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# The economic performances of Chinese immigrants in North America in 1990s

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*Abstract:* The immigrants from China have generally taken over European immigrants to play important role in the North America since 1960s. Based on the human capital theory and neoclassical economic theory, this thesis examines the characteristics of Chinese immigrants who respectively arrived at the United States and Canada since 1990 (cohort 1990-1997 and cohort 1998-2000). The data is coming from the 2001 Canadian census and 2000 U.S. census stemmed from the IPUMS datasets in order to examine the gap in the earnings between Chinese immigrants and the Natives that should diminish with the duration in the host countries. Using the probit and OLS regressions, our findings show that Chinese immigrants experience drop off in the transferability of the education attainment in both host countries. Moreover, our results indicate the U-shape pattern in the occupational mobility, when Chinese immigrants immigrated into the United States or Canada. In addition, this thesis analyses the sample of Chinese immigrants from the 1991 Canadian census, 2000 U.S. census, and 2001 Canadian census and finds that among Chinese immigrants the brain drain occurred with their relocation from Canada to the United States. The different characteristics of Chinese immigrants who selected different host countries have been revealed.

*Key words:* Chinese immigrants, immigration, the United States, Canada

# 1. Introduction

The U.S. (The United States) and Canada had sustained national-origins quota systems in their immigration policies until the 1960s. The European immigrants had dominantly integrated into the society in the new world. There is no unbridgeable gap in the culture, the custom and the region between immigrants' offspring in both countries and the European ones. Both the U.S. and Canadian governments were somewhat inclined to welcome European immigrants, who were able to quickly assimilate to the new countries. According to Borjas' illustration (1991), prior to 1965, the United States granted enormous amounts of visas for United Kingdom (6,572) and Germany (25,957), whereas the quota for Asian countries were approximately equal to 100 per year. This policy was promulgated until 1965, when the phenomenon was prevalent that the number of European immigrants insofar was lower than the quota, even though U.S. and Canada respectively admitted tremendous amount of refugees during World War Two. In 1965, The U.S. government implemented the 1965 amendments to the Immigration and Nationality Act that allowed 270,000 people per year legally to immigrate into the United States, whereas the percentage of immigrants derived from entrenched country had been restricted to be less than 7,5 % (Borjas 1991). Meanwhile, Canada enacted the versatility point system, in which applicants were classified into three different groups, such as sponsored immigrants, nominated relatives and independent immigrants (Borjas 1991). The Canadian government selected the eligible visa applicants based on some standards. Therefore, it is taken for granted that the number of Asian immigrants, especially from China, have started to skyrocket since 1960s. Based on Chiswick's research (1987), in the United States, the share of Asian visa applicants increases from 6 percent to 40 percent over 30 years. Thompson & Weinfeld (1995) also pointed out that the immigrants stemmed from China and Taiwan respectively were the sixth and seventh source in Canada in 1992.

Although both the States and Canada are the primary destination countries for many immigrants, their motivations are strikingly different, especially for Chinese applicants. It is not doubtful that different outcomes would be occurred, due to given immigration policies and other latent reasons. Acknowledging contexts of both resource and host countries, gets access to understand the proclivity of Chinese immigrants for host countries. Additionally, we should take different factors into consideration, which include the effects of admission policies, the economic or political upheavals in the source country, and the situation of the labor market in the host countries in order to understand the immigration (Borjas 1985).

## 1.1. Context

### 1.1.1. China

China has a long history. It experienced to be feudalism in variety of dynasties. In comparison with Europe, meritocracies in China usually possessed tremendous amount of land and merely taken landlord's benefit into consideration when they designed and implemented a series of policies. Due to low agricultural productivity in the ancient China, peasants and farmers should have been confined in the land, which they rented from meritocracies. Furthermore, emigrations frequently occurred to Europe commonly were resulted from the political freedom and the religious tolerance (Ling 1912). In the ancient China, the autocracy usually outweighed than the democracy. Hence, it is not hard to be asserted in general "China is not a migration nation" (Ling 1912 pp 76).

Although China was not a migration nation, several expeditions were deliberately or spontaneously organized in varieties of dynasties. Since Han dynasty, Chinese merchants by means of the Silk Road transmitted not only tangible materials such as ceramic, silk and tea, but also intangible culture and custom. Another far-reaching maritime adventure was occurred in Ming Dynasty. Zheng He was reputational diplomat, mariner and explorer as a favorite of emperor. He obeyed the order from son of heaven and conducted seventh voyage, which is called as the seven Ming-era maritime voyages in the timespan from 1405 to 1433. Even though the official

expedition was ceased, owing to financial issues, merchants and traders from China still remained connection with indigenous people in the South Asia.

Although there was no impressive expedition and immigration occurred since Ming dynasty, the immigration recurred in the end of Qing dynasty owing to Opium Wars. Experienced several failures to battle against United Kingdom and their aligners, the British regime had imposed Manchu bureaucracy to unleash stringent measures, which prevented all ports from the commerce with western countries. Meanwhile, residences inhabited nearby the seashore were suffered from poverty as result from population burden, political corruption and stresses of wars. When grasped heralds, in terms of promising lives over sea, dwellers in coastal regions did not hesitate to immigrate to "Gold Mountains" in California, where they were able to get rid of poverty and diseases (Ling 1912 pp 80). Ling (1912) argued that two internal traits belonged to Chinese emigrants were worthwhile to be mentioned. First, in contrast with European immigrants, Chinese immigrants were reluctant to embrace the culture and manners in the host countries. To some extent, this phenomenon hindered Chinese immigrants to assimilate and integrate in the host societies and resulted in Chinese immigrants difficulty narrowed the deficiency of the living standards between them and the native inhabitants. Second, Chinese always tended to crowd together in new places. The Chinese sense of family attachment is one of imperative traditions. All younger men in China served as avant-garde, explored and discovered the new world, where they had opportunity to enhance their living standard. When the avant-garde settled down, they would reunited with their directive relatives and members in the tribute in the host countries.

### 1.1.1. The United States

Since European explorers discovered, the States were primary destination for European immigrants, who suffered from famine, wars and disease. Moreover, the salary gap between America and Europe prompted the poor to incessantly travel and inhabit in the new world. European offspring were predominant in U.S. Even though the States government respectively closed the path of immigration in 1890s and after World War One, U.S. Immigration and Nationalization Service reported that 70

percent legal immigrants were derived from Europe and Canada in 1950s (Chiswick 1987; Thompson & Weinfeld 1995).

Components of immigrants in the States were the upheaval by virtue of the Immigration policy amended in 1965. Amount of immigrants stemmed from Asia especially from China steeply rose. Chiswick (1987) stated that Asian immigrants allocated in the U.S. in early 1980s shared 40 percent of all immigrants, compared with merely 6 percent in the 1950s. Moreover, another feature of immigration in the U.S. was that immigrants from Mexico accounted for huge proportion. Both Immigration policy in the United States and the geological and historical features enable us to thoroughly explain outcomes listed above.

There are two types of family immigrants in U.S. included "Numerical limited" and "Numerically unlimited" visa (Antecol, Cobb-Clark & Trejo 2003 pp 195):

> "Numerical unlimited" family immigrants are the immediate relatives of U.S. citizens who enter without counting against the overall cap set for annual immigrant admissions. "Numerically limited" family immigrants are the more distant relatives of U.S. citizens and the immediate relative of U.S permanent residents who, in 1990, had to enter under one of the relevant preference categories (first, second, fourth, or fifth) that regulate admissions subject to the annual cap. (Antecol et al. 2003 pp 195)

The share of the close relatives of U.S. citizens or residents in successful applicants, account for 80 percent of the *numerically limited* visas (Borjas 1991), notwithstanding the rest of *numerically limited* visas was awarded to skilled applicants. To compare with point systems applied by Canada, the United States had a propensity to admit applicants who tended to reunite with the U.S. citizens or residents. We suspected that the human capital accumulation would be declined, if the family reunification were predominant reason to admit immigrants regardless of other important factors such as the age, the schooling, the income, and the language fluency.

The other unique characteristic in the States is that U.S. has to share long boundary with Mexico, which facilitated illegal aliens to leave for the States. Chiswick (1987) also stressed that the decline of cost of the transition and dissemination of the information usually resulted in the enhancement of the incentive for immigration from relative harsh places to the thrived areas. Based on economic inequity between U.S. and their neighbor country, Mexico, it is taken for granted that the tremendous amount of ineligible Mexicans tended to become illegal aliens in order to pursue the higher living standard. It is also undeniable that illegal aliens commonly were lower-skilled workers.

### 1.1.1. Canada

On the contrary, Canada experienced different immigration issues. After confederation, Canadian government encountered that they could not retain inhabitants and immigrants. Thompson & Weinfeld (1995) mentioned that one-fourth immigrants who stemmed from Europe to Canada would relocated to U.S. and Canadian-born in U.S. accounted for 25 percent Canada's population in 1901. It is obvious that the States was the prime destination for the immigrants. When U.S. restrictively limited immigration, Canada was served as Secondary option for many migrants.

Even though the Canadian government temporarily limited immigrants to allocate during World War Two, Canadian policymakers were aware of the shortage of labor in view of the industrial boom and reopened to the immigrants. European immigrants had detached themselves from Italy, Greece, and Portugal (Thompson & Weinfeld 1995).

The States and Canada also implemented new Immigration Acts. On the contrary to the U.S. regime, the application of the point system played an important role in the immigration policy in Canada. The point system screened characteristics included age, education attainment, language ability, occupational demand, and arranged employment. If applicants attained certain points, they would pass the test and be allowed to move in Canada. In addition, if potential immigrants had relatives in

Canada, they would earn extra points and went through the test, in spite of the visa directly granted in the United States. Therefore, because of the different immigration policy in both host countries, the structure of immigrants should be appeared the variation. According to Borjas' research (1991), whereas European immigrants accounted for 70 percent in the 1960s, the share of immigrants from Europe had been precipitated, and been flatten in 37 percent in the 1970s. Meanwhile, Asian immigrants, who entered to Canada, contributed 29 percent in the 1970s (Borjas 1991).

Additionally, because of the Canada-State free trade agreement, there were fewer illegal aliens who entered to Canada through the States.

In this thesis, we will aim to analyze whether Chinese immigrants are much easily assimilated in U.S. than in Canada and whether new immigrants have similar ability as their previous. Moreover, we will try to explore that Chinese immigrants flowed between the States and Canada during 1990s and 2000s, based on their different natures. Hopefully, through this thesis, we would be able to review the merits and disadvantages of different immigration policies, especially for Chinese immigrants. In sum, several empirical testable hypotheses associated with Chinese immigrants into the host countries are specified:

- The economic performance of New Chinese immigrants is worse than that of old Chinese immigrants. The payoff of Chinese immigrants should raise with the duration in the host countries.

- The transferability of the education attainment is not so smooth for Chinese immigrants. The mismatched phenomenon for Chinese immigrants should be occurred, whereas it would be reconciled with the increase in the duration in the host countries.

- Chinese immigrants should experience the U-shape pattern in the occupational mobility.

- The earnings of the Chinese immigrants who migrated from Canada into the United States should be higher than that of Chinese immigrants who still located in Canada.

- The relative growth in earnings between Chinese immigrants and native population in the United States should be not lagged behind the counterpart in Canada. This hypothesis is consistent with Borjas' concept that higher skilled Chinese immigrants prefer to select the United States, regardless of the screen system enacted by Canada.

