Mainland Chinese Migrant Earnings: Convergence or Divergence

by

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Economic Assimilation or Earnings Convergence

It is a commonly held view that migrants earn less than the native born when they arrive in the destination country but over time they are able to reduce this earnings gap. This process is known as economic assimilation. The concept of assimilation has many dimensions. In this book we analyze only economic assimilation and its related aspects. Other dimensions such as cultural affinity, ethnic identity, social distance, political affiliation and value integration will not be explored. Defined in a narrow sense, economic assimilation is a process whereby a migrant who has stayed in the destination country for an extended period of time earns more than an observationally equivalent migrant who has stayed a shorter period of time, thereby closing the earnings gap with respect to the native born. Alternatively, we may take a broader view of the process of the convergence of the migrant earnings with the native-born earnings over time, the human capital characteristics of the migrants and the native-born not being held fixed in the comparison.[1] Assimilation or convergence is an important narrative in many societies that receive a large number of migrant.[2] This narrative is often embellished with real life stories of migrants who have become very successful in the destination countries. Hong Kong is not short of such narratives.

[1] For a discussion of the narrow definition of assimilation and the broad concept of convergence, refer to Lam and Liu (2002b).
[2] See for instance Sowell (1983) which is an important narrative of the experiences and assimilation of immigrants groups in the U.S..

There are at least three major economic factors behind earnings convergence/divergence between the migrants and the native-born.

1.   *Specificity and Transferability of Human Capital*

The human capital which the migrants bring with them from the origin country, on the one hand, may not be transferable to the destination country. The education and skills they acquire in the origin country may not be productive in the destination country in which case their earnings fall behind the earnings of observationally equivalent native-born, resulting in earnings divergence. On the other hand, after arrival in the destination, migrants acquire skills specific to the destination country which they do not possess before migration. The most commonly cited observable country-specific skill is local language proficiency. Other less observable skills include cultural and social skills, knowledge of the local business environment and information of the local labour market. These skills acquired over time after arrival enhance the migrants' market productivity and therefore earnings, contributing to earnings convergence. This is the main economic reasoning behind economic assimilation narrowly defined.

2.   *Cohort Effect*

The characteristics of the migrant arrival cohorts, in terms of their education background, skills, experience and ethnic composition, change over time. This may be due to changes in the source countries of migrants but is more likely due to changes in the immigration policies which select migrants of different characteristics. Specifically, the "quality" of migrant arrival cohorts may deteriorate or improve over time. Here the term quality is used to mean narrowly human capital and skills productive in the labour market of the destination country. The change in migrant cohort quality underpins the earnings convergence/divergence. Earnings convergence is a reflection of improving migrant cohort quality over time and conversely for divergence.

3.   Macroeconomic Time Effect

Over time there could be macroeconomics changes in the economy of the destination country that are more favourable or more detrimental to the skills possessed by the migrants than the native-born, resulting in earnings convergence/divergence.

There are other hypotheses on convergence/divergence that we will not go into details in this book. For instance, there is the job matching hypothesis that convergence takes place over time as migrants acquire more local labour market information which improves job matching and therefor earnings. Another hypothesis attributes convergence/divergence to the lessening/intensifying labour market discrimination with regard to migrants. We will not go into details as these hypotheses are either very short term in nature as in the job matching model within the context of our analysis covering several decades, or they are not relevant in Hong Kong.[3]

Literature on Earnings Convergence

Early studies of the labour market performance of migrants in the U.S. seem to support the notion that migrants catch up with the native-born in the U.S. after 10-20 years in the country (Higgs 1971; McGouldrick and Tannen 1977; Chiswick 1978; Blau 1980). Specifically, Chiswick shows that five years after immigration, the wage of male migrants is 10% below the wage of U.S. born men. After about 13 years in the country, migrants' wage converges to that of the U.S. born and after 23 years, migrants' wage is 6% higher. Assimilation as represented by wage convergence is attributed to the acquisition of country-specific human capital by the migrants after arrival in the destination country that enhances their wage relative to the wage of the native-born. Skills specific to the destination country may include social and cultural skills, knowledge of the local labour market that improves job matching and more importantly the acquisition of English language fluency which enhances productivity of the migrants and raises their relative wage.

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[3] There is no issue of racial discrimination here as Mainland Chinese migrants and the Hong Kong-born share the same ethnicity, language and a similar culture.

