Social Changes, Cohort Quality, and Labor Market Assimilation: Chinese Immigrants in Hong Kong, 1991-2006[1]

Zhuoni ZHANG
(zhzhni@ust.hk)

Xiaogang WU
(sowu@ust.hk)

Social Science Division
The Hong Kong University of Science and Technology
Clear Water Bay, Kowloon
Hong Kong SAR

Abstract

This paper uses a series of censuses and by-censuses data from 1991 to 2006 to examine the assimilation of Chinese immigrants in the labor market in Hong Kong, focusing on employment, occupational and earnings attainment in comparison to natives. Particular attention is paid to the assimilation of the immigrants over time, and the effects of changes to the cohort quality, resulting primarily from the shift in immigration policy after Hong Kong's return to China in 1997. Results of my estimations show that newly arrived Chinese immigrants had a lower employment rate, and were trapped in elementary occupations even if they had jobs, and earned much less than the natives. As immigrants stayed longer, the gap tended to decrease. However, most immigrants were not able to reach parity to the natives in terms of earnings throughout their working lives. The above pattern differs by gender. No evidence suggests significant changes in the quality of immigrant cohorts after Hong Kong's reunification with China in 1997.

Immigrants' disadvantages in labor markets in host countries have been well documented, as they usually arrive with distinct disadvantages in human capital, labor market skills and fluency in the dominant language specific to the destination (Chiswick, 1979).

---

[1] Paper prepared for 2010 PAA annual meeting. Please do not cite without authors' permission. The research is supported by a grant from the Public Policy Research Fund from the Central Policy Unit of Hong Kong SAR Government. Direct all correspondence to Zhuoni Zhang (zhzhni@ust.hk), Social Science Division, Hong Kong University of Science and Technology.

However, scholars have not reached a consensus on the experience of immigrants after their arrival, referring to the process of how they are assimilated into the local labor markets. A large body of literature based on analyses of cross-sectional data have shown that the relative earnings of immigrants tend to increase with the number of years after their immigration (e.g., Borjas 1982; Borjas and Tienda 1985; Carliner 1980; Chiswick, 1979; DeFreitas 1980). Some scholars argue that the earnings convergence is due to the fact that immigrants become more assimilated as they acquire more country-specific skills such as local language, culture and knowledge of labor markets. Other scholars (Borjas 1985, 1995) contend that the revealed convergence based on cross-sectional analyses may misinterpret the effects of immigrant cohorts as the assimilation effect. They argue that earlier immigrants earn more than more recent arrivals not because of assimilation but because of their higher cohort quality, mainly as a result of changes to immigration policies (Baker and Benjamin 1994; Bloom and Gunderson 1991; Bloom et al. 1995; LaLonde and Topel 1992). This debate has continued to dominate the literature on immigration in different countries over the years (Constant and Massey 2005; Green 1999).

Hong Kong offers an ideal place to test these theories. The majority of the population in the former British colony is ethnic Chinese, one third of which emigrated from the Chinese mainland during various historical periods. Since the 1990s, particularly after 1997, due to the low fertility rate of the local population, legal immigrants from mainland China have become an increasingly important boost to the population and labor supply in Hong Kong. On the other hand, the newly arrived immigrants' sufferings due to unemployment and poverty upon arrival have become a prominent social problem in Hong Kong. Some scholars claim that the disadvantages of new immigrants and their families are major factors that have led to the deteriorating income inequality in recent years (Lui 1997). More public concern has been raised on whether immigrants from the mainland would worsen the local labor market, reducing the wages of their Hong Kong counterparts.

Recent immigrants in Hong Kong from mainland China are part of a cross-border ("international") Diaspora, most coming from neighboring Guangdong province speaking the same dialect (Cantonese). Given the fact that there is no ethnic boundary, it is easier

for Chinese immigrants to adjust to the local community than immigrants of different ethnicity in other countries. The immigrants and Hong Kong natives share minimal differences in biological and social backgrounds, ways of living, customs and culture, and so on. The biggest boundaries result from lack of language (English and for immigrants coming from outside Guangdong province also Cantonese), education, and work experience specific to the local labor market. These disadvantages, however, can be easily alleviated over time.

On the other hand, Hong Kong's handover in 1997 has led to certain changes in immigration policies towards the mainlanders. The daily quota for permanent immigrants from the mainland shifted in 1998 towards a family-reunion policy. Poorly educated women, from rural areas of neighboring Guangdong province have become the major beneficiaries. This policy shift implies a great change in the quality of the cohorts of new immigrants before and after the handover, making the year 1997 a good point in time for a comparative study on the impact of the quality change in immigrant cohorts on the labor market outcomes of Chinese immigrants in Hong Kong.

In this paper, we examine the labor market outcomes of Chinese immigrants in Hong Kong, focusing on changes in cohort quality and assimilation effects over time. We choose to analyze employment, occupational attainment, and earnings as three main indicators of labor market outcomes from 1991 to 2006.

Chinese Immigrants in Hong Kong Since 1991

The first tidal wave of Chinese immigrants to Hong Kong dated back to 1930s and 1940s, when China is overwhelmed by Anti-Japanese War and Civil War. Since then, Hong Kong has witnessed several phases of Chinese immigrant influxes, and its immigration policy changed several times accordingly (Chan et al. 2003). During the first phase, there were around 1.9 million Chinese people moved to Hong Kong to avoid chaos caused by war (Wan 2001). The second phase was characterized by unstable immigrant figures and varied immigration policy from early 1960s to late 1970s. A very strict policy was implemented before the mid 1960s to prevent the surge of refugee inflow resulted from the Great Famine in China, according to which illegal immigrants would be repatriated immediately once found; however, this strict policy was abandoned in 1967 and all Chinese immigrants were granted permanent residence once they reached Hong Kong.

From 1974 to 1980, the immigrant policy became what was known as the “touch-base” policy-- as long as they could avoid being caught and repatriated at the border and managed to reach an urban area, they could get permission to apply for an identification card and to reside and work in Hong Kong. Although immigration policy changed several times during the second phase, a great quantity of people moved from mainland China to Hong Kong, legally or illegally, with roughly half of the Hong Kong residence coming from the mainland in 1970s(Chan et al. 2003).

The third phase of Chinese immigrant inflow began in early 1980s and last till now. The feature of this period is its consistent principle of immigrant policy to illegal immigrants, known as “once caught immediately repatriated”, and its daily one-way permit quota system towards potential legal immigrants for family reunion. One one hand, mainlanders hardly can cross the border illegally. Even if illegal immigrants succeed to reach Hong Kong, they can just stay as illegal residents and will face tremendous difficulty in education and employment. The number of illegal immigrants from mainland China decreased dramatically. On the other hand, the government started to deal with potential legal immigrants who have the right to migrate to Hong Kong but still stay in the mainland. According to the Sino-British Joint Declaration, Hong Kong permenant residents include Chinese citizens born in Hong Kong before or after the establishment of the Hong Kong Special Administrative Region, Chinese citizens who have ordinarily resided in Hong Kong for a continuous period of not less than seven years before or after the establishment of the Hong Kong Special dministrative Region, and persons of Chinese nationality born outside Hong Kong of those residents listed above. Remarkably, this definition allows a huge number of people in mainland China to apply for the right of adobe in Hong Kong. For instance, over 310,000 children of Hong Kong permanent residents still lived in mainland China in 1991. The daily one-way permit quota system is thus launched in mid 1980s to enable massive qualified mainlanders to come to Hong Kong for family reunion in an orderly manner.

This paper focuses on Chinese immigrants in Hong Kong since 1991 with several considerations. First of all, they are all legal immigrants under a stable immigrant policy, by studying whom we can avoid the problem of selection bias as it may happen when including all kinds of illegal immigrants under variable immigrant policies. Second,

Hong Kong's economic growth has become modest and stable since the beginning of the 1990s after rapid growth for decades (Ho 2005), and a stable economic atmosphere is necessary to study changes in immigrant cohort quality and assimilation effects over time. Third, Chinese legal immigrants play a even more important role in both Hong Kong's social and economic fields since early 1990s with a rapid growth of new arrivals but a continuous decline of total fertility rate. As Figure 1 shows, the total number of new arrivals from mainland China holding one-way permit increases drastically since early 1990s, soars up to 60,000 per year in 1996, doubling the figure before the decade, and remains around 50,000 in later years. Contrastly, the total feritility rate[2], as shown in figure 2, continues to decrease over the period. The average number of children that would be born alive to one woman during her lifetime given the age-specific fertility rates in that year drops from 1.9 in 1981, to around 1.3 in 1991, and even lower than 1 after 2001. Finally, using 1997 as a point in time, a study covering the period from 1991 to 2006 is suitable enough to compare the labor market outcomes of immigrants under different governing institutions--in colonial age and in post-handover era.