In the section 2, we focus on the historic literature and summarize the academic conclusions by previous scholars.  Based on the IPUMS dataset, we conduct on data description and explain the methodology in section 3. The results of empirical analysis are components in section 4. Section 5 illustrates the limitations in this research and the final conclusion is discussed in section 6.

## 2. Previous Literature and Theoretical Review

Owing to the efficient redistribution system and completed social welfare systems and stronger labor unions, the income distribution in Canada tended to be egalitarian, which would offset higher skilled immigrants' income in Canada and draw much lower skilled workers.  Concerning the network, Salaff, Greve and Xu (2002) asserted that compared with refugees, the characteristics of most Chinese immigrants into Canada were diverse. In contrast with their counterparts in the States, the Chinese immigrants in Canada had to spend much more time to reconstruct the social network, which also exert negative impact on the Chinese immigrants' income in Canada.

Based on the neoclassical economics, the primarily incentive of the immigration is the disparity of the earnings between sending countries and receiving countries (Massey, Arango, Hugo, Kouaouci, Pellegrino and Taylor. 2013). In this case, the

annual income in host countries is an appropriate parameter to measure the extent to which immigrants were inclined to migrate in the host countries. Hence, if we take into account that the potential immigrant tends to pursue the maximal benefit in all options, it is not surprise that immigrants would select to relocate again when they already settle down the first destination countries. Borjas & Bratsberg (1994) demonstrated that relative income discrepancy between host countries and source countries was associated with the rate of immigration. The gap of the earnings between North America and Great China outweighs than the interior difference in the regions of great China, which consists of the mainland of China, Hong Kong, and Taiwan.

Massey (2013) and his colleagues stated that individual human capital characteristics, social conditions, and costs of the migration should contribute the probability of the migration into destination countries. In terms of the individual human capital characteristics, the education attainment plays important role. Borjas & Bratsberg (1994) pointed out that to increase 100 miles in voyage distance causes to decrease 1.2 percent in immigration rate. The cost of the immigration over the Pacific Ocean from China to different ports in the west coast of North America, nevertheless, is roughly equal. Therefore, we may insist that Chinese immigrants who were inclined to the United States or Canada did not alter their destination due to the cost of the immigration.

The ratio between the returns to ability in sending countries and that in host countries is an imperative parameter to indicate characteristics of immigrants (Borjas & Bratsberg 1994). If the ratio is less than the particular threshold in the indicator, higher skill people have proclivity to relocate to the developed countries such as the United States and Canada (Borjas & Bratsberg 1994). On the contrary, lower skill people tend to emigrate, if the ratio is bigger than the threshold (Borjas & Bratsberg 1994). It is not difficult to confirm that the ratio in terms of the earnings in China is obviously lower than that in the United States and Canada. Therefore, people who possessed higher skills were inclined to remove from China and immigrated into North America. Moreover, Chinese immigrants who decided to permanent settle into the United States or Canada always possessed the highest skill, in contrast with the

re-migrants. The return migration in Chinese immigrants prevailingly is accounted for the error information concerning opportunity in the host countries or optimal residential location plan over life-cycle (Borjas & Bratsberg 1994). The remigration usually attenuates the discrepancy of the earnings between source countries and host countries (Borjas & Bratsberg 1994). We make sure that the productivity in the immigrants who decided to remigration prevailingly is lower than that in permanent immigrants. In other word, the ratio between the payoff and the skill in sending countries is lower than that in the host countries. In addition, it is possible that Chinese immigrants who were already located in Canada would relocate into the United States because the ratio of the return to skills in the United States than that in Canada.

Rooth & Saarela (2007) through testing the migration from Finland to Sweden verified the theory provided by Borjas & Bratsberg. Moreover, they also discerned a very intriguing point that "*selection on observable characteristics is unrelated to selection on unobservable characteristics*"(Rooth & Saarela 2007 p. 94). Therefore, we cannot rely on the education attainment, the working experience or other observable traits of immigrants as the proxy to measure the motivation or the ability of immigrants. The earnings of immigrants are combined result from the immigration policy enacted by the host countries and the human capital of the immigrants. Rooth & Saarela (2007) also stated that the worker mobility in vast geographical areas seems to be the zero sum game. In other word, some participants are supposed to gain benefits at the expense of others. And then, the versatile screen system promulgated by the Canadian government cannot fulfill what they expected, if only the observable characteristics of applicants are reviewed.

We proceed to analyze the observable characteristics in the immigration. Initially, the U shape pattern of the immigrant occupational mobility was provided by Chiswick, Lee and Miller (2005). We insist that Chinese immigrants would be in the midst of the occupational upheaval, when they immigrated into the destination country. Due to the variation in the linguistic fluency and the transferability in the credential, the occupational mobility has been U shape pattern (Chiswick et al. 2005). Neither Chinese Mandarin nor Cantonese is somewhat similar to English, so that Chinese

Immigrants commonly were in the midst of the U shape pattern in occupation mobility, when they arrived at these host countries. It makes sense that Chinese immigrants were not able to gain places, in which they used to engage prior to immigration. In order to survive in the host countries, Chinese immigrants would engage into jobs described as lower skilled requirements. Of course, their occupations are not unchangeable. After retraining or the assimilation into the host countries, Chinese immigrants were able to approach the places, which are equivalent to their original occupations.

Furthermore, Chiswick and his colleagues (2005) also pointed out that high skilled immigrants should suffer from severe issues in occupational mobility, and the falling tendency of immigration occupational mobility should be obvious in the Chinese immigrants who were refugees or members of reunification family.  Economic migrants from China easily took high skilled places such as professionals or technicians. When they immigrated into these host countries, independent Chinese immigrants exposed unfamiliar ambiences and their first jobs in the host countries should be steeply declined. In contrast with refugees or reunifications, nevertheless, the occupational mobility of economic immigrants would be ascending, when they adjusted to the host countries.

Besides the U shape pattern in occupational mobility, other characteristics also varied with the immigration and the number of years since immigration. The amount of years from immigrations plays dominant role to impact on the earnings of immigrants (Chiswick 1978). Chiswick also found that controlling for other variables such as the education attainment or the working experience, the earnings of immigrants will be increased with the rise of years since the immigration (Chiswick 1978; Pivnenko & DeVoretz 2003). The time span of the immigrations exerts the positive impact on the earnings of immigrants. Based on the length of years since the immigration, we are able to categorize two groups and the threshold at 1998. According to Chiswick's theory (1978), the cohort prior to 1998 obtained higher income compared with the cohort after 1998.  In addition, the increase of the earnings is consistent with the length of years since immigration in the cohort. The new immigrants tended to receive less income in contrast with their predecessors. It

also is accounted for by the transition from dual selection to the solo selection (Guo & DeVoretz 2006).

However, the marginal effect of the education attainment on the earnings of immigrants is smaller (Chiswick 1978). Chiswick (1978) had split the schooling as the schooling in pre-immigration or that in post-immigration. As the immigration occupational mobility, the small impact of the pre-immigration schooling is the result from the scarce information of the schooling, which employers can grasp, compared with interpretation for the effect of post-immigration schooling (Chiswick 1978). It is possible that the impact of the schooling on the earnings of Chinese immigrants seldomly empilifies the unobersvable characteristics of Chinese immigrants (Rooth & Saarela 2007). When we consider Rooth & Saarela's assertion about the relationship between the observable and unobservable characteristics, Chiswick's interpretation in terms of the reflection of self-selection is not so convincible. Moreover, Pivnenko & DeVoretz (2003) from another dimension provided an implication that the years of the schooling cannot exactly indicated the immigrants' performance in the labor market. The sheepskin effect enables to precisely exemplify the payoff to the schoolings in the labor market (Pivnenko & DeVoretz 2003), even though it cannot sort out issues with respect to the acquirement of education attainment in abroad. Because the limitation of dataset, we cannot distinguish between the pre-immigration schooling and the post-immigration schooling. Although we cannot corroborate Chiswick's explanation, we may rely on the dummy variables and a probit regression concerning the education attainment to check whether Chiswick's concept is ubiquitous for Chinese immigrants in host countries.

The earnings are also relevant to mismatched education attainment in the host countries (Chiswick & Miller 2010). The mismatched schooling consists of the under-education and over-education. According to the decomposition by Chiswick & Miller (2010), both under-education and over-education enable immigrants sourced from non-English language countries to gain lower payoff to schooling. Therefore, it is not doubtful that the earnings of Chinese immigrants are supposed to be lower than the native counterparts in our study. As the immigration occupational mobility, the educational transferability is not stagnant. Chinese immigrants who are under-

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education would have much more incentive to adjust to the requirements in the labor market in the host countries. The issue concerning the over-education would be partially addressed, if the ability of Chinese immigrants in the host countries enable to be verified (Chiswick & Miller 2010; Borjas 1985). We are able to find that the payoff to the schooling in Chinese immigrants should enhance with increasing the duration in the host countries. Moreover, because of similar screen system implemented in Canada, the gap of the payoff to the schooling in Canada somehow likes that in Australia and does not show up salient variation when to compare with that in the United States.

Concerning the effect of immigration policy, the screening system promulgated by Canada does not attain their original aims compared with the immigrant self-selection (Antecol, Cobb-Clark & Trejo 2003; Pivnenko & DeVoretz 2003). Different characteristics in human capital primarily determine the variation of earnings of Chinese immigrants between the United States and Canada, if we exclude exogenous factors stemmed from different immigration policies. Moreover, Antecol et al. (2003) also asserted that the apparent disparity of the payoff and the education in the host countries is caused by the illegal Mexican immigrants across the widen border. In the light of the narration above, to eradicate Hispanic samples is feasible way in order to enhance the research accuracy. Finally, female immigrants also correspond with human capital theory, even though the female immigrants principally support their family rather than direct participants in the labor markets (Antecol et al. 2003). It is appropriate to include both male and female immigrants into regression and compare with the variation with respect to gender.

Unfortunately, what we do exerts some limitations. The real growth of the earnings in immigrants with increasing the duration is slower than what is estimated by the cross-section studies; the enhancement of the earnings of immigrants also is overestimated, in consequence of the cross-section study (Borjas 1985). We understand that the cross-section model is established on previous immigrants possessed identical quality compared with the latter immigrants. Nevertheless, the objective fact is not consistent with our hypotheses that most of Chinese immigrants in 1980s are economic immigrants who experienced dual selection, in contrast with

following Chinese immigrants by means of the reunification (Guo & DeVoretz 2006). In turn, "the quality of immigrant cohorts has experienced a secular decline" (Borjas 1985 p. 485) The statements by Borjas (1985) and Guo & DeVoretz (2006) enlighten us that what we gain is supposed to be overestimated. Notwithstanding, the deviation seemingly can be compensated, when we only research the assimilations of Chinese immigrants between different destination countries.

We draw our attention to the characteristics of Chinese immigrants. The Chinese immigrants both in the United States and Canada transited from a homogenous group into a heterogeneous group, rather than being unchangeable. For instance, the traits of Chinese immigrants stemmed from mainland also appear to divergence between the1980s and the 1990s (Guo & DeVoretz 2006). By virtue of the political upheaval in China, the amendment of immigration policies in the United States and Canada, and the change of demand in labor market, the majority of Chinese immigrants from purely economic immigrants converted to the mixture of business immigrants, political refugees and family members who need to reunification. The divert immigration groups compared with who experienced dual selection correspond with the secular decline in the cohort (Borjas 1985). In the independent immigrants, the quality of immigrants sourced from mainland, to some extent, gradually catches up with that from Hong Kong or Taiwan. Hence, we are able to postulate that the obvious variation is owing to the external impact, such as Hong Kong ruled by China.