Chiswick's analysis, like the earlier studies, is based on comparing earnings in a single cross section. In a cross-sectional analysis a significant wage growth observed for immigrant cohorts with a longer duration of stay in the destination country could be the result of a decline in the skills and abilities of recent arrival cohorts relative to the earlier cohorts. Borjas (1985, 1995) compares the arrival cohorts using the 1970 and 1980 census data and shows that half of the convergence measured by Chiswick in a cross section is driven by a decline in cohort "quality" over time. He highlights the importance of the cohort effect in measuring assimilation. Subsequent work on assimilation mostly use synthetic panels or longitudinal data to isolate the cohort effects and typically find a smaller assimilation effect than reported in analysis based on a single cross section. The origin countries of the migrants are important as they affect their entry earnings in the destination countries. For instance, Borjas (1994, 1995) finds that immigrants do not assimilate quickly. Based on a longitudinal analysis of migrant earnings, Lubotsky (2007) points out that the migrant-native earnings gap closes by only 10-15 percent during the migrants' first 20 years in the U.S. which is about half the rate estimated from repeated cross sections of the censuses. He posits that selective emigration of low-wage migrant causes over-estimation of the wage of migrants who remain. LaLonde and Topel (1992), however, find strong evidence of assimilation for most ethnic groups of migrants in the U.S.. Overall migrant quality did decline, largely as a result of changes in the ethnic composition of new migrants. The differential experience in assimilation and the transferability of human capital of migrants from different countries of origin are analyzed in a number of studies for Germany (Basilio, Bauer and Kramer, 2017), Sweden (Edin, LaLonde and Aslund, 2000), Norway (Longva and Raaum, 2003) and Spain (Izquierdo, Lacuesta and Vegas, 2009).

Other recent studies on migrant labour market performance also find that the rate of wage convergence is modest. Baker and Benjamin (1994) find evidence of modest assimilation in Canada in the 1971, 1981 and 1986 censuses. In fact many arrival cohorts experience no earnings growth over this period. Frenette and Morissette (2005) cast doubt on whether Canadian migrants will ever converge to the native in earnings. Abramitzky, Boustan and Eriksson (2014) find little evidence that immigrants converge with natives in the U.S. but instead document substantial persistence of the initial earnings gap between the two groups over the life cycle which persist into the second generation. Borjas (2015) uses data from 1970-2010 U.S. censuses and finds evidence in the slowdown in economic assimilation of migrant. Migrants who arrived before 1980 narrowed their wage gap relative to the native-born by 15 percentage points in two decades but migrants who entered after 1980 have a much lower rate

of assimilation while those who arrive in the 1990s experience no assimilation at all. Borjas attributes the decline in assimilation to a reduction in the rate of human capital accumulation among new migrants, specifically a decline in the rate of acquisition of the English language as evidenced by the slowdown in the rate of increase in English fluency of recent arrival cohorts in the first decade in the U.S.

Besides the impact of the cohort effect on wage convergence, there have been studies on the impact of the time effect on relative earnings. Specifically, macroeconomic changes may affect the earnings of migrants and the natives to a different extent. Barth, Bratsberg and Raaum (2004) investigate the influence of macroeconomic conditions on the assimilation of migrants in Norway. Borjas (2015) also raises the possibility that changes in the macroeconomic condition could affect the wages of migrants and the native-born differently and hence the wage gap but shows that it cannot account for the severe decline in the rate of assimilation. The differential impact of macroeconomic changes on migrant and native-born earnings, as we will show, is an important factor in earnings divergence/convergence over time in Hong Kong.

Literature on Earnings Convergence/Divergence in Hong Kong

The experience of Mainland migrants integrating into the Hong Kong labour market is very different from the wage convergence reported in the literature for the U.S. and Canada. Instead of convergence, there is actually divergence between the migrants and the Hong Kong-born for an extended period of time. Lam and Liu (2002a) report that from 1981 to 1991 there has been earnings divergence between the male Mainland migrants and the Hong Kong-born with the gap widening from 11.3% to 25.5%. By decomposing the intercensal change in the earnings gap between the Hong Kong-born and the migrants, they find that the widening of the earnings gap is mainly due to the relative decline in the returns to schooling of the migrants. They attribute the relative deterioration of the migrants' returns to schooling (or skill prices) to the macroeconomic forces at play. During this period the economic restructuring of Hong Kong shifted the demand for workers from manufacturing toward the service sector as manufacturing production was relocated across the border to the Pearl River Delta. The skills and schooling which the pre-1981 migrants acquired on the Mainland were not productive in the emerging high value-added service industries in Hong Kong. Hence earnings between the migrants and the Hong Kong born diverge rather than converge. In essence the human capital which migrants acquired in the Mainland depreciated in Hong Kong.