[Figure 1 about here]

[Figure 2 about here]

Cross-boundary marriages are the underlying reason for the striking increase of new arrivals from mainland China holding one-way permit, among whom most are Chinese females coming to Hong Kong to join their husbands(see figure 1). A distinct featur of Hong Kong's marriage market is that a large proportin of male residents in Hong Kong tend to go to mainland China, especially the nearby Guangdong province which shares the same language and cultural tradition with Hong Kong, to search for their brides. The number of Hong Kong males marrying females from the mainland has almost doubled from 15776 to 28145 in 2006, and together with the relatively lower number of local

[2]Total fertility rate refers to the average number of children that would be born alive to one woman during her lifetime if she was to pass through their childbearing ages 15-49 experiencing the age-specific fertility rates prevailing in a given year.

females marrying mainland males, the number of cross-boundary marriages accounts for more than half of all Hong Kong marriages in 2006.[3]

The obervation of cross-boundary marriages featuring new arrivals from mainland China renders separate analyses for female Chinese immigrants and male Chinese immigrants in this paper. Female Chinese immigrants are charaterized by several distinctions. On one hand, they are binded to a more social than economic role with a large proportion of them being economically inactive after their arrival. Over 40% recent female Chinese immigrants stay at home as housewives in 1996(Lam and Liu,1998) and this figure remains around 35% in 2005[4]. On the other hand, even if they enter labor market as male immigrants do, they are about to experience distinctive work trajectory which might be affected by events implicitly pertaining to women such as pregnancy and child bearing. These events have significant impact on not only their objective career development, but also their subjective views on balancing their social role as a mother and economic role as a worker. They might also be less adaptive to structural changes in labor market due to the interruption of work experience by such events. In the following, hypotheses are presented generally for all Chinese immigrants, but subsequent analyses are conducted by gender.

Hypotheses

The large scale arrivals of Chinese immigrants provide both an opportunity and a challenge for local society in Hong Kong. On one hand, it offsets the problem of population growth caused by low local ferlity rate, slows down the aging process, and therefore sustains the vitality of Hong Kong's population which is essential for the entsustainability of both social and economic developmenton in Hong Kong. On the other hand, however, the large amount influx of Chinese immigrants also challenges the local socioeconomic structure and has brought public concerns on poverty and inequality. One major issue worrying local population is whether immigration increases earnings inequality in Hong Kong(Lam and Liu1998). Such an anxiety is reansonable in the sense

3 Including mainland brides coming to Hong Kong to get registered and single Hong Kong males with Certificate of Absence of Marriage Record going to mainland China to get married. Source: Census and Statistics Department (CSD). 2007. Marriage and Divorce Trends in Hong Kong,1981-2006. Hong Kong: Government Printer.

4 Source: Thematic Household Survey Report No.28, Hong Kong Census and Statistics Department, 2006.

that although Chinese immigrants share almost identical tradition as Hong Kong natives, they still have problems in transferability of human capital, language/skills specific to local market system, and adaptation to local political system and social structure. These problems block them from assimilating into the local society, which is consequently related to poverty and inequality issue in Hong Kong. This paper deals with the first part of this causal chain of poverty and inequality issue, focusing on the assimilation of Chinese immigrants in Hong Kong. In the following, three hypotheses will be deduced about Chinese immigrants in local labor market in terms of entry effect, assimilation effect, and cohort quality, against the backdrop of social, economic, and political situations they face and changes in such areas Hong Kong has experienced over last decades.

Similar to most immigrants in other receiving economies, Chinese immigrants in Hong Kong are in disadvantaged positions in local labor market upon their arrival. First, educational systems are different between mainland China and Hong Kong. Chinese immigrants have problems in transferring human capital (lam,1986) and the proficiency in English/Cantonese after their arrival. Second, the market system resulted from market-oriented economic reform in the mainland differs from that of Hong Kong, which also renders difficulty in transferring skills for Chinese immigrants in local labor market. Although production skills in manufaturing may be general and can be transferred for these immigrants, skills related to other sectors such as service, managerial and professional, are more country-specific and less transferable to Hong Kong(Lam & Liu,1998). Facts are, however, that there is a large proportion of Chinese immigrants[5] worked in manufaturing and agricultural sectors before their migration (Lam & Liu; 1998), which make immigrants oncentrate in manufacturing sector after their arrival in Hong Kong(Lam and Liu 1993); and that as Hong Kong continues to witness the process of de-industrialization with more and more factories are relocating to mainland China (Chiu et al. 1997), the manufacturing sector is shrinking over time[6], which make the

[5] In 1991, 10% of legal immigrants from China work in manufacturing sectorin the mainland, and 10% in agricultural sector.

[6] The proportion of workers in the manufacturing sector keeps dropping from 26.0% in 1991 to 6.3% in 2006, while the proportion in service sector increases from 27.8% to 41.8%. Source: The Hong Kong Annual Digest of Statistics 2002 and 2007.

employment status and occupational attainment of recent Chinese immigrants even worse.

Not only do Chinese immigrants have disadvantages in employment and occupational attainment, the rising income inequality in Hong Kong makes them more marginalized in the society. Despite a general increase in people's annual income, the *Gini* coefficient has enlarged during the past two decades,[7] with a more rapid increase in earnings in the higher-income and middle-income brackets than in the lower ones. For example, monthly earnings in the top two deciles increased by up to two hundred percent between 1990 and 2000, while the bottom two deciles increased at a much lower level of around forty to seventy percent. During the financial crisis years 1998-2000, the bottom classes experienced more than a ten percent decrease in earnings while there was an increase for the two top deciles (Ho 2005). Under such a circumstance, Chinese immigrants, with their high possibilities in getting lower ranked jobs unpon their arrival, tend to be adversely affected in earnings attainment compared to local workers. Therefore, we propose to test our first hypothesis:

Hypothesis 1: Chinese immigrants are less likely to be employed, and tend to have lower occupational attainment and earnings than Hong Kong natives upon arrival.

Despite their disadvantages upon arrival, Chinese immigrants have a good chance of assimilating into the labor market over time. Chinese immigrants do not face racial discrimination and cultural barriers in Hong Kong. The government also provides new arrivals with a series of free services to facilitate their early integration into the local community including Full-time Initiation Program, Education and Support Services for Newly-arrived Children, Full-time Job-hunting Knowhow Course, Job Matching Program, Employment Lectures, Information Gallery, and so on. The longer Chinese immigrants stay, the more fluent they become in English and Cantonese, and the more specific training and other skills they acquire in the local labor market. Once they overcome the obstacles after their immigration, they are able to rapidly improve their labor market performance, and the gap between them and their native counterparts would decrease.

---

[7] The *Gini* coefficient based on original monthly household income rose up from 0.518 in 1996 to 0.533 in 2006. Source: Hong Kong 2006 Population By-census - Thematic Report: Household Income Distribution in Hong Kong.

Empirical studies also lend support to the positive effect of duration of stay on improving immigrants' position in local labor market. For example, a research based on Hong Kong census data has shown that the occupational segregation of Chinese immigrants diminishes as time goes by. As the duration of residence in Hong Kong increases from less than 5 years to more than 20 years, occupational segregation of Chinese immigrants decreases from 22% to around 5%; and for immigrants who came to Hong Kong before 10 years old, occupational segregation even does not exit (Liu, Zhang and Chong 2004). We thus propose our second hypotheses to test the assimilation effect:

Hypothesis 2: The gaps in employment status, occupational and earnings attainment between Chinese immigrants and Hong Kong natives decrease over time.

Hong Kong's handover in 1997 has brought changes to the daily quota system of the immigration policy towards Chinese immigrants. Before the handover, at least a half of the daily quota for Chinese immigrants was set without any limitations; however, the number decreased to only eight percent from the beginning of 1998, with that 138 out of the 150 daily quota are limited to Hong Kong residents' spouses and qualified children. The qualified spouses are either separated from their husband/wife more than ten years or with a child under 14.[8]

Changes in the daily quota system lead to several features of the newly arrived Chinese immigrants. According to a survey on persons from the mainland having resided in Hong Kong for less than 7 years in 2005,[9] 74% of them were female and the median age of these female immigrants was 34. Among all the adult immigrants (age≥15), only 5% had attained tertiary education, significantly lower than that for the entire population in Hong Kong(23%); 75% were married and 35% were home-makers. Around half of all the newly arrivals were from households with monthly household income less than ten thousand Hong Kong dollars while the corresponding figure for the entire population was 21%. These characteristics of the newly arrived Chinese immigrants after Hong Kong's handover probably indicate a worse situation they encounter in local labor market compared to natives than immigrants migrated before 1997. Although a few programs targeted to talented immigrants have been launched after Hong Kong's return to China,

---

[8] Source: Immigration (Amendment) Ordinance 2001 (17 of 2001)

9 Source: Thematic Household Survey Report No.28, Hong Kong Census and Statistics Department, 2006.

the number of immigrants based on these programs is much smaller than that of the immigrants generated by the family-reunion oriented daily quota system.[10] New immigrants who arrived after 1997 may have been more marginalized in the local labor market. Thus we propose our third hypothesis to test whether there is a declining cohort quality of new entrants after Hong Kong's handover:

Hypothesis 3: The gaps in employment status, occupational and earnings attainment between the newly arrived immigrants and the natives are larger after 1997 than before.

So far, several studies have been conducted to examine the labor market outcomes of Chinese immigrants in Hong Kong. Chinese immigrants are found to be penalized in their initial class positions, subsequent mobility and current income attainment (Chiu et al. 2005), but scholars have not reached a consistent empirical results in terms of whether there is assimilation effect or not, with some arguing that duration of residence has no effect (Chiu et al. 2005) or even a widening gap as time goes by(Lam and Liu 2002), and others claiming as immigrants stay longer, they do improve their situation in the local labor market (Liu et al. 2004). The inconsistent results of these analyses mainly come from their failure to separate the assimilation effect from the cohort effect, and their different measures of labor market outcomes. This paper overcomes these weaknesses by studying the same cohorts over one and a half decades, clearly measuring both the effect of duration of stay and the effect of immigrant cohort quality, and by studying three measures of labor market outcome including employment, occupational attainment and earnings at the same time.