Ukrainian immigrants are eligible equivalents, when we research on the performance of Chinese immigrants in North America. Although there is the divergent preformation of Ukrainian immigrants due to the variation of human capital endowment, the universal performance of Ukrainian immigrants approached and somewhat outstrip the native inhabitant respectively in the United States and Canada (Pivnenko & DeVoretz 2003). If Chinese immigrants are able to sort out issues in terms of the language and the transferability of the education attainment, we insist that Chinese immigrants can assimilate into the destination countries. In addition, the more skilled Ukrainian immigrants finally prefer to select the United States, in spite of the versatile system implemented by Canada (Pivnenko & DeVoretz 2003). The destination country for high skilled Chinese immigrants

probably is consistent with that of Ukrainian immigrants. Through cross-country comparison, we will test that the Chinese immigrants possessed high labor market endowment preferred to select the United States as their destination country.

As higher skilled Chinese immigrants, selected to the United States, regardless of the screening system, would Chinese immigrants, who had settled down in Canada, have propensity of inflow in the United States? If the phenomenon exists, which characteristics did Chinese immigrants possess? The issues associated with emigration problems annoying Canadian government so long time. There is no salient evidence to demonstrate that Chinese immigrants enable to get rid of this universal rule. The inflow from Canada into the United States attributes to both the economic factors and non-economic factors. The discrepancy of income is primarily one of economic incentives to result in the brain drain in Canada (Devoretz & Iturralde 2001). Simultaneously the cost of movement should, to some extent, offset the incentive. The non-economic factors included marriage the presence of children also deters the Chinese immigrants to move out from Canada (Devoretz & Iturralde 2001). Devoretz & Iturralde (2001) found that younger Canadian with high academic degree has much more opportunity to transmit into the United States, and recently experienced relocation prompts people to move out. New younger Chinese immigrants with high education attainment are supposed to motivate to dispatch into the United States compared with the counterparts.

# 3. Data and Methodology

## 3.1.    Data

We exploit the micro level data based on 2000 U.S. census, 1991 Canadian census, and 2001 Canadian census. Datasets are provided by IPUMS (AKA: Integrated Public Use Micro data Series projects), which is a organization collaborated between the University of Minnesota and various National statistical Offices. The 2000 United States dataset is 5 percent random sample from the entire population surveyed in 2000. The 1991 Canadian dataset is 3 percent random sample from Canadian population, and the 2001 Canadian dataset is 2,7 percent sample. The sufficient

socioeconomic characteristics and labor behaviors provided by a variety of censuses facilitate to compare the native population with the different cohorts of Chinese immigrants in host countries. Initially, 2000 U.S. census consists of approximate 14 million observations, and the sample size in 1991 Canada census and 2001 Canada census respectively includes 809,654 and 801,055.

We restrict to the samples aged from 16 to 65 in all datasets. The employers in general hire employees aged 16 or over. Even though the minimum age of employees in the United States is 14 year old, employers still prefer to hire applicants aged 16 year old. Moreover, people in both the United States and Canada usually retire at 65 years old. On the contrary, Chinese immigrants are continuous to work, even though their age attain 65 year old. To restrict age from 16 to 65 enables to reduce the bias between the native population and Chinese immigrants in destination countries.

According to Guo & DeVoretz (2006), the height of the outflow of Chinese immigrants appears in 1990s. When we take into account those economic events and political events occurred in the end of 1989, it is no surprise to concentrate on Chinese immigrants who had arrived at the host countries since 1990. Because of the Hong Kong ruled by Chinese government in 1997 Oct 1st, it is possible that the characteristics of Chinese immigrants emerged an upheaval. We treat 1997 as a threshold and split the Chinese immigrants into two cohorts. The first cohort includes Chinese immigrants who reached to the destination countries from 1990 to 1997, in contrast with the second cohort, in which the Chinese immigrants arrived in all host countries from 1998 to 2000.

We also should take several prerequisites into account, when selecting the research sample. The samples that have a strong attachment with the labor market should be selected, so that the observations reported as serving in the army should be removed. The occupation category consists of legislator, professional, technician or associate professional, clerk, service worker and market sale, craft and related trades workers, machine operators and assemblers, elementary occupation, and agricultural, and fishery worker. Meanwhile, we take into account for both: wage

earners and self-employed, by virtue of the investment immigration. The investment immigration is one of common activities for Chinese visa applicants in both the United States and Canada.

In terms of the currency ratio between the U.S. dollar and Canadian dollar, Canadian Central Bank published an average convert ratio in 2001 (Bank of Canada 2001). In addition, Canadian Central Bank also released the inflated ration between 1991 and 2001 (Bank of Canada). Although there is a deviation through the currency converting, we can establish the connection about the earnings in the different host countries. If the annual earnings responded by some respondents is lower than 300 dollars in the questionnaires, we get rid of the sample. The amount of the earnings is too low to be reliable. We suspect that some respondents mistakenly filled out their monthly income. It contributes to the accuracy in this study that we eliminate the observations, in which the annual incomes are lower than 300 dollar and missing samples in the datasets.

We also found that the missing data in the education attainment in all datasets. In view of small sample size in the sub-group of less than primary completed, we combined the primary completed group with the group described less than primary completed in the category of the education attainment. Hence, the category of schooling includes less than Secondary degree, Secondary degree completed, and University degree completed.

Concerning the marital status, we combined the sub-group named as separated or divorced status with the sub-group of widowed status, in order to focus on the relationship between the single and the married. Finally, the category of the marital status consists of single/never married, Married/in union, and Separated/divorced/widowed.

According to Antecol et al. (2003), the Hispanic in the United States commonly intervene the estimated earnings in the native population. It is proper that we eliminate this underestimation. In the 2000 United States census, we depended on the category named as HISPAN in the United States in order to get rid of Hispanic

observations. Meanwhile, in Canadian census, the category named as ETHNCA equips us with the criterion to remove the Hispanic group.

After the preliminary, the total number of the observations in the 2000 U.S. census is 5,492,004, and the total amount of the observations in the 2001 Canada census is 291,004. The number of native samples in the 2000 United States census and 2001 Canada census respectively is 5,476,299 and 286,764. The amount of observations belonged to Chinese immigrants is equal to 15,705 in the 2000 U.S. census and 4,240 in the 2000 Canada census. Additionally, the Chinese immigrants in both censuses consist of the Cohort 1990-1997 and the Cohort 1998-2000. The amount in the Cohort 1990-1997 is 11,342 in the 2000 U.S. census and 2,820 in the 2001 Canada census, in contrast with the number in the Cohort 1998-2000, which is equal to 4,363 in the 2000 U.S. Census and 1,420 in the 2001 Canada census.

Compared the U.S. census with the Canada census, the average earnings in the United States is higher than that in Canada, whereas the distribution of the earnings in the United States is more scattered. Overall, we may assume that the higher skilled populations tend to have higher salary in the United States. The description also matches with the fact that the earnings in Canada are more equal.

In terms of demographic characteristics, the age distribution in both the United States and Canada are concentrated into the age interval between 36 and 45. The percentages of the sample in other age groups are lower than that in the age group between 36 and 45. The distribution across various sub-groups does not show up extravagant variance in both datasets. Moreover, the proportion of the male is slightly larger than female in both dataset.

In the life span from 16 to 65, the majority of the populations in both countries tend to get marry. The populations in Canada have higher ability to maintain their marriage. On the contrary, the populations in the United States were easily to become single, because of the divorce or the diseases. We may speculate that Canadians to some extent were more prudent, when they tend to terminate a marriage relationship, in contrast with who were in the United States.

In the distribution of the education attainment, the samples in both datasets congregated in particular group, in which they completed the Secondary degree. The percentage of completed Secondary degree in the U.S. census is approximately higher 10 percent compared with that in the Canada census, whereas the percentages of completed University degree in both censuses are roughly equal.

When we review the occupation in different census, we may discover one interesting point. The individuals in Canada were inclined to engage into the professional, simultaneously avoided the commercial jobs such as clerk or sales in the shop or the market.   Exempt from that, the job distributions in both censuses generally are similar.

The change of the share of Chinese immigrants in both countries is opposite. In Canada census, the amount of Chinese immigrants keeps flat, compared with that is steep decline in the United States. It is possible that Chinese immigrants cannot adapt the fiercely competitive environment, when they were directly exposed into the United States. Otherwise, Canada was in favor by somehow latent reasons. The inflow of Hispanic immigrants across boundary also enables to dilate the proportion of Chinese immigrants in the U.S. census.

## 3.2    Methodology

Based on the human capital earning function, we would empirically analyze the regression of micro characteristics on the earnings. The conventional function is listed below:

$$\ln \gamma_n = \beta_1 T_n^2 + \beta_2 T_n + \theta X_n + \varphi C_n + \mu_n$$

Where $\gamma_n$ denotes the annual earnings of individuals in host countries; $\mu_n$ is the residual in the regressions; $T_n$ is the age of respondents; $X_n$ is a vector of variables affected the earnings, which included the marital status and gender; $C_n$ represents

different cohorts. When we take the effect of the schooling on the earnings into account, it is:

$$\ln \gamma_n = \beta_1 T_n^2 + \beta_2 T_n + \theta X_n + \varphi C_n + \omega S_n + \mu_n$$

Where $S_n$ is the dummy variable for the education attainment. Based on last equation, we also construct the interaction model between the cohort and the education attainment. It is:

$$\ln \gamma_n = \beta_1 T_n^2 + \beta_2 T_n + \theta X_n + \varphi C_n + \omega S_n + \eta \, C_n * S_n + \mu_n$$

Where $C_n * S_n$ denotes the interaction variable.

In addition, we test the traits of Chinese immigrants in the education attainment and the occupation, by means of the Probit model, that is:

$$E_n = \beta_1 T_n^2 + \beta_2 T_n + \theta X_n + \varphi C_n + \mu_n$$

$$O_n = \beta_1 T_n^2 + \beta_2 T_n + \theta X_n + \varphi C_n + \mu_n$$

Where $E_n$ is the binary category of education attainment; $O_n$ represents the binary category of the occupation. The $E_n$ takes the value of 1 for that respondents accomplished the University degree or above; and 0 otherwise. The $O_n$ takes value of 1 for that those respondents engaged in the professional, or the technician and associated professional; and 0 otherwise.

## 4 Results

### 4.1    Characteristics of Chinese immigrants between Cohorts in the States and Canada

The earnings is one of the imperative criteria to measure the situation of the assimilation in host countries. The higher earnings imply to the better performance of Chinese immigrants in the host countries. Table 2, Reg1 and Reg2 respectively report the results of estimating an ordinary least square model (Aka OLS model), in which the regressand represents the natural logistic annual income in the Canada or the United States. In explanatory variables, we primarily control for age, age squared, marital status, and gender. In terms of age, variables in the regression are numerical variables. Based on the data description, we discern that the trend of the earnings is polynomial with the age rising. As we mentioned before, there are two cohort groups of Chinese immigrants, according to the date that they arrived in the host countries. The native population is served as the reference group in the variable, named as cohorts. In Table 2, Reg1 mainly indicates the disparity of the earnings between different cohorts of Chinese immigrants and the natives in Canada. In order to gain accurate conclusion, we should control several variables including age, age squared, marital status, and gender. Reg2 in Table 2 focuses on that in the United States.