Subsequent studies by Zhang and Wu (2011), Ou and Pong (2013) and Post et al. (2015) all focus on the change in the relative returns to schooling of migrants and the Hong Kong-born as the key driver to earnings divergence/convergence over different census periods.[4] Their results are varied. Zhang and Wu (2011) find migrants' earnings disadvantage relative to the natives diminishes over time, albeit that the rate of convergence is slow, in their samples of individuals aged 25-64. Ou and Pong (2013), however, finds overall earnings diverge in their samples of age 15-50 but the outcome varies with the skill level with divergence for the high-skilled workers but convergence for the low-skilled workers.[5] Working on samples of age 20-49, Post et al. (2015) shows that the earnings gap between the Hong Kong-born and the Mainland migrants widen from 1991 to 2016, after controlling for the effects of language, age and education.

From Divergence to Convergence, 1981-2016

It should be pointed out that the early study of Lam and Liu (2002a) pertains to the earnings experience in 1981-1991 of Mainland migrants who arrived Hong Kong before 1981. Arrival cohorts after the abolition of the reached-base policy in October 1980 are very different. It is therefore important to control for the cohort effect, to differentiate arrival cohorts, especially cohorts of more recent years, as they are very different in quality. We should also take into consideration the time effect as our analysis spans over four decades during which macroeconomic changes will almost certainly have differential impacts on the returns to the human capital of the migrants and the Hong Kong-born.

In this paper we will make use of the broad concept of earnings convergence/divergence and analyze the change in the earnings gap. We will address the following issues. What is the earnings experience of the later arrival cohorts of Mainland migrants in comparison to the Hong Kong-born in the decades after 1991? Do migrants' earnings continue to diverge beyond 1991 to 2016 or do they converge? What factors contribute to the divergence/convergence?

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[4] Zhang and Wu (2011) analyzes 5% samples of the 1991 to 2006 censuses. Ou and Pong (2013) works on a 20% random sample of the full micro census dataset (1/7 of population) of the 1996, 2001 and 2006 census. Post et al. (2015) studies a 5% census sample from 1991 to 2011.
[5] High-skilled is defined as schooling level of Form 6 or above whereas low-skilled refers to lower secondary education or below.

Since the censuses do not have information on the hours of work, we use the monthly earnings variable instead of the hourly wage variable. A simple way to represent the earnings gap between the Mainland migrants and the Hong Kong-born is their relative earnings, as measured by the ratio of the average earnings of migrants to the average earnings of the Hong Kong-born[6]. The difference between unity and the ratio is the (average) earnings gap expressed as a fraction of the average Hong Kong-born earnings. By tracking the average earnings ratio we can ascertain whether there is earnings divergence or convergence. A fall in the ratio indicates divergence as migrants' average earnings become a smaller percentage of the Hong Kong-born's average earnings. By corollary, an increase in the ratio indicates convergence.

Table 1 and Figure 1 show the migrant/Hong Kong-born average earnings ratio from 1971 to 2016 by gender. For the whole group irrespective of educational attainment, the average earnings of male migrants are only 82.5% of the Hong Kong-born in 1971 and 89.4% in 1981. Over the next two decades, while the average earnings of both groups increase, the relative earnings of the migrants decline, falling to only 73.0% of the Hong Kong-born in 2001. Earnings divergence is evident. Earlier on, Lam and Liu (2002a) reports earnings divergence of pre-1981 male migrants over the decade 1981-1991. Extension of the analysis shows that divergence persists for another decade from 1991 to 2001. In the 1980s and 1990s male Mainland migrants actually become less economically integrated in Hong Kong. The average earnings gap between the Mainland migrants and the Hong Kong-born actually widens. This finding of divergence is at variance with U.S. and Canadian studies that show convergence at a slow rate or no convergence but not divergence. It is not consistent with the view that migrants' acquisition of country-specific human capital or job market information enhances their earnings and narrows the earnings gap shortly after their arrival. The turning point appears after 2001 as the average earnings ratio begins to rise and earnings convergence emerges. The ratio rises continuously from 2001 reaching 77.8% in 2016 but it is still lower than the initial ratio in 1971. After two decades of earnings divergence from 1981 to 2001, there has been 15 years of gradual convergence up to 2016.

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[6] Another common measure of the earnings gap is the log difference between the migrant earnings and the Hong Kong-born earnings. For the purpose of this paper, it is easier to visualize the earnings gap as the ratio of average earnings.