There are additional limitations to the existing studies on Chinese immigrants in Hong Kong which this paper also tries to conquer. First, the data they used were all restricted to the colonial period, leaving the post-handover period unexamined. In this paper, we use data from four points of time covering from 1991 to 2006 to compare Chinese immigrants before and after Hong Kong's handover, which is a good way to evaluate the effects of political system and immigration policy on immigrants' labor

[10] According to a report of the immigration department of Hong Kong in 2006, there are 14,155 entry applications approved based on the Admission Scheme for Mainland Talents and Professionals since July 2003 and 405 Mainland students received approval to enter Hong Kong for employment in 2006. Source: http://www.yearbook.gov.hk/2006/en/20_02.htm

market outcomes. Second, previous analyses only focused on males and study on females is missing. This paper pays equal attention to male and female immigrants by separating them into two sets of analytical samples, which makes male-female comparison feasible. Third, the effects of language skills especially the comparative impact of English and Mandarin are understudied. Hong Kong is becoming more dependent on mainland China after its handover. While English remains important in such a global city, mandarin becomes another valuable language. In this paper, we try to test the effects of these two languages over time.

This paper also calculates years to equality in earnings between immigrants and natives, indicating the number of years for immigrants to catch up with natives and earn as much as them. By doing this, we can anticipate the integration process of Chinese immigrants and their economic life course in Hong Kong, which can surely serve as a policy implication for migration issue

Data, Measurements and Methods

The data we analyzed are five percent samples of the 1991, 1996, 2001, and 2006 population censuses and by-censuses in Hong Kong, which contain detailed and consistent measurements of employment, occupation and earning, language/dialect, education, duration of stay in Hong Kong, birth place, ethnicity and nationality, and other demographic characteristics. Since this paper focuses on labor market outcome, full-time students are deleted in our sample, and we also restrict the analysis to individual adults aged between 25 and 64.

The series of census and by-census data allow us to employ the mothedology of synthetic cohorts of immigrants proposed by Borjas (1987) and examine their labor market experiences over a period of time. This mothedology is a good way of addressing trends over time using multiple cross-sectional data sets. It enables us to separate the assimilation effect (captured by duration of stay in Hong Kong for the *same* cohort) from the cohort quality effect (captured by quality differentials of newly arrived immigrant cohorts in different reference years). We divide all Chinese immigrants into five cohorts, who had arrived pre-1987, 1987-1991, 1992-1996, 1997-2001, and 2002-2006, respectively. The pre-1987 cohort refers to those immigrants who had resided in Hong Kong for more than 4 years in the 1991 census data, 9 years in the 1996 by-census data,

14 years in the 2001 census data, and 19 years in the 2006 by census data. The 1987-1991 cohort refers to the most recent immigrants with residence of less than 1 to 4 years in 1991, also immigrants of 5-9 years in 1996, 10-14 years in 2001 and 15-19 years in 2006. While individuals in the same cohort are not identical across different census/by-census years, they are all representative samples of the same immigration population who entered Hong Kong within a certain period.

The illustration of synthetic cohorts is presented in Figure 3. All the synthetic cohorts are compared to Hong Kong natives. For each cohort, there are two types of coefficients. One is the first coefficient of this cohort upon their arrival, and the other includes subsequent coefficients over the period after their arrival. We can identify (1) the entry effect for each cohort using the first coefficient separately, and (2) the change of cohort quality by comparing the first coefficients across different cohorts, and (3) the assimilation effect for each cohort over time by comparing each cohort's serial coefficients. While this method enables us to examine the assimilation effect and the cohort quality effect of Chinese immigrants, it has no way to control macro economic fluctuations during the period. Furthermore, the labor market experience of Chinese immigrants may be affected by the emigration of Hong Kong residents over the past few decades. The investigation of these issues is beyond the scope of this paper.

[Figure 2 about here]

We use employment, occupational attainment and earnings as three measures of labor market outcome to examine differences between Chinese immigrants and Hong Kong natives in terms of these three measures, and how the gaps change over time and across cohorts. Employment status is coded 1 if the respondent has a job and otherwise 0. Occupational attainment is measured by the likelihood of entering elementary occupations. Elementary occupations include sales and service elementary occupations, construction, manufacturing, agriculture and fishing. We also take the logarithm of monthly income from main employment to examine earnings determination.

In addition to immigrant cohorts, we also examine the effect of language skills, marital status, age, education. Language skills consist of two dummy variables, English and Mandarin. English is coded 1 if the person can speak English, and so is Mandarin.

Marital Status is a dummy variable with married being equal to 1, otherwise 0. Education is measured by four categories corresponding to the level attained, including primary school or below, middle school, high school and tertiary. Occupation is also used as an explanatory variable in the analysis of earnings. It includes white-collar workers, service and sales workers, elementary occupations and others. White-collar workers refer to managers and administrators, professionals, associate professionals, and clerks. Other occupations include skilled agriculture and fishery workers, craft and related workers, plant and machine operators and assemblers, with their relatively lower percentages in the occupational distribution. Summary statistics for selected independent variables are presented in Table A1. We conduct the analysis for men and women separately.

Binary logit models and Ordinary Least Square regression models are used in the analysis. We also calculate years to equality in earnings between immigrants and natives, and separate the entry effect, assimilation effect, and cohort (quality) effect, using the method proposed by Bloom et al (1995).

Analytical Results

Table 1 presents the employment rate of Chinese immigrants, percentage employed in elementary occupations among those employed, and average monthly income ratio of them to Hong Kong natives, separately for male and female immigrants. Chinese immigrants' employment rate has been less than that of Hong Kong natives since 1991. At the time of entry, all the cohorts of the newcomers have lower employment rate compared to the natives of the same gender,[11] and most of the gaps remain stable or decrease slightly over time. The employment rates of female Chinese immigrants across all the cohorts are significantly much lower than male immigrants in the same cohort. There is a declining trend in cohort quality of new arrivals for female immigrants in terms of employment rate.

[Table 1 about here]

Chinese immigrants mainly take up elementary occupations while the majority of natives are white-collar workers. The middle part of Table 1 shows that all immigrant cohorts have higher percentages employed in elementary occupations than natives. Only

11 The pre-1987 cohort includes all immigrants who arrived in Hong Kong before 1987. With a big variation of duration stay in Hong Kong, its figure is not comparable.

around ten percent of the natives are elementary workers while the percentages are up to twenty five for male and forty five for female immigrant cohorts upon entry. Again, the proportion of female immigrants employed in elementary occupations is much higher than that of male immigrants in the same cohort. The gaps narrow for most cohorts as they stay longer. Generally, new arrivals after Hong Kong's handover had higher percentages than previous newcomers, but no stable increasing trend materialized throughout the four years of research.

The bottom part of Table 1 presents average monthly income ratio of Chinese immigrants and Hong Kong natives. All the immigrant cohorts earn significantly less than natives at each census year. Most male immigrant cohorts earn around 65~75% of native males workers, while the figure is much lower for female immigrants that most of female cohorts only earn around or less than half of female native workers. Over time, most of the gaps between immigrant cohorts and the natives in terms of earnings decrease. The relative income of new arrivals at their entry compared to natives is larger after 1997 than before for female immigrants, but the result is not consistent for male immigrants.

Multivariate Analysis Results

Labor market outcomes are also determined by several factors other than immigrant status. The disadvantages of Chinese immigrants shown above may come from their different distributions in language skills, education, occupation, and other personal characteristics. Therefore we conduct multivariate analyses in the following to clear up the effects of other factors. Since the pre-1987 arrivals include all immigrants with residence in Hong Kong more than 20 years, it is not plausible to compare these figures with other cohorts. This cohort is not included in my main explanations.

When explaining the coefficients of the synthetic immigrant cohorts in the following tables, two comparisons are made. First, for each synthetic cohort, coefficients across the four census and by-census years reflect the assimilation process of the corresponding cohort over time. Second, the first coefficient of each cohort provides information on the change to immigrant cohort quality.

Employment Status

In Table 2, we report estimated coefficients in binary logit models on the likelihood of being employed for Chinese immigrants and natives. When controlling other factors we found most newly arrived male and female immigrant cohorts were significantly much less likely to be employed than their native counterparts. One exception is the 1987-1991 female cohort. Hypothesis 1 is supported for males and largely supported for females. Within the same cohort, most male immigrants undertook a process of assimilation;[12] and so did female immigrants with the exception of the 1987-1991 cohort. Hypothesis 2 is largely supported for both male and female Chinese immigrants. The likelihood of newly arrived females being employed apparently became much lower after 1997, compared to natives, but the pattern was not clear for newly arrived males. Hypothesis 3 is supported by female immigrants and rejected by male immigrants.

[Table 2 about here]

The effects of other variables are not surprising. English is the official language in the colonial period, while Mandarin becomes more important after Hong Kong's return to China. My results demonstrate straightforward trends of a decreasing impact of English and an increasing effect of Mandarin on the chances of being employed. Married men are significantly more likely to have a job, while married women are quite the opposite. Older people are more likely to be employed. A higher educational level leads to a better chance of being employed.

Occupational Attainment

Given much higher percentages of elementary occupations for Chinese immigrants relative to Hong Kong natives, we now turn to analyze the likelihood of being employed in elementary occupations as a measurement of occupational attainment. The coefficients shown in Table 3 are in accordance with what we expected. All the newly arrived immigrant cohorts were significantly more likely to be trapped in elementary occupations than their native counterparts Hypothesis 1 is supported for both males and females. Within the same cohort, the immigrant assimilation process differed between males and females. For male immigrants, the likelihood of being employed in elementary occupations for the same cohort decreased over time, compared to male natives. For

[12] One exception is the 1992-1996 cohort.

female immigrants, only the 1987-1991 arrivals showed a process of assimilation. Hypothesis 2 is only plausible for male immigrants. Newly arrived male immigrants were more likely to be employed in elementary jobs than previous newcomers; in particular, the magnitude increased drastically after 1997, suggesting a decline in the quality of male immigrant cohorts. There is no clear pattern for female immigrants. Hypothesis 3 is applicable only for male immigrants.