We proceed to interpret coefficients in models (Table 2, Reg1 and Table 2, Reg2). All variables in both models are significant in the 99 % confidence interval. When we review the controlling variables in Reg1 and Reg2, the socioeconomic characteristics of the natives are correspondent with our common sense. Although the turning points are different, the trends of the log earnings rise firstly and then decline with age increasing. We are able to interpret that as employees use to pursue the higher income with incessantly accumulating experience. After given time point, employees tend to keep their positions, at the expense of the decrease of their income in future. We merely are able to discern the relationship of the marital status and the earnings in Reg1 and Reg2. On the basis of the married natives, the individuals who are single or divorced have relatively lower earnings. Moreover, compared with the male with the similar quality, the female natives commonly suffer from the lower earnings.

In addition, when we move on and review the variable named as Cohorts in Reg1 and Reg2 of Table 2, the sign of coefficients in all subgroup is negative. We interpret that the earnings in Chinese immigrants in both censuses are lower than that in the

natives in the similar context. This phenomenon is consistent with human capital theory that there is the obviously negative disparity of the earnings between immigrants and the natives, by virtue of the process of the assimilation of immigrants in the host countries. In addition, we implement the F-test and demonstrate that the characteristics in different cohorts of Chinese immigrants are also significantly different in both models (Table 2, Reg1, Table2, Reg2). The deficit of the income in the Cohort 1990-1997 of Chinese immigrants related to the natives in Canada ceteris paribus is 33,59 percent [exp (cohort 1990-1997) - 1]; the discrepancy in earnings between the Cohort 1998-2000 and the natives in Canada is 51,95 percent [exp (cohort 1998-2000) - 1]. Similarly, the deficiency of the earnings in the Cohort 1998-2000 of Chinese immigrants is 31,45 percent in the United States (Table 2, Reg2). Although the earnings in the Cohort 1990-1997 of Chinese immigrants is higher than that in the Cohort 1998-2000, the value is still lower than the earnings in the natives in the United states.

Besides variables illustrated above, Reg3 and Reg4 in table 2 show the impact of the education attainment on the log earnings. Moreover, all coefficients in both models are also significant in the 99% confidence interval. In the reference of the individuals completed Secondary degree, the log earnings in the natives with University degree are higher. On the contrary, the log earnings in the natives without Secondary degree is the lowest in both censuses. The estimates, in terms of the education attainment are consistent with the objective facts in both host countries. Controlling the education attainment as a variable facilitates to precisely analyze the disparity of log earnings between different cohorts of Chinese immigrants and the natives in both host countries.

Moreover, if the estimating OLS models include the education attainment (Table 2, Reg3 and Table 2, Reg4), the measures of goodness of fit have been increased. The goodness of fit is an important criterion to scale the extent to which the model is able to illustrate the population. The adjusted R squared in the regression is imperative indicator of goodness of fit. The values in adjusted R squared in the models controlling the education attainment (Table2, Reg1 and Table2, Reg2) are higher than that without controlling the education attainment. Therefore, it is proper to say

that we should take the education attainment into consideration, when we research on the economic performance of Chinese immigrants in the host countries. Of course, the coefficients in the Cohorts indicate the discrepancy of the earnings in different cohorts of Chinese immigrants, in the reference of the native. In Table 2, Reg3 mainly focuses on Canada, in contrast with Reg4, in which we exploit the 2000 U.S. census.

We move on and analyze the different characteristics in different cohorts of Chinese immigrants according to the natives (Table 2, Reg3 and Table 2, Reg4). The negative sign in both subgroups of Cohorts consolidates the theory that the earnings in Chinese immigrants universally are lower than that in the natives. Compared with coefficients of different cohorts in Chinese immigrants in Canada census (Table 2, Reg3), the different cohorts of Chinese immigrants are of difference in the Characteristics. The trend of the earnings in Chinese immigrants is the secular decline with decreasing of the length in Canada. When we review the characteristics in different cohorts of Chinese immigrants in the U.S. census (Table 2, Reg4), the trend is similar. We also verify by means of the F-test in both models that the characteristics between different cohorts of Chinese immigrants are significantly different (Table 2, Reg3 and Table2, Reg4). The deficit of the earnings in the Cohort 1990-1997 is 34,5 percent of the earnings in the natives in Canada; and the deficit of the earnings in the Cohort 1998-2000 is 58,87 percent of the earnings in the natives in Canada (Table 2, Reg3). In the United States, the deficit of the earnings in the Cohort 1990-1997 of Chinese immigrants, in the reference of the natives, is 18,78 percent; the disparity earnings in the Cohort 1998-2000 is 41,55 percent of the earnings in the natives (Table 2, Reg4). Though the values in variable, cohorts, have been changed in the Reg3 and Reg4, compared with counterparts in Reg1 and Reg2, we still can make similar conclusions. We postulate that the obviously negative wage gap between immigrants and the natives is demonstrated by the models in Reg3 and Reg4. Moreover, the hypothesis associated with the process of the assimilation in the foreign immigrants also is supported by Reg3 and Reg4.
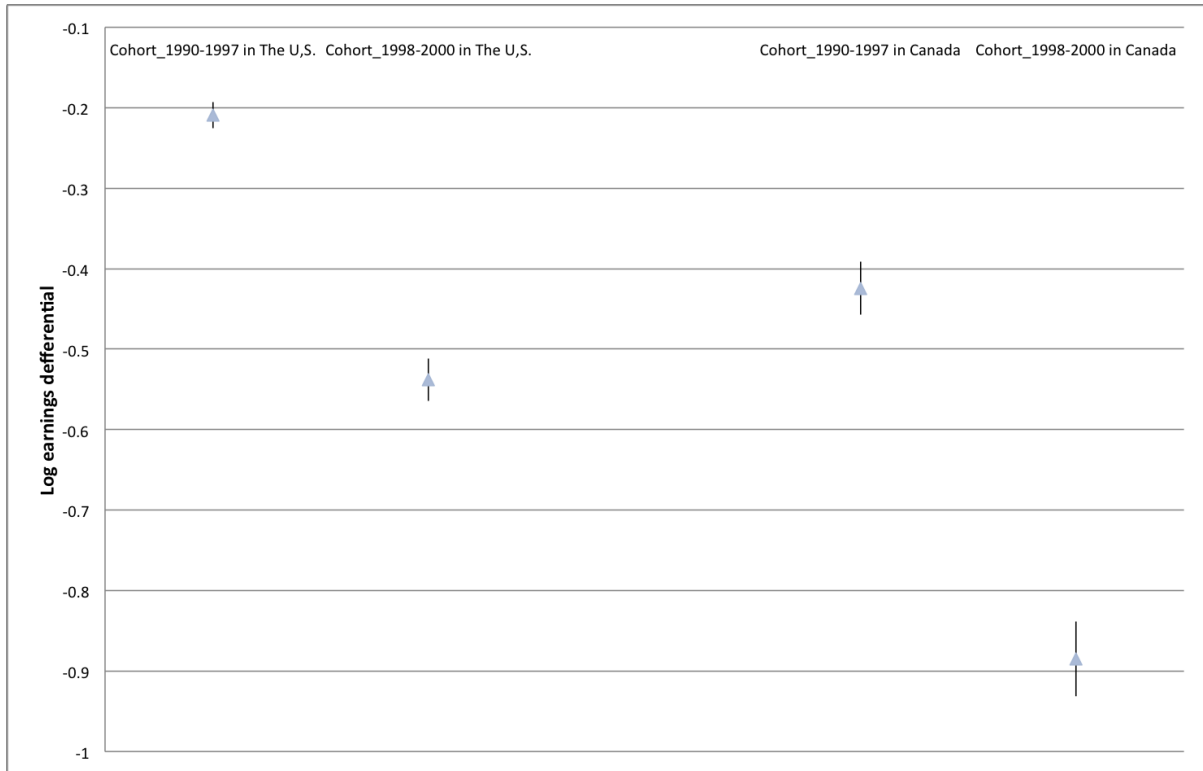
*Figure 1: log earnings differential in different Chinese immigrants with controls for the education attainment*

*Coefficients of natives in either the U.S. or Canada is equal to zero*

*From models with controls for the education attainment*

We will generally analyze the characteristics in different cohorts of Chinese immigrants in the United States and Canada, relied on the graphic analysis. Figure 1 respectively portrays the gap of the log earnings in different cohorts of Chinese immigrants in host countries, in the reference of the natives. We also control the education attainment, when we analyze the characteristics in different cohorts of Chinese immigrants. Because the natives in host countries separately are treated as the reference, the log earnings in the natives are assigned to be neutral.

In Figure 1, the dots indicate the discrepancies of the estimating earnings in different cohorts of Chinese immigrants, according to the earnings in the natives in the U.S. census or the Canada census (Table 2, Reg3 and Table 2, Reg4). Based on the 95 percent confidence interval, we also draw the upper and lower confidence bound for all estimates in Figure 1, when we describe the estimated wage gaps in different cohorts of Chinese immigrants.

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Initially, Figure 1 establishes a sensible way to depict the disparity of the earnings in different cohorts of Chinese immigrants, according to the earnings in native in host countries. Figure 1 also equips us with a perceivable way in detect the relative deficits in the earnings between different cohorts in Chinese immigrants in certain host country. For incidence, in Canada, the point represented the deficit of the earnings in Cohort 1998-2000 always is lower than the dot represented the deficit of the earnings in Cohort 1990-1997 of Chinese immigrants. The situation in the United States is similar, so that the Figure 1 also supports what we assert above.

Figure 1 also sets up a wonderful platform to compare the disparity of the earnings in certain cohorts between different host countries. The points indicated the wage gaps in both cohorts of Chinese immigrants in the host countries. So that the dots in the United States separately are higher than those in Canada, we may interpret as the relative deficit of earnings in both cohorts of Chinese immigrants in the United States respectively are lower than the counterparts in Canada. Therefore, we postulate that the screening system enacted by the Canadian government does not attain their initial purpose. Because of the self-selection, Chinese immigrants possessed higher quality, tended to immigrate into the United States, instead of Canada. What we found is consistent with Borjas' theory that the self-selection plays important role in the assimilation rather than the versatile score system. In next section, we will decompose the educational transferability in different cohorts of Chinese immigrants in both host countries and test the change of traits in Chinese immigrants since they arrived at host countries.

## 4.2    Decomposition of the education attainment in Chinese immigrants in the United States and Canada

It is undeniable that the sheepskin effect also exerts influence on Chinese immigrants in the host countries (Wan 1998). In contrast with years of schooling, to exploit the education attainment, facilitates to research on the transferability of Chinese immigrants in terms of the education attainment. The interaction models equip us with a platform to analyze the mobility of education in Chinese immigrants

in both host countries. Reg1 and Reg2 in Table 3 separately report the results of estimating OLS models with interaction variables between the cohorts and the education attainment. As all models in Table 2, the natives are treated as a reference group in the variable named as cohorts, and the Secondary degree completed is the reference group in the dummy variable named as the education attainment. For example, the positive coefficient in the subgroup named as University degree completed is interpreted as the surplus in the natives completed the University degree, in the reference of the earnings in the natives completed the Secondary degree. In the dummy variable, Cohorts, the coefficients illustrate the disparity of the income in different cohots with the Secondary degree completed, according to the earnings in the natives with the Secondary degree completed.