Table 1: Migrant/Hong Kong-born Average Earnings Ratio, 1971–2016 (%)

	1971	1981	1986	1991	1996	2001	2006	2011	2016
Male	82.5%	89.4%	86.8%	78.5%	76.3%	73.0%	75.0%	74.2%	77.8%
Female	87.6%	76.1%	74.3%	68.3%	69.8%	61.7%	62.9%	60.7%	65.1%

Figure 1: Trend in Migrant/Hong Kong-born Average Earnings Ratio, 1971–2016 (%)

Source: Hong Kong Census and By-Census. Hong Kong-born's earnings = 100%.
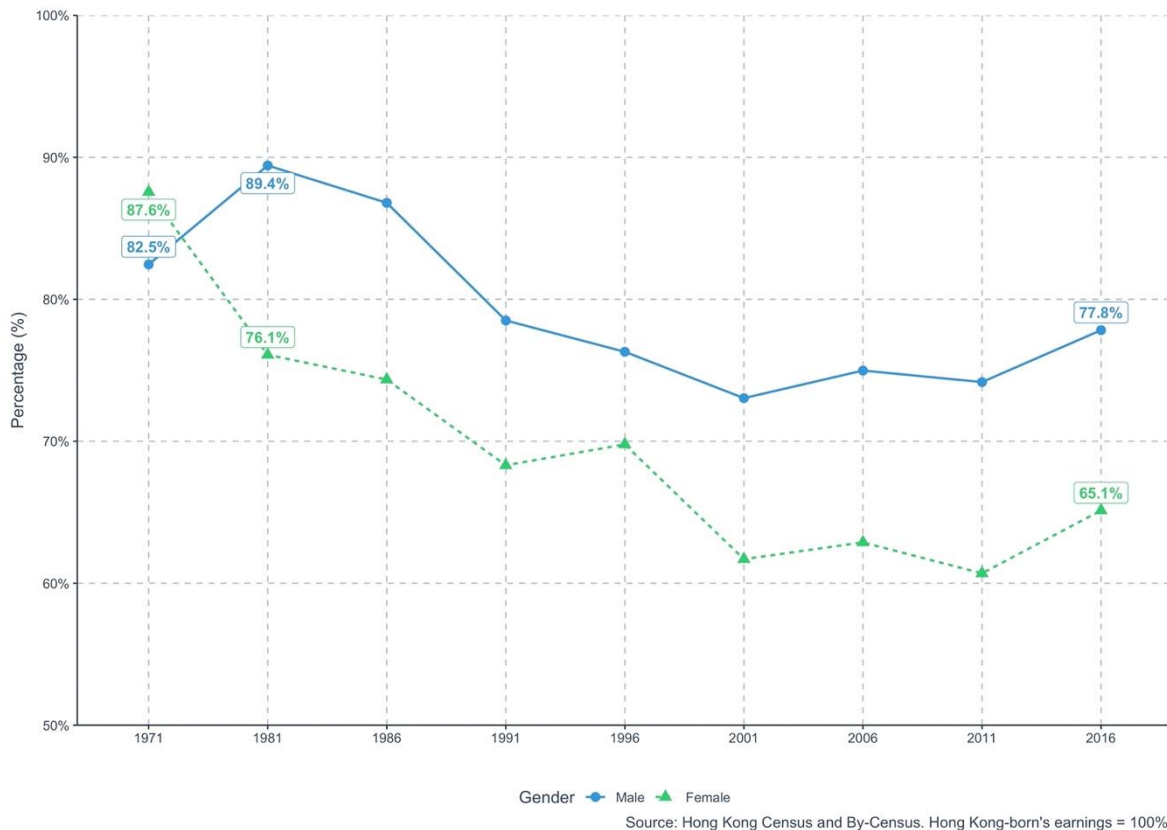
Except for 1971 the female migrants' average earnings ratios are smaller than the male ratios in all years, implying a larger female earnings gap between the migrants and the Hong Kong-born. The larger earnings gap maybe attributable to the lower educational attainment and skill levels of the female migrants relative to the female Hong Kong-born in comparison to the male case. This is because for an extended period of time, female Mainland migrants mostly come to Hong Kong for family reunion under the One-way Permits Scheme. In 2001, over 40% of the OWP migrants have primary or below level of education. It is only after 2001 that this percentage drops sharply. Also starting from 2003 the number of Mainland migrants admitted under the Admission Scheme for Mainland Talents and Professionals starts to increase. Migrants admitted under this scheme must have a university degree and no doubt many of them

are females. It should be noted that the divergence of female migrant earnings continues until 2011, a decade after the male migrants, before there is a clear sign of convergence.