[Table 3 about here]

The impacts of other variables are in accordance with my expectations. Individuals who can speak English or Mandarin are statistically less likely to be trapped in elementary occupations than those who can not. The advantage of English speakers becomes smaller and the advantage of Mandarin speakers becomes larger over time. Married people are less probable, and older people are more likely to be employed in elementary occupations. Education is negatively related to the likelihood of entering the lowest ranking occupations, and the advantages of middle school and high school relative to primary school or below tend to decline over time.

Earnings

Table 4 presents the OLS regression estimates on the natural logarithm of monthly income. Chinese immigrants of different cohorts were found to earn significantly less than Hong Kong natives upon their arrival, holding constant other variables. Specifically, male immigrants earned 18.9% ($e^{-0.209}$-1) to 32.8% ($e^{-0.398}$-1) less than male native workers, and female immigrants earned 14.2% ($e^{-0.153}$-1) to 21.8% ($e^{-0.246}$-1) less than their native counterparts upon arrival. Hypothesis 1 is strongly supported for both males and females. For the same immigrant cohort, the gap decreased as they stay longer. Hypothesis 2 is confirmed for both genders. Male immigrants had a higher assimilation rate than female immigrants. For instance, the relative income of the 1992-1996 male arrivals increased 11.2% ($e^{-0.136}$-$e^{-0.273}$) from 1996 to 2006, while the relative income of the same female cohort increased only 7.3% ($e^{-0.157}$-$e^{-0.246}$); the 1997-2001 male arrivals had a rise of 16.4% ($e^{-0.163}$-$e^{-0.377}$) in their relative income, while the same female cohort only had a rise of 5.3% ($e^{-0.169}$-$e^{-0.234}$). There is no clear decline in cohort quality after 1997. Hypothesis 3 is not supported.

[Table 4 about here]

As expected, language skills play a significant role in determining individual earnings. Workers who can speak English earn 15 %($e^{0.139}$-1) to 29 %($e^{0.252}$-1) more than those who cannot. Mandarin-speaking workers earn slightly more than non-Mandarin speakers. Over time, the advantage of English is decreasing while Mandarin becomes more of an advantage.

Relative to white-collar workers, the income of service and sales workers, elementary workers and other occupations is significantly much less. The gap between the lower ranking and the white-collar occupations has become even larger over time for both males and females, indicating a widening occupational earnings inequality over the past few decades. Take the elementary occupations for example, the monthly income of male elementary workers was 42.3% ($e^{-0.55}$-1) less than that of male white-collar workers in 1991, and the gap increased to 55.3%($e^{-0.805}$-1) in 2006; female elementary workers earned 34.4%($e^{-0.422}$-1) less than female white-collar workers in 1991, and the gap soared to 51.2%($e^{-0.718}$-1) in 2006. Married people earn more and older people are more likely to have a higher income. A higher educational level leads to significantly higher earning, compared with primary school or below.

Years to Equality in Earnings

Previous analyses confirm the assimilation hypothesis of Chinese immigrants with regard to earnings attainment. A question captures my curiosity concerning how many years it would take for an immigrant to catch up with a native. We calculate years to equality for Chinese immigrants in Table 5, using the method proposed by Bloom et al (1995). Given the different effects of language skills, comparisons are made between the immigrants who can speak English and those who can not, between the immigrants who can speak Cantonese and those who can not, and between the immigrants who can speak Mandarin and those who can not, all relative to the whole working native population. Controlled variables are not reported in this table, but presented in appendix Table A2.

The entry effect is the effect of a dummy variable with Chinese immigrant coded 1 and Hong Kong native 0. This is the difference in earnings between Chinese immigrants upon their arrival and their native counterparts, that is, when the residence of the immigrants in Hong Kong is less than 1 year. This entry effect is expected to be negative.

The assimilation effect is the impact of years after the immigrant's migration.[13] It reflects the average percentage change in immigrants' earnings for each year spent in Hong Kong, the net effect of any increases resulting from other labor market or personal characteristics. The assimilation effect is expected to be positive. The cohort effect is included to control the differences among Chinese immigrants of different entrant periods. It measures the average unobserved quality of particular immigrant cohort relative to the reference group, the pre-1987 immigrant cohort.

Years to equality are estimates of the average year it takes for each immigrant cohort to earn as much as their native counterparts. It is the number of years it takes for the positive assimilation effect to offset the negative entry effect; the net effect of changes to the quality of immigrant cohorts. Specifically, it is calculated by the absolute value of the sum of entry effect and cohort effect, divided by the assimilation effect. For example, the average year to equality for Chinese male immigrants who can speak English in Table 5 is 47.7. It is the absolute quotient dividing the sum of entry effect -0.260 and cohort effect -0.074 by assimilation effect 0.007.

[Table 5 about here]

All newly arrived immigrant cohorts with whatever language skills earn less than natives. The 2002-2006 arrivals who can speak English are exceptional among all the immigrants, as it takes around 9 years for males and 20 years for females to earn as much as Hong Kong natives. Other immigrant cohorts who can speak English would take more than 30 to 55 years to catch up with native workers in earnings attainment. Years to equality for those who can not speak English is at least 61 years for males and around 90 years for females, indicating there is almost no chance for them to get an income equal to the natives.

Male immigrants with Cantonese language skills would have to work for 44 to 51 years, and females for 53 to 63 years, to reach the income level of natives. An interesting contrast exists among the immigrants who can not speak Cantonese. Male immigrants show no sign of assimilation, as indicated by the insignificant coefficient of assimilation

[13] The open-ended interval in the 1991 census refers to immigrants who arrived prior to 1981 and these immigrants are assumed to have been in Hong Kong for 20 years; The open-ended interval in the 1991, 2001, 2006 census refers to immigrants who arrived prior to 1976, 1981, 1986 and they are assumed to have been in Hong Kong for 30 years.

effect, which means they can never get an income equal to that of the natives no matter how long they stay in Hong Kong. However, female immigrants have a fairly optimistic process of assimilation. The 1992-1996, 1997-2001 and 2002-2006 arrivals would overtake the natives in 18, 21 and 23 years correspondingly.

Differentials also exist between the immigrants who can speak Mandarin and those who cannot. For instance, the average year to equality of the pre-1987 cohort is 20 years more for those who cannot speak Mandarin than for those who can. This may be because immigrants who can not speak Mandarin have low educational level, and are most probably from rural areas. In general, it would take around 41 years for males and 48 years for females with Mandarin language skills to complete the assimilation process, while it seems that the non-Mandarin speakers could not be fully assimilated throughout their lives.

Overall, although the effect of English is decreasing and the impact of Mandarin is increasing over time, the advantages of speaking English still outweigh Mandarin for mainland arrivals post-1997.

Conclusions

Using a series of census and by-census data in Hong Kong, this paper examines the employment status, occupational and earnings attainment of Chinese immigrants in Hong Kong from 1991 to 2006. We test three hypotheses concerning the labor market outcomes for Chinese immigrants upon their arrival, the process of assimilation over time, and the change in the quality of immigrant cohorts in Hong Kong. Table 6 summarizes the analytical results of these hypotheses.

[Table 6 about here]

The employment status and occupational and earnings attainment of most new immigrants from mainland China are inferior to their native counterparts. Holding other factors constant, it is found that they were less likely to gain employment than natives; for those who had been able to get a job, they were more likely to work in the lowest ranking elementary occupations than natives. Furthermore, regardless of the occupational attainment, immigrants still earned much less than native workers upon their arrival.

As they stayed longer, most Chinese immigrants became assimilated into the local labor market. Their employment status tended to improve over time. The likelihood of

entering the elementary occupations declined for male immigrants as their duration of stay in Hong Kong extended out. The monthly income gap between Chinese immigrants and their native counterparts narrowed over time. The assimilation of Chinese immigrants results from several factors. First, they do not face problems caused by racial discrimination and cultural adjustment. Second, as they stay longer, they become more fluent in English and Cantonese, and gain more skills and experience specific to the local labor market. Third, they may be able to find better jobs given the probable mismatch by accepting any available jobs upon arrival (Ecksterin and Weiss 1998; Weiss et al. 2003). The improvement of their occupational and earnings attainment just reflects the fact that the immigrants recover from the downward occupational mobility immediately after immigration compared to their original status (Richmond 1967; Chiswick et al. 2002).

Given the assimilation of Chinese immigrants' earnings attainment, years to equality are calculated by immigrants' language skills using pooled data from 1991 to 2006. Although the gap between Chinese immigrants and native born workers in terms of earnings decreased over time in Hong Kong, most Chinese immigrants had little chance to earn as much as natives throughout their working lives.