There are four interaction variables to be established, based on the education attainment and the cohorts (Table3, Reg1 and Table3, Reg2). The exponential sum of coefficients in interaction variables and coefficients in interesting variables, ceteris paribus, indicates the discrepancy of the earnings in the particular cohort of Chinese immigrants referred to the natives with Secondary degree completed (Hill, Griffiths & Lim 2008). The function is listed below:

X= exp (the coefficients in cohorts + the coefficients in the education attainment + the coefficient in the interaction variable named as cohorts * the education attainment)-1 where X denotes the disparity of the earnings in certain cohorts with the particular education attainment.

Reg1 in Table 3 mainly implies to the characteristics in different cohorts of Chinese immigrants with various academic attainment in Canada, based on the natives with the Secondary degree completed. Relied on the function listed above, we are able to accurately account for the deficits of the earnings in different cohorts of Chinese immigrants with various education attainment. In the Cohort 1990-1997, the deficits of the earnings in Chinese immigrants are saliently decreased with the education attainment improved.  In the reference of the earnings in the natives with Secondary degree completed in Canada, the deficit of the earnings in Cohort 1990-1997 of Chinese immigrants with the increased education attainment precipitates from 48,21 percent, across 39,41 percent, to only 3,73 percent. Although the trend of the deficit

of the earnings in Cohort 1998-2000 with the increased education attainment is the declination, as that in Cohort 1990-1997, the extent is not significant. In the reference of the earnings in the natives of Canada, the deficit of the earnings in Cohort 1998-2000 with less than Secondary degree is 51,71 percent, in comparison with 50,93 percent that with Secondary degree completed and 49,08 percent that with University degree completed.

Based on the interpretations, the issue, in terms of Chinese immigrants with the schooling mobility is existence in Canada. When the Chinese immigrants attempted to integrate into the society, the Chinese immigrants possessed higher academic degrees usually are suffered from obstacles due to that potential employers could not acquire the information, concerning their academic background and their experience. When we compare the situations between Cohort 1990-1997 and Cohort 1998-2000 of Chinese immigrants, it is taken for granted that the disadvantage of Chinese immigrants possessed higher educational degree would be reduced with increasing the length in the host country.

Reg2 in Table 3 focuses on the research in the United States. As what we done in Reg1 of Table 3, we also are able to grasp the deficits of the earnings in different cohorts of Chinese immigrants with various academic contexts, in the reference of the earnings in the natives with Secondary degree in the United States. In the cohort 1990-1997, the deficit of the earnings in Chinese immigrants with the education attainment improved is shrunk from 49,74 percent to 31,61 percent, and then the earnings in Chinese immigrants with the University degree is 51,74 percent higher than that in natives with Secondary degree. Nevertheless, the earnings in Cohort 1998-2000 of Chinese immigrants with any education attainment is lower than the earnings in natives with Secondary degree completed in the United States. In Cohort 1998-2000, the deficit of the earnings in Chinese immigrants with the less than Secondary degree, ceteris paribus, is 54,98 percent of the earnings in natives in the United States, and the deficit of earnings in Chinese immigrants with Secondary degree is 43,84 percent, compared with the deficit of the earnings in Chinese immigrants with University degree, which is 4,59 percent. We also are aware that the earnings in Cohort 1998-2000 of Chinese immigrants with improved education

attainment gradually approach to the earnings in the natives American with Secondary degree completed. This interpretation in the United States enables to strengthen the statements that we prior mentioned.

In both censuses, we can discern that the distribution of relative earnings in Cohort 1990-1997 with different education attainment is much more scattered than that in Cohort 1998-2000 with different education attainment. In this case, we may state that the internal motivations especially the self-selection, prompt Chinese immigrants possessed lower academic degree to look for the jobs, in which they are eligible. Simultaneously, both the language barrier and the verification of knowledge hamper Chinese immigrants possessed high educational degree to grasp the places, in which they engages in China.
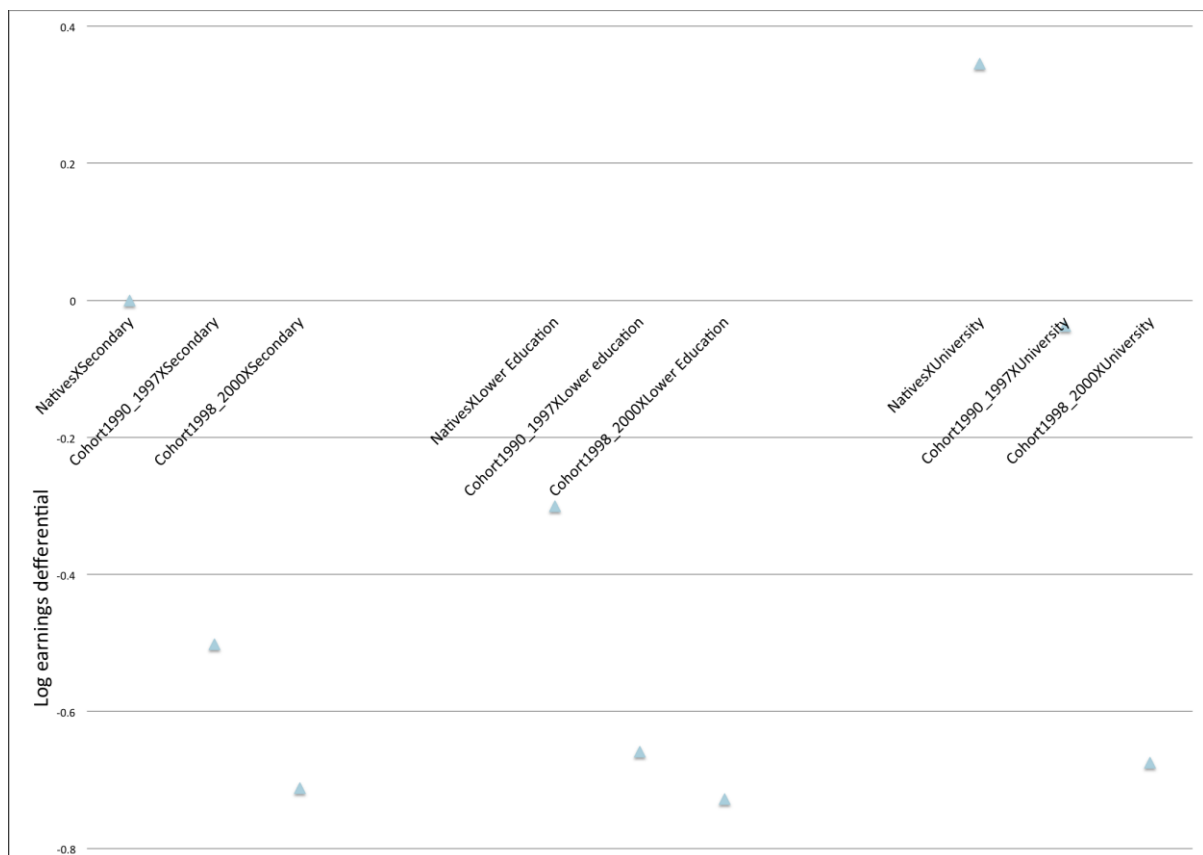
Figure 2 describes the relationship of the earnings between different cohorts and various education attainment in Canada, according to the Reg1 in Table 3. Because the natives with Secondary degree completed are treated as the reference in the interaction variable, its point is located at zero. If the dots are below zero, the relative earnings in certain cohorts with the particular education attainment are lower than the earnings in natives in Canada with Secondary degree completed, and vice versa. Based on the education attainment, we assign 9 dots into three groups in Figure 2. Every group consists of the relative earnings in different cohorts of Chinese immigrants and the natives. In all groups, the relative earnings in cohort 1990-1997 of Chinese immigrants are lower than that in the natives, but the relative earnings in Cohort 1990-1997 are higher than that in Cohort 1998-2000 of Chinese immigrants. To compare with the differentials of the earnings between the Cohort 1990-1997 and the Cohort 1998-2000 of Chinese immigrants in all groups, enables to demonstrate that the trend of earnings of Chinese immigrants is upward with the increase in the duration in Canada. Moreover, we may discern the space of the disparities of the earnings between different cohorts given the education attainment. In the groups depicted the University degree completed, the space of the discrepancies of earnings over different cohorts is the largest, and that in the group concerning the less than Secondary degree is the smallest. It means that the rising economic performance of Chinese immigrants is consistent with the increase in the duration in Canada. Therefore, we believe that there is a mismatch in terms of the schooling in Chinese immigrants. Of course, the mismatch will be disappeared with increasing the length in Canada.

*Figure 3: log earnings differential between cohorts and the schooling in the U.S.*

*Coefficients of natives completed secondary degree in the U.S. is equal to zero*

Similarly, Figure 3 portrays the differentials of the earnings in different cohorts with various education attainments in the United States. The rules of the arrangement in Figure 3 are correspondent with that in Figure 2. Hence, we also can get three groups, according to the different education attainment and the point represented the earnings in the natives with Secondary completed is located at zero. Overall, the conclusions in the United States are also similar with that in Canada. In every group, the relative earnings in Cohort 1998-2000 of Chinese immigrants is the lowest, in contrast with the highest relative earnings in the natives. In addition, when we test the spaces of the disparities of the earnings between different cohorts of Chinese immigrants in same education attainment, the space in the group of the higher education attainment always is larger than that in the group of the lower education attainment. It also consolidates the conclusion, based on Figure 2. There is one more thing. In comparison with the relative earnings in Chinese immigrants with University degree completed between Figure 2 and Figure 3, although the relative

earnings in cohort 1990-1997 in Canada approaches to zero, the relative earnings in cohort 1990-1997 in the United States is much higher than its benchmark. What we found insofar reinforces that the performances of Chinese immigrants in the United States are higher than that in Canada.

We should take into account that different qualities of Chinese immigrants also enable to cause the divergence of the economic performances of Chinese immigrants. It is necessary to test whether or not there is an upheaval of the quality between different cohorts of Chinese immigrants. The education attainment is an important proxy to scale the quality of Chinese immigrants. The possibility of gaining high education is one of important ways to measure the quality of Chinese immigrants. In order to analyze the proportion of the high education attainment in different cohorts of Chinese immigrants referred to the natives, Reg1 and Reg2 in Table 4 separately report the results of estimating probit regressions in Canada and the United States. In other word, the regressand takes the value of 1, on account of University degree completed in the education attainment and 0 otherwise. As models in previous tables, the control variables consist of age, age squared, marital status, and gender. The dependent variable in both models indicates whether or not the certain cohorts are able to fulfill the University degree completed. The interpretation for dummy variables is a little different in the probit model, in the contrast with the previous OLS models. For example, in Canada, attaining the University degree in the female, versus the male (the reference group), reduces the z-scores by 0,16 (Reg1 of Table 4). In the United States, having the University degree in the female, versus the reference group, decreases the z-scores by 0,038 (Table 4, Reg2). These interpretations obey the common sense that the male have much more opportunities to attend University than the female. In addition, all variables in Table 4 are significant in 99% confidence interval.

