | 3.77 |
| LANGUAGE | 0.1961 | 5.14 | 0.0914 | 1.74 | 0.0017 | 0.02 |
| Adjusted $R^2$ | 0.3800 | | 0.3912 | | 0.3553 | |
| N | 22589 | | 8932 | | 9521 | |

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