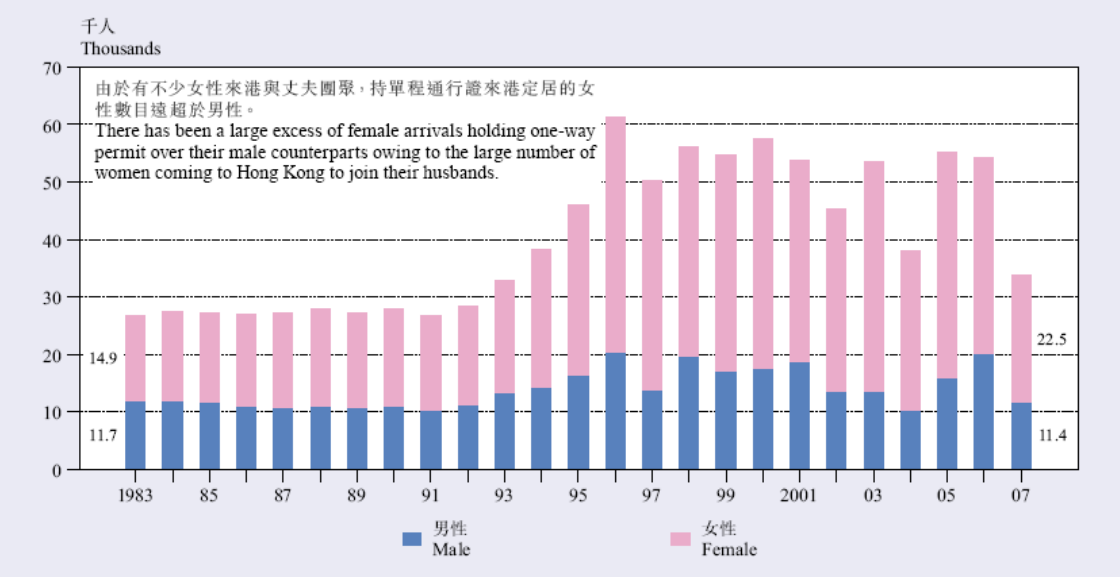
The above pattern differs by gender. First, all the labor market outcomes of the male immigrant cohorts were inferior to their native counterparts at the time of entry, while there was one exception for female immigrants. The 1992-1996 female cohort showed a significantly higher likelihood of being employed than their native counterparts upon arrival. Second, most male immigrants became assimilated into the local labor market in terms of occupational attainment as they stay longer, while most female immigrants did not. Third, male immigrants had a higher assimilation rate in terms of earnings than female immigrants.

The result of the effect of the change in cohort quality before and after Hong Kong's handover is not consistent. The newly arrived females after 1997 were less likely to be employed, which was not the case for males. The latest male entrants enjoyed a higher likelihood of entering the elementary occupations after 1997, which was not plausible for female immigrants. The relative earnings of both new male and female entrants were not significantly lower than previous entrants. Therefore, it is hard to draw a conclusion

about the change in quality of immigrant cohorts based on the political point in time of Hong Kong's handover.

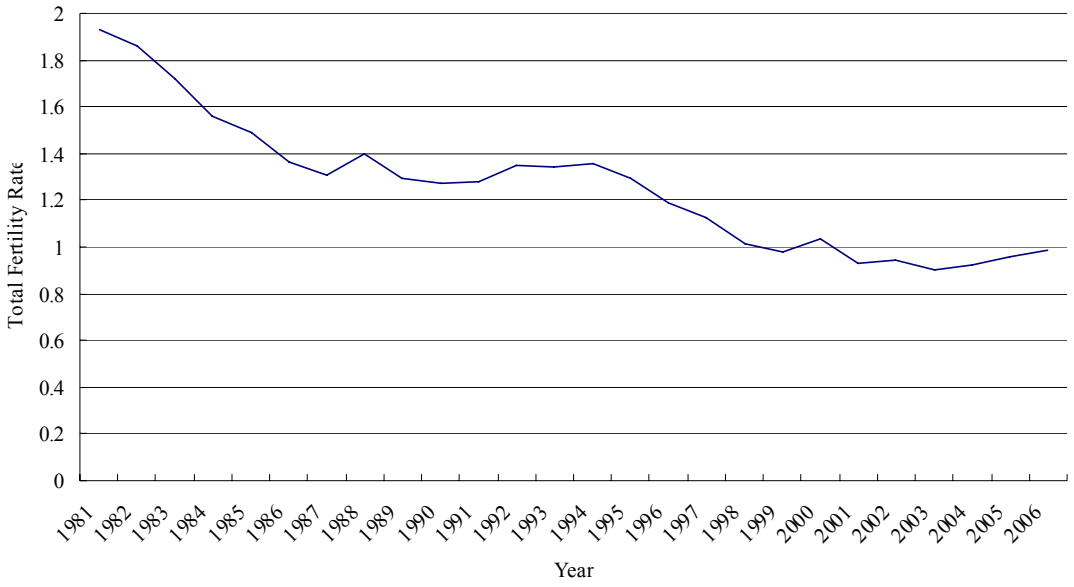
Two groups of Chinese immigrants in this study have piqued my curiosity. One is the Chinese female immigrants who arrived in Hong Kong between 1987 and 1991. They were not disadvantaged in gaining employment at the time of entry. As they stayed longer in Hong Kong, their employment status compared to natives worsened instead of improving as other cohorts do. While other female immigrant groups did not get assimilated in occupational attainment, this cohort behaved quite the opposite. The other interesting group of Chinese immigrants is the 2002-2006 arrivals who can speak English. It takes only 9.3 years for males and 20.4 years for females to overtake the natives, while most of other immigrant cohorts see little possibility to reach parity to the natives in earnings. Further study is required to explain the uncommon experience of these two groups of people; however this is out of the scope of this paper and is future study.

Figure 1 New Arrivals from the Mainland of China Holding One-way Permit



Source: Census and Statistics Department (CSD). 2008. *A Graphic Guide on Hong Kong's Development (1967-2007)*. Hong Kong: Government Printer.

Figure 2 Total Fertility Rate of Hong Kong 1981-2006



Source: Census and Statistics Department (CSD). 2007.*The Fertility Trend in Hong Kong, 1981 to 2006*. Hong Kong: Government Printer.

Figure 3 Illustration of the Coefficients of Synthetic Cohorts.

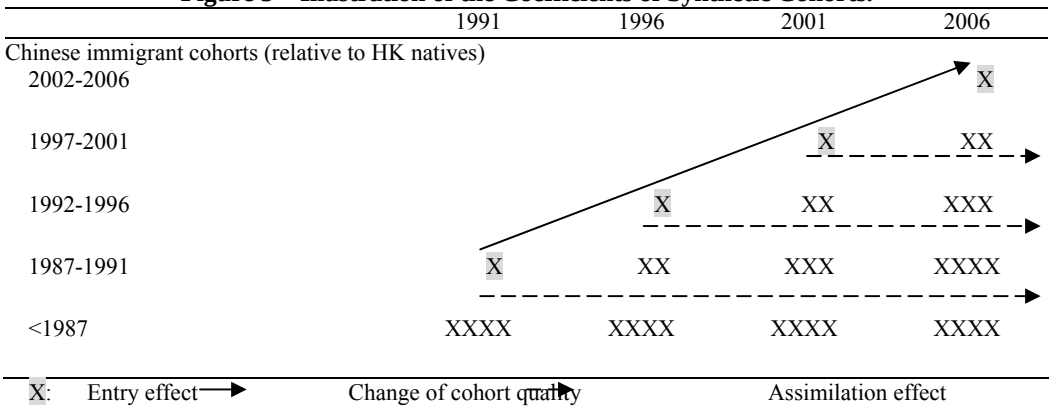


Table 1 Employment, Occupation and Monthly Income of Chinese Immigrants and HK Natives by Sex, 1991-2006 (25-64 Age Group)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Employment rate								
HK natives	94.8	94.7	92.0	90.3	62.7	63.6	67.9	68.5
Mainland immigrants (by cohort)								
2002-2006				85.3				42.6
1997-2001			81.0	86.4			44.1	52.3
1992-1996		93.3	89.7	88.7		49.2	52.6	57.6
1987-1991	80.7	94.9	91.0	89.2	55.8	54.6	57.2	59.7
<1987	87.6	86.2	82.0	77.0	41.4	41.0	45.2	46.0
Percentage employed in elementary occupations								
HK natives	11.3	10.3	9.7	9.9	10.6	10.5	10.3	9.7
Mainland immigrants (by cohort)								
2002-2006				25.1				31.3
1997-2001			23.0	22.4			45.4	43.9
1992-1996		17.7	18.3	17.1		27.5	33.9	35.0
1987-1991	22.1	15.6	16.4	14.3	31.2	33.3	32.0	29.2
<1987	23.1	22.8	22.7	20.8	35.9	32.0	31.9	30.8
Average monthly income ratio of Chinese immigrants to HK natives								
HK natives	100	100	100	100	100	100	100	100
Mainland immigrants (by cohort)								
2002-2006				75.1				51.5
1997-2001			71.2	69.4			41.9	44.0
1992-1996		84.4	73.1	70.1		60.6	51.1	52.3
1987-1991	64.0	73.0	65.8	66.3	50.8	53.6	52.2	57.4
<1987	72.3	71.6	70.1	73.1	63.1	65.3	64.5	68.0