We move on and interpret the indicator variable, Cohorts, in both models of Table 4. The natives in both models are treated as the reference groups in Cohorts. In Canada, completed University degree in Cohort 1990-1997, versus the natives, ceteris paribus, decreases the z-scores by 0,286, the that in Cohort 1998-2000 of Chinese immigrants reduces the z-scores by 1,116 (Table4, Reg1). Although the

values in Reg2 of Table 4 are different, in terms of the indicator variable, we are aware that there is no significant difference in the situations of different cohorts in the United States. For example, in the United States, the change of the indicator variables, Cohorts, from the natives to the Cohort 1990-1997, diminishes the possibility in the education attainment to take value one by 68,3 percentage points; and the change of the indicator variables, from the natives to the Cohort 1998-2000, reduces the possibility in the education attainment to take value one by 93,3 percentage points.

We are able to test the difference of coefficients for different cohorts in the model. There is significant difference of coefficients between different cohorts, so that we may explain as the enhanced education attainment in Chinese immigrants associated with the increase in the length in the host countries. Notwithstanding, results in Reg1 and Reg2 also provide an alert, in terms of the relationship between the economic performance in different cohorts of Chinese immigrants and the different qualities in different cohorts. Based on Borjas' theory, the intrinsic qualities in different cohorts and the duration in the host countries, influence on the change of economic performance in Chinese immigrants. However, we cannot split two reasons, when we implement the cross-section model. What we found illustrates a limitation in our research and, to some extent, undermines our conclusions.

## 4.3    Decomposition of the Occupational transferability of Chinese immigrants in the United States and Canada

In the data description about the 2001 Canada census, the proportion of Chinese immigrants in the entry-level position decreases with increasing the duration in Canada. We may find that the share of the entry level is declined from 5,14 percent in the Cohort 1998-2000, to 3,83 percent in Cohort 1990-1997. Meanwhile, the earnings in Chinese immigrants is synchronically to rise with increasing the duration in Canada. The average earnings in Chinese immigrants rises from 18,740 dollar to 17,730 dollar with the increase in the length in Canada. Although the change of the participation rate of Chinese immigrants in entry level in the United States is not

consistent with that in Canada, the earnings of Chinese immigrants in professionals still boosts with the time span increased in the United States.

The data description listed above provides a hint in the field of the occupational transferability. Chinese immigrants should experience the occupational mobility, when they assimilate into the host countries. We implement the probit model, in order to decompose the occupational transferability in different cohorts of Chinese immigrants, based on two censuses. In estimating probit models (Table 5, Reg1 and Table 5, Reg2), we observe that the impact of the various cohorts of Chinese immigrants on the possibility to engage in the sophisticated places. The dependent variables take the value of 1 for professionals, associated professionals, or technicians in the occupation, and 0 otherwise. Reg1 and Reg2 in Table 5 respectively include same control variables such as age, age squared, marital status, gender.

To start with analyzing Reg1 in Table 5, the change of the indicator variable, cohorts, from the natives to Cohort 1990-1997 of Chinese immigrants, ceteris paribus, diminishes the possibility that the occupation takes the value one by 5,5 percentage points, and the change of cohorts from the native to Cohort 1998-2000, reduces the possibility that the occupation takes the value one by 38,9 percentage points. The coefficient in the cohort 1990-1997 is significant in 95% confidence interval, compared with cohort 1998-2000, which is significant in 99% confidence interval. Similarly, in Reg2, the change of the cohorts from the natives to cohort 1990-1997, ceteris paribus, decreases the possibility that the occupation takes the value one by 50 percentage points, and the change of the cohorts from the natives to cohort 1998-2000 reduces the possibility that the occupation takes value one by 69 percentages points. Both values in the indicator variable are significant in 99% confidence interval. We also test that the coefficients in indicator variable are significant difference in both models (Table 5, Reg1 and Table 5, Reg2). In both models, we may detect that the Cohort 1990-1997 of Chinese immigrants have much more opportunities to take sophisticated places than the Cohort 1998-2000. It circumstantially corroborates that there is the rising trend in the occupational transferability in host countries.
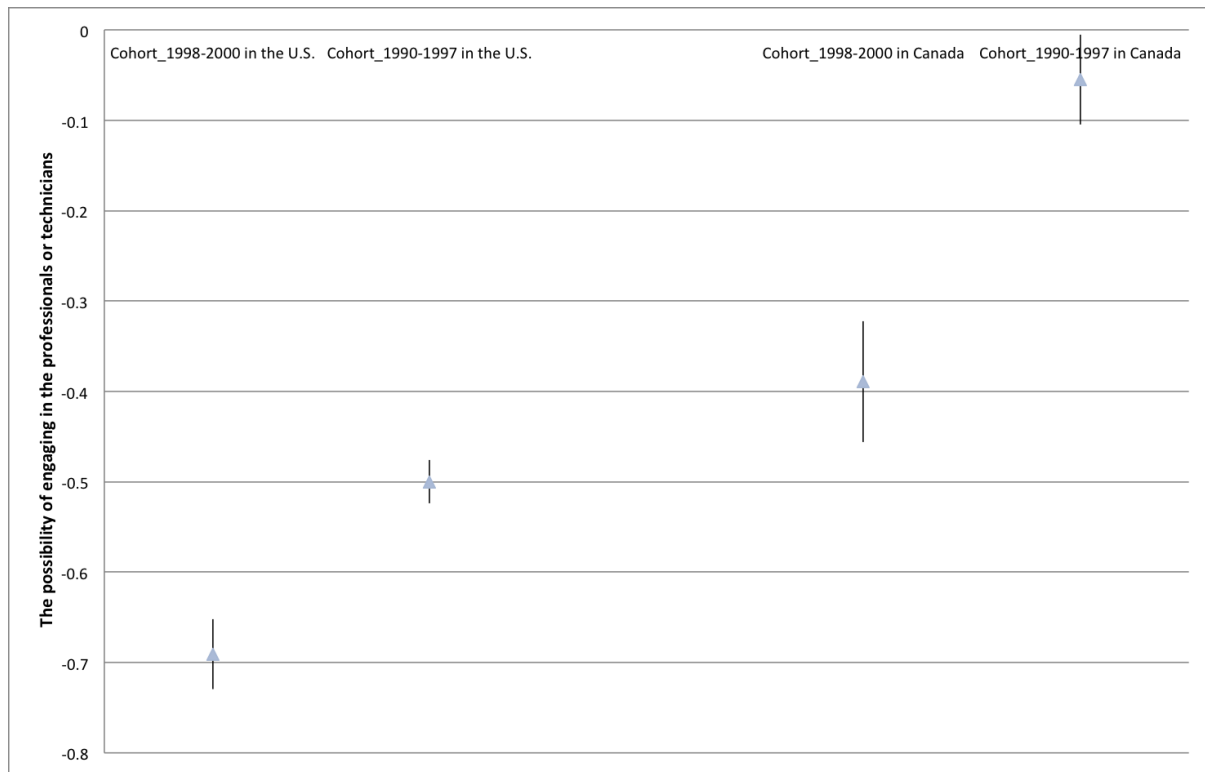
*Figure 4: The possibility of placing in professionals or technician in different Chinese immigrants in the U.S. and Canada*

*Estimates from models without controlled education attainment*

Figure 4 graphically describes the possibility that different cohorts of Chinese immigrants engage into sophisticated places, on the basis of the natives in both host countries. We may find that the possibility that all cohorts of Chinese immigrants placed the sophisticated jobs is lower. We also provide the upper and lower bounds of 95 confidence intervals, in Figure 4. Moreover, Figure 4 enables to directive illustrates the relationships between different cohorts in same host countries. The possibility that cohorts 1990-1990 of Chinese immigrants takes the professional places is higher than cohort 1998-2000 in both the United States and Canada.

When we compare the occupational transferability of Chinese immigrants between host countries, we also can find several interesting points by means of analyzing Figure 4. The shift of the occupational transferability between cohorts of Chinese immigrants in Canada is higher than the United States. In addition, given the cohort of Chinese immigrants, the relative possibility to participate in professional jobs in

Canada is higher than the United States. We may explain what we found by the consequence of the brain drain phenomenon in Canada. Since Canada established, the brain drain phenomenon is never to be disappeared, and the United States is the destination country for the brain drain, due to the economic motivation (Devoretz & Iturralde 2001). The salary for identical jobs in the United States is higher than Canada. We may postulate that the vacancy of the jobs would be in place by applicants with the lower quality in Canada. The Chinese immigrants with identical quality are easier to engage in the sophisticated jobs in Canada. In turn, the Chinese immigrants were exposed in more fiercely competitive labor market in the United States than that in Canada.

## 4.4 The gap in earnings between Chinese immigrants in Canada and those who relocated into the United States

In view of North American Free Trade Agreement, the citizens belonged to the United States and Canada is able to freely transport over the border and dwell where they are willing to settle down. The Canadian government incessantly suffered from the brain drain since Canada established. According to Rooth & Saarela (2007), the higher skilled immigrants tended to emigrate and pursue the higher living standard. It is taken for granted that Canadians possessed certain characteristics also are inclined to relocate into the United States (Devoretz & Iturralde 2001). We wonder that Chinese immigrants who initially settled down in Canada were not exempt from the fashion of the brain drain.

In order to research on that the brain drain phenomenon also is occurred in Chinese immigrants with higher ability, we need to construct three new cohorts and integrate them as an indicator variable. The cohort 1 includes the Chinese immigrant who arrived in Canada less than 5 years, based on the 1991 Canada census. According to the 2000 U.S. census, the samples in the cohort 2 should satisfy the following requirements: 1. The Chinese immigrants had relocated from Canada to the United States; 2. the time span of Chinese immigrants in the United States is less than 5 years. Finally, the cohort 3 consists of that Chinese immigrants had migrated into Canada since 1996, based on the 2001 Canada census. Though it is difficult to

figure out the exact time span, over which the Chinese immigrants in Cohort 2 had arrived at Canada, it is undeniable that Chinese immigrants primarily rushed into Canada around 1990. It is judicious that the cohort 1 of Chinese immigrants is treated as the reference group, and we can compare with the differentials of the economic performance between Cohort 1 and Cohort 2. Meanwhile, Cohort 3 is also a wonderful benchmark, in order to explore with the characteristics of Cohort 1. We proceed to analyze the variation of the economic performance of different cohorts of Chinese immigrants. The annual earnings is the proxy to scale the ability of different cohorts in Chinese immigrants.

According to the fundamental equation, it is

$$ln\,\gamma\ =\beta\,T+\ \theta\,X+\varphi\,C\ +\omega\,S+\ \mu$$

Where $\gamma$ denotes the annual earnings; $\mu$ is the residual in the model; $T$ is the dummy variable for age of respondents; $X$ is a vector of variables, which included marital status and gender, affected the earnings; $C$ represents various cohorts; and S represents the education attainment.

Reg1 in Table 6 reports the estimating OLS model. In order to enhance the measure of goodness of fit, we are supposed to manipulate several socioeconomic factors as control variables. When we generally review the control variables (Table 6, Reg1), predicting coefficients seemingly make sense. Cases are abounding. The earnings of the female is lower than that of the male in the Cohort 1 (samples of Chinese immigrants in 1991 Canada census). The earnings in Cohort 1 with University degree is higher than that with Secondary degree, and the earnings in Cohort 1 without Secondary degree is the lowest.

We primarily research on the effect of different cohorts of Chinese immigrants on the annual earnings. In reference of the Cohort 1, the surplus of the earnings in Cohort 2 (Chinese immigrants relocated in the United States) is approximate 2 folds and the deficit of the earnings in Cohort 3 (Chinese immigrants in the 2001 Canada census), ceteris paribus, accounts for 27,3 percent. We are aware that the distribution of the

earnings in different cohorts of Chinese immigrants is deviated. Moreover, the earnings of Chinese immigrants relocated from Canada to the United States saliently is higher than that of Chinese immigrants in Canada. We assume that the diverse characteristics in different Cohorts of Chinese immigrants somewhat result in the scattered distribution. We need to confirm that Chinese immigrants in Canada possessed higher ability have a proclivity to immigrate into the United States, as the native Canadian. In this study, we are also aware that the disparity of the incomes between the United States and Canada enables to cause a bias, when we measure the differentials of the qualities in different cohorts of Chinese immigrants. We will use the interaction models and analyze the impact of the different cohorts of Chinese immigrants and the education attainment on the earnings.

When we proceed to research on the interaction model between the education attainment and different cohorts, it is

$$ln\,\gamma = \beta\,T + \theta\,X + \varphi\,C + \omega\,S + \eta\,C * S + \mu$$

Where C * S denotes the interaction variable.

Reg2 in Table 6 reports the estimating OLS model including the interaction variable between the Cohorts and the education attainment. The cohort 1 is also treated as the reference group in the variable, Cohorts, and the Secondary degree completed is the reference group in the education attainment. We also control several variables as what we done in Reg1 of Table 6. We need the formula listed in previous section, in order to account for the effect of the interaction variable. In the reference of both the Secondary degree completed and the Cohort 1, the earnings in cohort 2 possessed University degree is the highest. The surplus of the earnings in cohort 2 with University degree is almost 3 folds, which is larger than the surplus of the earnings in the identical cohort with other education attainment. Additionally, the coefficients of the interaction variable are significant in 99% confidence interval. Based on the interaction regression (Table 6, Reg2), as Devoretz & Iturralde (2001) narrated, the higher education attainment is one of important factors to prompt the population in Canada to migrate in the United States. We also have sufficient reasons to belief

that Chinese immigrants with the higher ability in Canada have motivation to relocate into the United States.

In addition, Devoretz & Iturralde (2001) also emphasized that the time point in the lifespan is another imperative factor for the cross-countries immigration. As the assertion by Devoretz & Iturralde (2001), the younger population in Canada is in favor of the transition across the boundary. The benefit of Chinese immigrants in Canada who would relocate into the United States would be decreased with increasing the age. It is not difficult to postulate that Chinese immigrants with higher quality tended to migrate in the United States, if they succeed in the assimilation into the society of Canada. The younger age somewhat reinforces the momentum for the transition into the United States. If we enact the interaction variable between the cohort and age, the interaction variable enables to demonstrate that the age also affects Chinese immigrants' decision, in terms of the immigration across the border.

## 5. Limitations

According to Borjas (1985), the methodology applied in this study exists some drawbacks. The estimating deficiencies between Chinese immigrants and the natives in both host countries are underestimated, compared with the realistic deficits. The economic performances of Chinese immigrants have been overestimated, when we implemented the cross-section models in the study. This issue is the result of the fact that the characteristics of various cohorts of Chinese immigrants had been varied since 1980s. The intrinsic nature and external impacts result in these incessant changes of the characteristics in different cohorts of Chinese immigrants (Guo & DeVoretz 2006). Based on the cross-section, we attribute the growth of the economic performance in Chinese immigrants into the motivation and the self-selection, and simultaneously ignore the change of the ability in different cohorts. To input extra censuses in the research is one way to deal with this kind of issue. If IPUMS enables to supply extra datasets with vital variables in both targets countries, the problem articulated above has opportunity to be alleviated. However, IPUMS cannot supply the Canada 2011 census until 2015 June

(IPUMS 2014). We have only one option to be left that we temporarily conduct on analyses based on the methodology of the cross-section model, and then try to get rid of exogenous factors such as the change of the ability in Chinese immigrants, when datasets will be available.

Meanwhile, we cannot trace and remove Chinese immigrants who turned back to Chinese in this study. The characteristics of Chinese immigrants also exert the variance, when we research on the economic performance of Chinese immigrants in the host countries. It is prevalent that ineligible Chinese immigrants migrated into other countries, according to the unauthentic information. In turn, they usually have to re-migrate, when they figure out the realistic situation in the host countries. To include Chinese immigrants, who actually return to China, causes an obvious deviation, when we estimate the economic performances of Chinese immigrants.

In addition, the omission of indicators in terms of the linguistic fluency is another important limitation in this research. The linguistic fluency in English usually influences on the velocity and the extent of the assimilation in host countries (Chiswick & Miller 2010; Antecol et al. 2003). If the mother tongue of the immigrants is close with English, the language obstacle is not a salient problem in the process of assimilation into the labor market. To quantify of the language proficiency enables to lay strong foundation on the research of the process of the assimilation in Chinese immigrants. Both censuses in IPUMS, nevertheless, cannot offer any variables in terms of the language proficiency. In the analysis, we also attempt to use some alternative variables sourced from circumstantially information such as the language spoken at home. However, we discern that the disadvantage of the alternative variables outweighs than what they contributed. We finally give up controlling the variables in terms of the linguistic fluency. We should bear in mind that the absence of important variables somewhat deteriorates the measure of goodness of fit in models. In turn, the parameter of Adjective R squared is lower than what we expect.

## 6. Conclusion

In China the phenomenon of the emigration was sprouted in the middle of 20 century. Both the United States and Canada play pivotal roles as the destination countries since the new immigration policy promulgated in 1960. Chinese are an important fraction in the immigrant visa applicants in the United States and Canada in 1990s, in view of both economic and political events occurred in China. Based on the human capital theory and Micro neoclassical theory, we try to analyze the change of the economic performance in Chinese immigrants in the United States and Canada.

Exploited IPUMS datasets, the analytical results literarily support our hypotheses. When we interpret the coefficients in OLS models in the United States and Canada, we may find that the economic performance of Cohort 1990-1997 in Chinese immigrants is better than that of Cohort 1998-2000 (Table 2, Reg3 and Table 2, Reg4). There is the shift of the economic performance in Chinese immigrants with the increase in the duration in both host countries. When we juxtapose charts between the United States and Canada, in the reference of the natives, the deficit of the earnings in Chinese immigrants in Canada is higher, in the comparison with the United States (Figure 1). In turn, we may conclude that the screening system enacted in Canada is not as effect as people insisted. The characteristics of Chinese immigrants in United States at least are as same as that in Canada.

Meanwhile, because of the sheepskin effect, the concept of the years of schoolings in the research is taken over by the education attainment in our study. Based on the interaction model, we may address the effect of both the education attainment and the time span in the host countries on the economic performance of Chinese immigrants. In that section, we also discern that the distribution of the relative earnings in Cohort 1998-2000 of Chinese immigrants is convergent, in comparison with that in Cohort 1990-1997 of Chinese immigrants in both host countries. We expound that Chinese immigrants without higher education attainment have much more incentive and are easily look for jobs, and, simultaneously, Chinese immigrants obtained the higher academic degree suffer from the obstacle in the mobility of the education attainment, when Chinese immigrants arrive at destination countries.

Therefore, the hypothesis with respect to the educational transferability is supported by the statistical analyses, according to the interaction model.

When we use the probit model and test the possibility to complete the University degree, we are aware that the characteristics in different cohorts of Chinese immigrant, to some extent, are divergent. Therefore, we may consider that both the process of the assimilation into the host countries and the precipitation of the quality of Chinese immigration affect the relative earnings in different cohorts of Chinese immigrants. However, we are subject to objective limitations and cannot thoroughly disentangle the entwisted effects between the labor market and the immigration policy.

The probit model also sheds the light on the research of the U-shape pattern in the occupational mobility. It is not different to envision that Chinese immigrants are difficult to grasp the job as what they done in China, because of the language obstacle and the professional certification. It is not difficult to envision that here is a decline in the occupational mobility with the immigration. However, we find that, if the time span in Canada attains 7 years, the possibility to engage in professional jobs in Chinese immigrants is almost equal with that in native Canadian. On the contrary, the Cohort 1998-2000 of Chinese immigrants has less opportunity to take the sophisticated places. In the United States, the pattern is similar. It implies that there is the occupational transferability in Chinese immigrants, due to the acquisition of academic information by employers and the enhancement of the language ability.

To compare the economic performance in different cohorts of Chinese immigrants, we find that Chinese immigrants with the higher quality, to some extent, plan to relocate into the United States. As the Ukrainian immigrants (Pivnenko & DeVoretz 2003; Devoretz & Iturralde 2001), the motivation including the economic factors and non-economic factors push Chinese immigrants in Canada to transfer into the United States. Relied on the interaction model between the education attainment and a variety of cohorts, the Chinese immigrants with higher education attainment in Canada have much more momentums to migrate after being uprooted, as what the native Canadian done. It is possible that to participate into the U.S. labor markets is

sought-after for Chinese immigrants. They consider Canada as transfer station and the United States is the ultimate destination. Based on Borjas & Bratsberg (1994), it is possible that Chinese immigrants, who are not eligible to directly immigrate into the United States, select to immigrate into Canada as the springboard. In addition, we also postulate that younger Chinese immigrants in favor to the cross-border transit as the native Canadian.