Table 2. Binary Logit Models on Likelihood of Being Employed in Hong Kong, 1991-2006 (25-64 Age Group, Chinese Immigrants and Natives by Sex)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Chinese immigrant cohorts (relative to HK natives)								
2002-2006				-0.922*				-0.978*
				(0.086)				(0.036)
1997-2001			-1.113*	-0.394*			-0.428*	-0.342*
			(0.078)	(0.082)			(0.034)	(0.032)
1992-1996		-0.112	-0.291*	-0.384*		-0.149*	-0.078+	-0.064
		(0.103)	(0.087)	(0.065)		(0.044)	(0.036)	(0.034)
1987-1991	-1.199*	0.033	-0.124	-0.307*	0.235*	0.237*	0.156*	-0.008
	(0.083)	(0.104)	(0.078)	(0.063)	(0.045)	(0.042)	(0.041)	(0.040)
<1987	0.117*	-0.077*	-0.125*	-0.215*	0.012	-0.054*	-0.032	-0.137*
	(0.033)	(0.028)	(0.024)	(0.022)	(0.021)	(0.020)	(0.020)	(0.020)
Language skills [a]								
English	0.452*	0.435*	0.333*	0.231*	0.521*	0.544*	0.457*	0.328*
	(0.043)	(0.034)	(0.028)	(0.024)	(0.027)	(0.023)	(0.022)	(0.019)
Mandarin	0.087+	0.081*	0.133*	0.269*	0.087*	0.114*	0.129*	0.201*
	(0.037)	(0.028)	(0.022)	(0.020)	(0.023)	(0.019)	(0.017)	(0.016)
Married	0.791*	0.871*	0.968*	0.838*	-1.862*	-1.202*	-1.069*	-0.772*
	(0.037)	(0.034)	(0.029)	(0.027)	(0.036)	(0.028)	(0.026)	(0.022)
Age	0.265*	0.259*	0.205*	0.225*	0.123*	0.116*	0.146*	0.157*
	(0.011)	(0.009)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
$Age^2 \times 100$	-0.380*	-0.374*	-0.305*	-0.331*	-0.174*	-0.176*	-0.217*	-0.238*
	(0.011)	(0.010)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Education (reference: primary school or below)								
Middle school	0.301*	0.139*	0.182*	0.183*	-0.012	0.022	-0.077*	-0.003
	(0.036)	(0.031)	(0.026)	(0.026)	(0.025)	(0.023)	(0.022)	(0.022)
High school	0.537*	0.384*	0.504*	0.373*	0.559*	0.622*	0.427*	0.285*
	(0.042)	(0.035)	(0.030)	(0.028)	(0.027)	(0.024)	(0.024)	(0.022)
Tertiary	0.297*	0.321*	0.689*	0.492*	1.027*	0.994*	0.942*	0.728*
	(0.059)	(0.045)	(0.040)	(0.036)	(0.047)	(0.035)	(0.034)	(0.030)
Constant	-3.390*	-3.506*	-3.211*	-3.361*	1.274*	0.214	-0.265	-0.710*
	(0.214)	(0.191)	(0.165)	(0.159)	(0.153)	(0.146)	(0.148)	(0.142)
Pseudo R^2	0.169	0.167	0.132	0.127	0.154	0.163	0.158	0.146
N	71895	83364	87756	92148	65604	78106	86914	96465

Note: The dependent variable is a dummy variable with labor force participation coded as "1" and otherwise "0"; a, both language-skill variables are dummy variables; Standard errors are reported in parentheses; * $p<0.01$, + $p<0.05$.

Table 3 Binary Logit Models on Likelihood of Entering Elementary Occupations in Hong Kong, 1991-2006 (25-64 Age Group, Chinese Immigrants and Natives by Sex)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Chinese immigrant cohorts (relative to HK natives)								
2002-2006				1.281*				1.362*
				(0.100)				(0.068)
1997-2001			1.312*	0.891*			1.239*	1.311*
			(0.100)	(0.085)			(0.061)	(0.053)
1992-1996		0.665*	0.781*	0.643*		0.684*	0.742*	0.994*
		(0.092)	(0.091)	(0.075)		(0.082)	(0.063)	(0.056)
1987-1991	0.888*	0.391*	0.516*	0.389*	0.602*	0.623*	0.583*	0.765*
	(0.092)	(0.089)	(0.081)	(0.076)	(0.075)	(0.071)	(0.068)	(0.066)
<1987	0.142*	0.253*	0.235*	0.237*	0.184*	0.273*	0.330*	0.563*
	(0.027)	(0.026)	(0.027)	(0.028)	(0.039)	(0.038)	(0.037)	(0.037)
Language skills [a]								
English	-0.830*	-0.675*	-0.627*	-0.453*	-0.905*	-0.808*	-0.838*	-0.622*
	(0.040)	(0.035)	(0.035)	(0.031)	(0.069)	(0.054)	(0.049)	(0.040)
Mandarin	-0.053	-0.071*	-0.191*	-0.250*	-0.332*	-0.310*	-0.341*	-0.447*
	(0.031)	(0.027)	(0.026)	(0.025)	(0.048)	(0.040)	(0.035)	(0.031)
Married	-0.426*	-0.487*	-0.590*	-0.523*	0.389*	0.236*	0.152*	0.100+
	(0.032)	(0.033)	(0.036)	(0.035)	(0.059)	(0.055)	(0.051)	(0.044)
Age	-0.019+	-0.035*	-0.025+	-0.062*	0.161*	0.175*	0.213*	0.203*
	(0.010)	(0.010)	(0.011)	(0.011)	(0.015)	(0.016)	(0.018)	(0.017)
$Age^2 \times 100$	0.118*	0.062*	0.086*	0.086*	-0.144*	-0.101*	-0.118*	-0.154*
	(0.012)	(0.011)	(0.011)	(0.012)	(0.018)	(0.017)	(0.018)	(0.020)
Education (reference: primary school or below)								
Middle school	-0.459*	-0.404*	-0.362*	-0.237*	-0.576*	-0.670*	-0.712*	-0.433*
	(0.028)	(0.027)	(0.028)	(0.030)	(0.044)	(0.040)	(0.036)	(0.035)
High school	-1.099*	-1.070*	-1.023*	-0.887*	-1.668*	-1.941*	-1.934*	-1.635*
	(0.036)	(0.034)	(0.034)	(0.034)	(0.061)	(0.051)	(0.046)	(0.040)
Tertiary	-2.392*	-2.594*	-2.677*	-2.210*	-3.150*	-3.354*	-3.468*	-2.543*
	(0.094)	(0.076)	(0.078)	(0.063)	(0.168)	(0.129)	(0.121)	(0.078)
Constant	-0.583*	-0.333	-0.568+	0.148	-6.086*	-5.953*	-6.737*	-6.755*
	(0.196)	(0.203)	(0.224)	(0.222)	(0.321)	(0.352)	(0.387)	(0.369)
Pseudo R^2	0.134	0.152	0.164	0.133	0.322	0.351	0.381	0.335
N	63843	72918	73159	74818	34095	41966	50201	56393

Note: The dependent variable is a dummy variable with elementary occupations coded as "1" and otherwise "0"; a, both language-skill variables are dummy variables; Standard errors are reported in parentheses; * $p<0.01$, + $p<0.05$

Table 4. OLS Regressions on Log Income of Chinese Immigrants and Natives in Hong Kong by Sex, 1991-2006 (25-64 Age Group)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Chinese immigrant cohorts (relative to HK natives)								
2002-2006				-0.209*				-0.153*
				(0.023)				(0.015)
1997-2001			-0.377*	-0.163*			-0.234*	-0.169*
			(0.020)	(0.019)			(0.013)	(0.012)
1992-1996		-0.273*	-0.198*	-0.136*		-0.246*	-0.184*	-0.157*
		(0.018)	(0.018)	(0.015)		(0.016)	(0.013)	(0.012)
1987-1991	-0.398*	-0.234*	-0.138*	-0.115*	-0.231*	-0.204*	-0.152*	-0.143*
	(0.018)	(0.017)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)
<1987	-0.104*	-0.108*	-0.074*	-0.073*	-0.085*	-0.106*	-0.072*	-0.064*
	(0.005)	(0.005)	(0.005)	(0.006)	(0.008)	(0.007)	(0.007)	(0.008)
Language skills [a]								
English	0.222*	0.173*	0.167*	0.139*	0.252*	0.213*	0.247*	0.186*
	(0.006)	(0.005)	(0.006)	(0.005)	(0.008)	(0.007)	(0.007)	(0.006)
Mandarin	0.007	0.027*	0.008	0.041*	0.008	0.006	0.011+	0.019*
	(0.005)	(0.005)	(0.004)	(0.004)	(0.007)	(0.006)	(0.005)	(0.005)
Occupations (relative to white-collar workers)								
Service and sales workers	-0.245*	-0.274*	-0.275*	-0.331*	-0.224*	-0.217*	-0.275*	-0.357*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.010)	(0.009)	(0.008)	(0.007)
Elementary occupations	-0.550*	-0.603*	-0.643*	-0.805*	-0.422*	-0.429*	-0.464*	-0.718*
	(0.007)	(0.007)	(0.007)	(0.008)	(0.011)	(0.010)	(0.009)	(0.009)
Others	-0.360*	-0.402*	-0.404*	-0.491*	-0.427*	-0.346*	-0.385*	-0.453*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.011)	(0.012)	(0.014)
Married	0.244*	0.190*	0.246*	0.234*	0.030*	0.048*	0.050*	0.087*
	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Age ×10	0.705*	0.806*	0.880*	0.813*	0.559*	0.573*	0.722*	0.741*
	(0.017)	(0.018)	(0.019)	(0.019)	(0.024)	(0.024)	(0.024)	(0.024)
Age^2× 100	-0.085*	-0.093*	-0.099*	-0.086*	-0.066*	-0.064*	-0.080*	-0.079*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Education (reference: primary school or below)								
Middle school	0.075*	0.069*	0.074*	0.072*	0.064*	0.065*	0.054*	0.034*
	(0.006)	(0.006)	(0.006)	(0.007)	(0.009)	(0.009)	(0.009)	(0.009)
High school	0.112*	0.129*	0.148*	0.147*	0.227*	0.311*	0.316*	0.223*
	(0.006)	(0.007)	(0.007)	(0.008)	(0.010)	(0.010)	(0.010)	(0.009)
Tertiary	0.528*	0.546*	0.613*	0.527*	0.742*	0.806*	0.857*	0.700*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.013)	(0.012)	(0.011)	(0.011)
Constant	7.137*	7.444*	7.264*	7.283*	7.281*	7.650*	7.379*	7.334*
	(0.034)	(0.036)	(0.037)	(0.039)	(0.046)	(0.047)	(0.047)	(0.046)
R^2	0.42	0.41	0.43	0.41	0.48	0.45	0.49	0.46
N	61878	71814	72154	74162	32031	40912	49238	55528

Note: a, both language-skill variables are dummy variables; Standard errors are reported in parentheses; * p<0.01, + p<0.05.