## 6. Appendix

Table 1:Descriptive Statistics

Table 1 – Descriptive statistics

| Variable | Canada | | | | The U.S. | | | | Canada-the U.S. sample focused on Chinese immigrants | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | St.dev | Min | Max | Mean | St.dev. | Min | Max | Mean | St.dev. | Min | Max |
| *Dependent variables* | | | | | | | | | | | | |
| ln(wage) | 9,491 | 1,108 | 5,705 | 11,769 | 9,898 | 1,118 | 5,737 | 12,861 | 9,205 | 1,185 | 5,72 | 12,757 |
| University degree (=1, 0=otherwise) | 0,248 | 0,432 | 0 | 1 | 0,252 | 0,434 | 0 | 1 | - | - | - | - |
| professionals and technicians (=1, 0=otherwise) | 0,265 | 0,441 | 0 | 1 | 0,247 | 0,431 | 0 | 1 | - | - | - | - |
| *Independent variables* | | | | | | | | | | | | |
| Native (reference) | 0,985 | 0,12 | 0 | 1 | 0,997 | 0,053 | 0 | 1 | - | - | - | - |
| Cohort 1998-2000 | 0,005 | 0,07 | 0 | 1 | 0,001 | 0,028 | 0 | 1 | - | - | - | - |
| Cohort 1990-1997 | 0,01 | 0,098 | 0 | 1 | 0,002 | 0,045 | 0 | 1 | - | - | - | - |
| Chinese immigrants in Canada | - | - | - | - | - | - | - | - | 0,546 | 0,498 | 0 | 1 |
| Chinese immigrants inflowed into the U.S. | - | - | - | - | - | - | - | - | 0,092 | 0,289 | 0 | 1 |
| Chinese immigrants in Canada 1991 census (reference) | - | - | - | - | - | - | - | - | 0,362 | 0,481 | 0 | 1 |
| Age | 37,405 | 12,235 | 16 | 65 | 38,689 | 12,555 | 16 | 65 | - | - | - | - |
| Age_sq | 1548,797 | 941,853 | 256 | 4225 | 1654,474 | 992,371 | 256 | 4225 | - | - | - | - |
| <25 | - | - | - | - | - | - | - | - | 0,092 | 0,289 | 0 | 1 |
| 26-35 (reference) | - | - | - | - | - | - | - | - | 0,409 | 0,492 | 0 | 1 |
| 36-45 | - | - | - | - | - | - | - | - | 0,369 | 0,483 | 0 | 1 |
| 46-55 | - | - | - | - | - | - | - | - | 0,094 | 0,292 | 0 | 1 |
| 56-65 | - | - | - | - | - | - | - | - | 0,037 | 0,188 | 0 | 1 |
| Male (reference) | 0,52 | 0,5 | 0 | 1 | 0,514 | 0,5 | 0 | 1 | 0,518 | 0,5 | 0 | 1 |
| Female | 0,48 | 0,5 | 0 | 1 | 0,486 | 0,5 | 0 | 1 | 0,482 | 0,5 | 0 | 1 |
| Single/never married | 0,313 | 0,464 | 0 | 1 | 0,275 | 0,446 | 0 | 1 | 0,186 | 0,389 | 0 | 1 |
| Married (reference) | 0,599 | 0,49 | 0 | 1 | 0,571 | 0,495 | 0 | 1 | 0,775 | 0,418 | 0 | 1 |
| Separated/Divorced/Widowed | 0,088 | 0,283 | 0 | 1 | 0,154 | 0,361 | 0 | 1 | 0,039 | 0,193 | 0 | 1 |
| Less Primary & Primary completed | 0,197 | 0,398 | 0 | 1 | 0,098 | 0,297 | 0 | 1 | 0,161 | 0,368 | 0 | 1 |
| Secondary completed (reference) | 0,557 | 0,497 | 0 | 1 | 0,651 | 0,477 | 0 | 1 | 0,297 | 0,457 | 0 | 1 |
| University completed | 0,246 | 0,431 | 0 | 1 | 0,251 | 0,434 | 0 | 1 | 0,542 | 0,498 | 0 | 1 |
| **Observations** | **291004** | | | | **5492004** | | | | **3391** | | | |

Table 2: Differences in log earnings between Chinese Cohorts and Natives in the United States and Canada with and without controlled the education attainment

|  | Reg 1 | Reg 2 | Reg 3 | Reg 4 |
|---|---|---|---|---|
|  | *Canada* | *The U.S.* | *Canada* | *The U.S.* |
| *Number of obs =* | *291004* | *5492004* | *291004* | *5492004* |
| *Adj R-squared* | *0,3222* | *0,3112* | *0,3577* | *0,3787* |
| *In(Wage)* |  |  |  |  |
|  |  |  |  |  |
| *Age2* | *-0,002\*\*\** | *-0,002\*\*\** | *-0,002\*\*\** | *-0,001\*\*\** |
| *Age* | *0,216\*\*\** | *0,209\*\*\** | *0,192\*\*\** | *0,170\*\*\** |
|  |  |  |  |  |
| *Marital status* |  |  |  |  |
| *Single/never married* | *-0,215\*\*\** | *-0,174\*\*\** | *-0,233\*\*\** | *-0,179\*\*\** |
| *Married (Reference)* | *-* | *-* | *-* | *-* |
| *Separated/Divorced/Widowed* | *-0,115\*\*\** | *-0,134\*\*\** | *-0,090\*\*\** | *-0,056\*\*\** |
|  |  |  |  |  |
| *Gender* |  |  |  |  |
| *Male (Reference)* | *-* | *-* | *-* | *-* |
| *Female* | *-0,425\*\*\** | *-0,487\*\*\** | *-0,459\*\*\** | *-0,507\*\*\** |

| Education attainment | | | | |
|---|---|---|---|---|
| *Less Secondary Degree* | *-* | *-* | *-0,298\*\*\** | *-0,533\*\*\** |
| *Secondary Degree Completed (Reference)* | *-* | *-* | *-* | *-* |
| *University completed* | *-* | *-* | *0,344\*\*\** | *0,534\*\*\** |
| | | | | |
| Cohorts | | | | |
| *Natives (Reference)* | *-* | *-* | *-* | *-* |
| *Cohort_1990-1997* | *-0,409\*\*\** | *-0,119\*\*\** | *-0,424\*\*\** | *-0,208\*\*\** |
| *Cohort_1998-2000* | *-0,733\*\*\** | *-0,377\*\*\** | *-0,884\*\*\** | *-0,537\*\*\** |
| | | | | |
| *_cons* | *5,479\*\*\** | *5,901\*\*\** | *5,902\*\*\** | *6,603\*\*\** |

*Note: \*\*\* denotes 1% Significant level; \*\* is 5% Significant level; \* is 10% Significant level.*

*OLS regression estimates*

Table 3: Differences in logistic earnings between Chinese cohorts and natives for different education attainment in the U.S. and Canada

| | **Reg 1** | **Reg 2** |
|---|---|---|
| | *Canada* | *The U.S.* |
| | | |
| *Number of obs* | *291004* | *5492004* |
| *Adj R-squared* | *0,3579* | *0,3788* |

| ln(Wage) | Coef, | Coef, |
|---|---|---|
| | | |
| Age2 | -0,002*** | -0,001*** |
| Age | 0,192*** | 0,170*** |
| | | |
| Marital Status | - | - |
| Single/never married | -0,233*** | -0,179*** |
| Married (Reference) | | |
| Separated/Divorced/Widowed | -0,090*** | -0,056*** |
| | | |
| sex01 | | |
| Male (Reference) | - | - |
| Female | -0,459*** | -0,507*** |
| | | |
| Education attainment | | |
| Less Secondary Degree | -0,300*** | -0,533*** |
| Secondary Degree Completed (Reference) | - | - |
| University Degree Completed | 0,345*** | 0,534*** |
| | | |
| Cohorts | | |
| Natives (Reference) | - | - |
| Cohort_1990-1997 | -0,501*** | -0,380*** |
| Cohort_1998-2000 | -0,712*** | -0,577*** |
| | | |
| Cohort1990_1997 X Less than Secondary | 0,143*** | 0,225*** |
| Cohort1990_1997 X University Degree | 0,118*** | 0,263*** |

*Completed*

| | | |
|---|---|---|
| *Cohort1998_2000 X Less than Secondary* | *0,284\*\*\** | *0,312\*\*\** |
| *Cohort1998_2000 X University Degree Completed* | *-0,308\*\*\** | *-0,004* |
| | | |
| *_cons* | *5,903\*\*\** | *6,604\*\*\** |

*Note: \*\*\* denotes 1% Significant level; \*\* is 5% Significant level; \* is 10% Significant level.*

*OLS regression estimates*

Table 4: Differences in the education attainment between Chinese immigrants cohorts and natives in the U.S. and Canada

| | **Reg 1** | **Reg 2** |
|---|---|---|
| | *Canada* | *The U.S.* |
| | | |
| *Education attainment (University degree completed=1; otherwise=0)* | *Coef.* | *Coef.* |
| | | |
| *Age* | *-0,120\*\*\** | *-0,130\*\*\** |
| *Age2* | *0,001\*\*\** | *0,001\*\*\** |
| | | |
| *Marital Status* | | |
| *Single/never married* | *-0,132\*\*\** | *-0,076\*\*\** |
| *Married (Reference)* | *-* | *-* |

| | Reg 1 | Reg 2 |
|---|---|---|
| *Separated/Divorced/Widowed* | *0,152\*\*\** | *0,354\*\*\** |
| | | |
| *Gender* | | |
| *Male (Reference)* | - | - |
| *Female* | *-0,160\*\*\** | *-0,038\*\*\** |
| | | |
| *Cohorts* | | |
| *Natives (Reference)* | - | - |
| *Cohort_1990-1997* | *-0,286\*\*\** | *-0,683\*\*\** |
| *Cohort_1998-2000* | *-1,116\*\*\** | *-0,933\*\*\** |
| | | |
| *_cons* | *3,099\*\*\** | *3,405\*\*\** |

*Note: \*\*\* denotes 1% Significant level; \*\* is 5% Significant level; \* is 10% Significant level.*
*Probit regression estimates*

Table 5: Differences in the occupation between Chinese immigrants cohorts and natives in the U.S. and Canada with and without the education attainment

| | **Reg 1** | **Reg 2** |
|---|---|---|
| | *Canada* | *The U.S.* |
| | | |
| *The occupation (the professionals or Technicians=1; otherwise=0)* | | |
| | Coef. | Coef. |
| | | |

| | | |
|---|---|---|
| Age | -0,088*** | -0,077*** |
| Age2 | 0,001*** | 0,000*** |
| | | |
| Marital Status | | |
| Single/never married | -0,023*** | 0,035*** |
| Married (Reference) | - | - |
| Separated/Divorced/Widowed | 0,103*** | 0,249*** |
| | | |
| Gender | | |
| Male (Reference) | - | - |
| Female | -0,239*** | -0,312*** |
| | | |
| Cohorts | | |
| Natives (Reference) | - | - |
| Cohort_1990-1997 | -0,055 ** | -0,500*** |
| *Cohort_1998-2000* | *-0,389*** * | *-0,690*** * |
| | | |
| *_cons* | *2,418*** * | *2,416*** * |

*Note: \*\*\* denotes 1% Significant level; \*\* is 5% Significant level; \* is 10% Significant level.*
*Probit regression estimates*

Table 6: Differences in log earnings between different Chinese immigrant cohorts in the U.S. and Canada with and without interaction variables between the education attainment and cohorts.

|  | Reg 1 | Reg 2 |
| --- | --- | --- |
| Number of obs | 3391 | 3391 |
| Adj R-squared | 2,337 | 2,422 |
|  |  |  |
|  | Coef. | Coef. |
| sector_age |  |  |
| <=25 | -0,794*** | -0,784*** |
| 26-35 (Reference) | - | - |
| 36-45 | 0,090 ** | 0,074  * |
| 46-55 | -58,81 | -0,085 |
| 56-65 | -0,245 ** | -0,252 ** |
|  |  |  |
| Marital Status |  |  |
| Married (Reference) | - | - |
| Single/never married | -0,172*** | -0,179*** |
| Separated/Divorced/Widowed | 1,393 ** | 0,130 |
|  |  |  |
| Gender |  |  |
| Male (Reference) | - | - |
| Female | -0,333*** | -0,324*** |
|  |  |  |
| Less than Secondary Degree | -0,067 | -0,167 ** |
| *Secondary Degree Completed (Reference)* | - | - |

| | | |
|---|---|---|
| University Degree Completed | 0,227*** | 0,270*** |
| Cohort_1 (Reference) | - | - |
| Cohort_2 | 1,101*** | 0,212 |
| Cohort_3 | -0,319*** | -0,252*** |
| | | |
| Less than Secondary degree X Cohort_2 | - | 0,239 |
| University degree Completed X Cohort_2 | - | 0,969*** |
| Less than Secondary degree  X Cohort_3 | - | 0,116 |
| University degree Completed X Cohort_3 | - | -0,162  * |
| | | |
| _cons | 9,406*** | 9,416*** |

*Note: Cohort_3 is acronym of Chinese immigrants who stayed in Canada. Cohort_2 is acronym of Chinese immigrants relocated from Canada into the United States. OLS Regression estimates.*

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