Table 5. Entry, Assimilation, and Cohort Effects by Chinese Immigrants' Language Skills and Sex (25-64 Age Group, Pooled Regressions)

Dependent variable: Log income	Coefficient estimate				Years to equality			
	English		Non-English		English		Non- English	
	Male	Female	Male	Female	Male	Female	Male	Female
Entry effect	-0.260*	-0.182*	-0.305*	-0.269*				
	(0.020)	(0.026)	(0.009)	(0.011)				
Assimilation effect	0.007*	0.005*	0.005*	0.003*				
	(0.001)	(0.001)	(0.000)	(0.000)				
Cohort effect								
<1987(reference)					37.1	36.4	61.0	89.7
1987-1991	-0.074*	-0.095*	-0.033*	-0.043*	47.7	55.4	67.6	104.0
	(0.020)	(0.023)	(0.010)	(0.010)				
1992-1996	0.004	-0.063+	-0.037*	-0.053*	36.6	49.0	68.4	107.3
	(0.024)	(0.026)	(0.012)	(0.012)				
1997-2001	0.043	-0.069+	-0.114*	-0.052*	31.0	50.2	83.8	107.0
	(0.031)	(0.033)	(0.018)	(0.013)				
2002-2006	0.195*	0.080+	-0.106*	-0.047+	9.3	20.4	82.2	105.3
	(0.042)	(0.040)	(0.028)	(0.019)				
	Cantonese		Non-Cantonese		Cantonese		Non-Cantonese	
	Male	Female	Male	Female	Male	Female	Male	Female
Entry effect	-0.319*	-0.263*	-0.156*	-0.220*				
	(0.009)	(0.011)	(0.027)	(0.041)				
Assimilation effect	0.007*	0.005*	-0.002	0.005+				
	(0.000)	(0.000)	(0.001)	(0.002)				
Cohort effect								
<1987(reference)					45.6	52.6	-[a]	44.0
1987-1991	-0.017	-0.048*	-0.238*	0.010	48.0	62.2	-	42.0
	(0.010)	(0.010)	(0.036)	(0.042)				
1992-1996	-0.006	-0.052*	-0.053	0.128*	46.4	63.0	-	18.4
	(0.012)	(0.011)	(0.039)	(0.046)				
1997-2001	-0.041+	-0.048*	-0.150*	0.115+	51.4	62.2	-	21.0
	(0.016)	(0.013)	(0.048)	(0.053)				
2002-2006	0.010	-0.013	0.006	0.105	44.1	55.2	-	23.0
	(0.025)	(0.018)	(0.061)	(0.068)				
	Mandarin		Non-Mandarin		Mandarin		Non-Mandarin	
	Male	Female	Male	Female	Male	Female	Male	Female
Entry effect	-0.373*	-0.381*	-0.248*	-0.158*				
	(0.011)	(0.015)	(0.011)	(0.014)				
Assimilation effect	0.009*	0.008*	0.004*	0.002*				
	(0.000)	(0.001)	(0.000)	(0.001)				
Cohort effect								
<1987(reference)					41.4	47.6	62.0	79.0
1987-1991	-0.009	-0.019	-0.028	-0.044*	42.4	50.0	69.0	101.0
	(0.012)	(0.013)	(0.015)	(0.014)				
1992-1996	0.016	-0.004	-0.013	-0.054*	39.7	48.1	65.3	106.0
	(0.015)	(0.015)	(0.017)	(0.015)				
1997-2001	-0.012	0.004	-0.060*	-0.064*	42.8	47.1	77.0	111.0
	(0.021)	(0.017)	(0.023)	(0.016)				
2002-2006	0.015	0.032	0.066	0.019	39.8	43.6	45.5	69.5
	(0.031)	(0.023)	(0.035)	(0.025)				

Note: Entry effect is a dummy variable with Chinese immigrants coded as 1 and Hong Kong natives 0; Assimilation effect is the impact of years since migration; Years to equality is calculated by the absolute value of the sum of entry effect and cohort effect divided by assimilation effect; a, since the assimilation effect is not significant, years to equality can not be calculated for this group of people; Standard errors are reported in parentheses; * $p<0.01$, + $p<0.05$. Source: appendix table A2.

Table 6. Confirmation of the Three Hypotheses on Chinese Immigrants in Hong Kong, 1991-2006

	Hypothesis 1 Disadvantaged at arrival	**Hypothesis 2** Assimilation	**Hypothesis 3** Cohort decline after 1997
Male			
Employment status	√	√#	×
Occupational attainment	√	√	√
Earnings	√	√	×
Female			
Employment status	√*	√*	√
Occupational attainment	√	×	√
Earnings	√	√	×

Note: #, except the 1992-1996 cohort; *, except the 1987-1991 cohort.

Table A1. Percentages, Means, and Standard Deviations for Main Independent Variables by Sex and Year (25-64 Age Group)

	Male				Female			
Variables	1991	1996	2001	2006	1991	1996	2001	2006
Dichotomous Variables (percentages)								
Chinese immigrant cohorts (HK natives as reference)								
HK natives	52.2	59.2	63.1	67.9	55.5	60.5	61.6	63.3
2002-2006				0.9				4.4
1997-2001			1.1	1.2			5.6	5.5
1992-1996		1.3	1.3	2.0		3.4	4.7	4.6
1987-1991	1.6	1.5	1.8	2.1	3.9	3.7	3.6	3.4
<1987	46.3	37.9	32.7	25.8	40.6	32.4	24.5	18.8
Language skills (dummy variables)								
English	32.4	37.7	42.9	44.7	28.3	35.4	41.2	43.1
Mandarin	24.0	32.7	40.8	42.7	22.1	30.5	39.7	43.6
Occupations								
White-collar workers	33.5	40.2	43.3	45.6	47.1	58.7	61.1	62.1
Service and sales workers	12.8	13.2	13.9	14.3	11.6	14.0	16.2	17.7
Elementary occupations	16.7	14.9	13.9	12.9	19.4	16.9	17.4	16.5
Others	37.0	31.7	28.9	27.2	22.0	10.4	5.4	3.7
Marital Status								
Married	75.2	76.3	75.9	74.5	84.6	82.6	80.5	78.1
Education								
Primary or below	36.3	27.2	22.4	17.8	47.0	36.2	30.0	24.0
Middle school	23.0	24.3	25.3	24.1	17.1	18.3	19.4	19.7
High school	30.1	31.5	33.5	36.0	29.1	33.4	35.6	37.8
Tertiary	10.7	17.0	18.8	22.1	6.8	12.1	15.1	18.6
Continuous Variables (means)								
Age	40.6	41.3	42.3	43.5	40.3	40.7	41.7	42.9
	(11.3)	(10.6)	(10.3)	(10.4)	(11.4)	(10.6)	(10.1)	(10.1)
Years of schooling								
	9.6	10.5	11.0	11.6	8.4	9.5	10.2	11.0
	(4.2)	(4.2)	(4.1)	(4.1)	(4.7)	(4.6)	(4.5)	(4.4)

Table A2. Entry, Assimilation, and Cohort Effects by Chinese Immigrants' Language Skills and Sex (25-64 Age Group, Full Pooled Regressions)

Dependent variable:	English		Non-English		Cantonese		Non-Cantonese		Mandarin		Non-Mandarin	
Log income	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Entry effect	-0.260*	-0.182*	-0.305*	-0.269*	-0.319*	-0.263*	-0.156*	-0.220*	-0.373*	-0.381*	-0.248*	-0.158*
	(0.020)	(0.026)	(0.009)	(0.011)	(0.009)	(0.011)	(0.027)	(0.041)	(0.011)	(0.015)	(0.011)	(0.014)
Assimilation effect	0.007*	0.005*	0.005*	0.003*	0.007*	0.005*	-0.002	0.005+	0.009*	0.008*	0.004*	0.002*
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.000)	(0.001)
Cohort effect (reference: <1987)												
1987-1991	-0.074*	-0.095*	-0.033*	-0.043*	-0.017	-0.048*	-0.238*	0.010	-0.009	-0.019	-0.028	-0.044*
	(0.020)	(0.023)	(0.010)	(0.010)	(0.010)	(0.010)	(0.036)	(0.042)	(0.012)	(0.013)	(0.015)	(0.014)
1992-1996	0.004	-0.063+	-0.037*	-0.053*	-0.006	-0.052*	-0.053	0.128*	0.016	-0.004	-0.013	-0.054*
	(0.024)	(0.026)	(0.012)	(0.012)	(0.012)	(0.011)	(0.039)	(0.046)	(0.015)	(0.015)	(0.017)	(0.015)
1997-2001	0.043	-0.069+	-0.114*	-0.052*	-0.041+	-0.048*	-0.150*	0.115+	-0.012	0.004	-0.060*	-0.064*
	(0.031)	(0.033)	(0.018)	(0.013)	(0.016)	(0.013)	(0.048)	(0.053)	(0.021)	(0.017)	(0.023)	(0.016)
2002-2006	0.195*	0.080+	-0.106*	-0.047+	0.010	-0.013	0.006	0.105	0.015	0.032	0.066	0.019
	(0.042)	(0.040)	(0.028)	(0.019)	(0.025)	(0.018)	(0.061)	(0.068)	(0.031)	(0.023)	(0.035)	(0.025)
Occupations (relative to white-collar workers)												
Service and sales workers	-0.282*	-0.284*	-0.334*	-0.332*	-0.345*	-0.338*	-0.270*	-0.283*	-0.304*	-0.302*	-0.329*	-0.330*
	(0.004)	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Elementary occupations	-0.652*	-0.515*	-0.672*	-0.521*	-0.692*	-0.540*	-0.632*	-0.501*	-0.671*	-0.517*	-0.671*	-0.538*
	(0.005)	(0.006)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)
Others	-0.434*	-0.382*	-0.461*	-0.454*	-0.477*	-0.466*	-0.419*	-0.382*	-0.445*	-0.404*	-0.465*	-0.461*
	(0.004)	(0.007)	(0.003)	(0.006)	(0.003)	(0.005)	(0.004)	(0.007)	(0.003)	(0.006)	(0.003)	(0.006)
Married	0.255*	0.081*	0.265*	0.073*	0.259*	0.070*	0.257*	0.083*	0.259*	0.075*	0.263*	0.078*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Work experience [a]	0.033*	0.021*	0.021*	0.007*	0.023*	0.008*	0.032*	0.020*	0.029*	0.016*	0.025*	0.011*
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)
Work experience^2	-0.000*	-0.000*	-0.000*	0.000*	-0.000*	0.000	-0.000*	-0.000*	-0.000*	-0.000*	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years of schooling	0.079*	0.109*	0.054*	0.082*	0.057*	0.084*	0.081*	0.110*	0.069*	0.099*	0.063*	0.091*
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Year (relative to 1991)												
1996	0.436*	0.499*	0.450*	0.507*	0.440*	0.501*	0.443*	0.502*	0.449*	0.509*	0.442*	0.503*
	(0.004)	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.005)
2001	0.528*	0.578*	0.557*	0.594*	0.545*	0.588*	0.531*	0.579*	0.547*	0.593*	0.544*	0.584*
	(0.004)	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
2006	0.390*	0.474*	0.448*	0.512*	0.434*	0.506*	0.395*	0.474*	0.427*	0.501*	0.421*	0.492*
	(0.004)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Constant	7.530*	7.188*	7.959*	7.690*	7.936*	7.669*	7.501*	7.185*	7.702*	7.381*	7.817*	7.524*
	(0.010)	(0.012)	(0.008)	(0.010)	(0.008)	(0.010)	(0.010)	(0.012)	(0.009)	(0.011)	(0.009)	(0.011)
Observations	198296	134916	260942	166618	277579	176001	181659	125533	221004	148240	238234	153294
R-squared	0.46	0.48	0.47	0.52	0.47	0.51	0.47	0.49	0.45	0.48	0.49	0.52

Note: Entry effect is a dummy variable with Chinese immigrants coded as 1 and Hong Kong natives 0. Assimilation effect is the impact of years since migration. a, work experience = age – years of schooling – 6. Standard errors are reported in parentheses. * p<0.01, + p<0.05.

References

Baker, Michael, and Dwayne, Benjamin. 1994. "The Performance of Immigrants in the Canadian Labor Market." Journal of Labor Economics 12:369-405.

Bloom, David E., G., Grenier, and M., Gunderson. 1991. "An Analysis of the Earnings of Canadian Immigrants." Pp. 321-342 in *Immigration trade and the Labor Market*, edited by John M., Abowd and Richard B., Freeman. Chicago: University of Chicago Press.

Bloom, David E., G., Grenier, and M., Gunderson. 1995. "The Changing Labor Market Position of Canadian Immigration." *The Canadian Journal of Economics* 28: 987-1005.

Borjas, George J. 1982. "The Earnings of Male Hispanic Immigrants in the United States." *Industrial and Labor Relations Review* 35: 343-53.

Borjas, George J. and Marta, Tienda, ed. 1985. *Hispanics in the U.S. Economy*. New York: Academic Press.

Borjas, George J. 1985. "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants." *Journal of Labor Economics* 3:463-489.

Borjas, George J. 1987. "Self-Selection and the Earnings of Immigrants." *American Economic Review* 77: 531-53.

Borjas, George J. 1995. "Assimilation and Changes in Cohort Quality Revisited: What Happened to Immigrant Earnings in the 1980s?" *Journal of Labor Economics* 13: 201-245.

Carliner, Geoffrey. 1980. "Wages, Earnings, and Hours of First, Second and Third Generation American Males." *Economic Inquiry* 18: 87-102.

Census and Statistics Department (CSD). 2007a.The Fertility Trend in Hong Kong, 1981 to 2006. Hong Kong: Government Printer.

Census and Statistics Department (CSD). 2007b. Marriage and Divorce Trends in Hong Kong,1981-2006. Hong Kong: Government Printer.

Chan, Mow Chiu, Siu-ying Lau, Man Tak Yuen, Siu Wai Wu, and Kin Yuen Ip. 2003. "Theme One: Acculturation of young arrivals from the Mainland." Pp1-127 in *Acculturation of young arrivals from the Mainland*, edited by Mow Chiu Chan, Siu-ying Lau, Man Tak Yuen, Siu Wai Wu, and Kin Yuen Ip. Hong Kong: Center for Educational Development, Hong Kong Baptist University. [In Chinese]

Chiswick, Barry R. 1979. “The Economic Progress of Immigrants: Some Apparently Universal Patterns.” Pp.357-399 in *Contemporary Economic Problems*, edited by W. Fellner. Washington DC: The American Enterprise Institute.

Chiswick, Barry R., Yew L., Lee and Paul W., Miller. 2002. “Longitudinal Analysis of Immigrant Occupational Mobility: A Test of the Immigrant Assimilation Hypothesis,” IZA Discussion Paper No. 452. Available at SSRN: http://ssrn.com/abstract=305371

Chiu, Stephen W. K., Susanne Y.P., Choi and kwok-fai Ting. 2005. “Getting Ahead in the Capitalist Paradise: Migration from China and Socioeconomic Attainment in Colonial Hong Kong.” *The International Migration Review* 39:203-227.

Chiu, Stephen W.K., K.C., Ho and T. L., Lui. 1997. *City States in Global Economy: Industrial Restructuring in Hong Kong and Singapore*. Boulder,CO: Westview Press.

Constant, Amelie and Douglas S., Massey. 2005. “Labor Market Segmentation and the Earnings of German Guestworkers.” *Population Research and Policy Review* 24:489-512.

Defreitas, Gregory. 1980. “The Earnings of Immigrants in the American Labor Market.” Ph.D. Dissertation, Columbia University.

Eckstein, Zvi and Yoram, Weiss. 1998. “The Absorption of Highly Skilled Immigrants: Israel, 1990-1995.” Working Paper No. 140, George J. Stigler Center for the Study of the Economy and the State, University of Chicago.

Green, D.A. 1999. “Immigrant occupational attainment: assimilation and mobility over time.” *Journal of Labor Economics* 17: 49–79.

Ho, Richard Yan-ki. 2005. “The Hong Kong Economy since the 1980s.” Pp.43-50 in *Social Development in Hong Kong*, edited by Richard J., Estes. Hong Kong: Oxford University Press (China) Ltd.

Lalonde, Robert J., and Robert H., Topel. 1992. “The Assimilation of Immigrants in the U.S. Labor Market.” Pp.67-92 in *Immigration and the Work Force*, edited by George J., Borjas and Richard B. Freeman. Chicago: University of Chicago Press.

Lam, Kit-Chun, 1986. “Imperfect Information, Specificity of Schooling and Rate of Return Migration.” *Economic Letters* 21, 283-289.

Lam, Kit Chun and Pak Wai, Liu. 1993. *Are Immigrants Assimilating Better Now than a Decade Ago?* Hong Kong: Hong Kong Institute of Asia-Pacific Studies, the Chinese University of Hong Kong.

Lam, Kit Chun and Pak Wai, Liu. 1998. *Immigration and the economy of Hong Kong*. Hong Kong: City University of Hong Kong.

Lam, Kit Chun and Pak Wai, Liu. 2002. "Earnings Divergence of Immigrants." *Journal of Labor Economics* 20: 86-101.

Liu, Pak Wai, Junsen, Zhang and Shu-Chun Chong. 2004. "Occupational Segregation and Wage Differentials between Natives and Immigrants: Evidence from Hong Kong." *Journal of Dgevelopment Economics* 73:395-413.

Lui, Hon-Kwong, 1997. *Income Inequality and Economic Development*. Hong Kong: City University of Hong Kong.

Richmond, Anthony H. 1967. *Post-ear Immigrants in Canada.* Toronto: University of Toronto Press.

Wan, Shuk-fong. 2001. *JieDu Yimin XIn-Those Moving between Cultures*. Hong Kong: Breakthrough. [in Chinese]

Weiss, Yoram, Robert M., Sauser and Menachem, Gotlibovski. 2003. "Immigration, Search and Loss of Skill." *Journal of Labor Economics* 21: 557-591.