Economic Interpretation of the Intertemporal Change in Relative Earnings

The change in the average earnings ratio could be due to relative changes in the quantity of human capital and their returns of the migrants vis-à-vis the Hong Kong-born. Some of these changes have opposite effects on the relative earnings. For instance, over time if the average educational attainment level of the stock of migrants in Hong Kong improves relative to the Hong Kong-born, that could explain the increase in the average earnings ratio. This could happen if there is a large inflow of new arrivals who are better educated. The converse is true in the case of earnings divergence. This suggests that we should investigate the cohort effect, especially given that there have been significant changes in the human capital characteristics of migrants and quality has risen over time. Furthermore, migrants may be acquiring specific human capital in Hong Kong which enhance their earnings capacity over time, as posited by some studies as the driving force behind economic assimilation. A countervailing effect, however, is the depreciation or obsolescence of the human capital which migrants acquired in the Mainland upon their arrival in the Hong Kong and entry into the labour market as pointed out in Lam and Liu (2002a). This lowers migrant relative earnings. Complicating the change in the earnings ratio further are macroeconomic changes over time which may have differential impact on the prices of observed skills (such as educational attainment and work experience) as well as unobserved skills possessed by migrants and the Hong Kong-born.

The decade of the 1970s was the heyday of Hong Kong manufacturing. It was also a period of a large influx of illegal immigrants (mostly male) before the abolition of the reached-base policy. The arrival of a large number of young, hard-working low-skilled male workers from the Mainland who are productive in manufacturing jobs and keen to make a living in Hong Kong may explain the rise in the relative earnings of the less educated male migrants from 1971 to 1981. As Lam and Liu (2002a) suggest, in the 1980s the economic restructuring from manufacturing to service has a negative impact on the return to the migrant human capital acquired in the Mainland, which accounts for the earnings divergence from 1981 to 1991. The skills and work experience of the migrants are more productive in manufacturing production than in providing services. The restructuring continues into the 1990s and is by and large complete by the turn of the century when nearly all manufacturing has relocated across the

border into the Pearl River Delta. This is consistent with persisting earnings divergence of the migrants beyond 1991 to 2001, albeit at a slower rate than the previous decade. From 1981 to 2001, there has been plenty of time for the old migrants to acquire skills specific to Hong Kong to enhance their earnings. Persistent divergence suggests that specific human capital is not a significant factor in migrant relative earnings in Hong Kong. Assimilation is either insignificant or non-existent. Acquisition of specific human capital is not the narrative behind migrant relative earnings during this period. Quite the opposite, the depreciation or obsolescence of migrant human capital from the Mainland drives earnings divergence.

Earnings convergence of the male migrants nevertheless begins from 2001 and the female migrants from 2011. It could be due to a relative improvement in the returns to migrants' skill as Hong Kong' economy becomes more integrated with the Mainland'sThe rising quality of new migrant cohorts, especially the university-educated migrants, underpins the increase in relative earnings after 2001 for males and 2011 for females. The infusion of a sizeable number of new migrants who earn local university degrees under the IANG scheme after 2007 is also a factor contributing to closing the earnings gap.

To summarize, the Mainland-specific human capital which the old migrants possess and the new migrants bring with them depreciates in value in the 1980's and the 1990's as Hong Kong transformed from a manufacturing economy to a service economy. However, as the Hong Kong economy becomes more integrated with the Mainland economy in the 2000's and after, Mainland-specific human capital becomes relatively more productive. The prices of Mainland-specific skills like Putonghua fluency, social and cultural skills and the understanding of the behavior of Mainland consumers and business practices increase. This interpretation provides a plausible explanation of the intertemporal change in migrant relative earnings from 1981 to 2016.

There are alternative hypotheses of what drives the change in the relative earnings leading to earnings convergence. The conventional hypothesis is that the accumulation of human capital specific to the destination country after the arrival of the migrants will enhance their earnings contributing towards earnings convergence. Alternatively, rising quality of the new migrant cohorts over time will also eventually close the earnings gap between the migrants and the Hong Kong-born. In the case of Hong Kong the conventional specific human capital view is not supported, as there have been two decades or longer of earnings divergence before

earnings mildly converge. The period of divergence before convergence is much longer than what has been posited in the conventional hypothesis. To test whether the rising quality of the new migrant cohorts is the factor behind convergence, we will have to control for the cohort effect. We will return to this point in the subsequent sections.
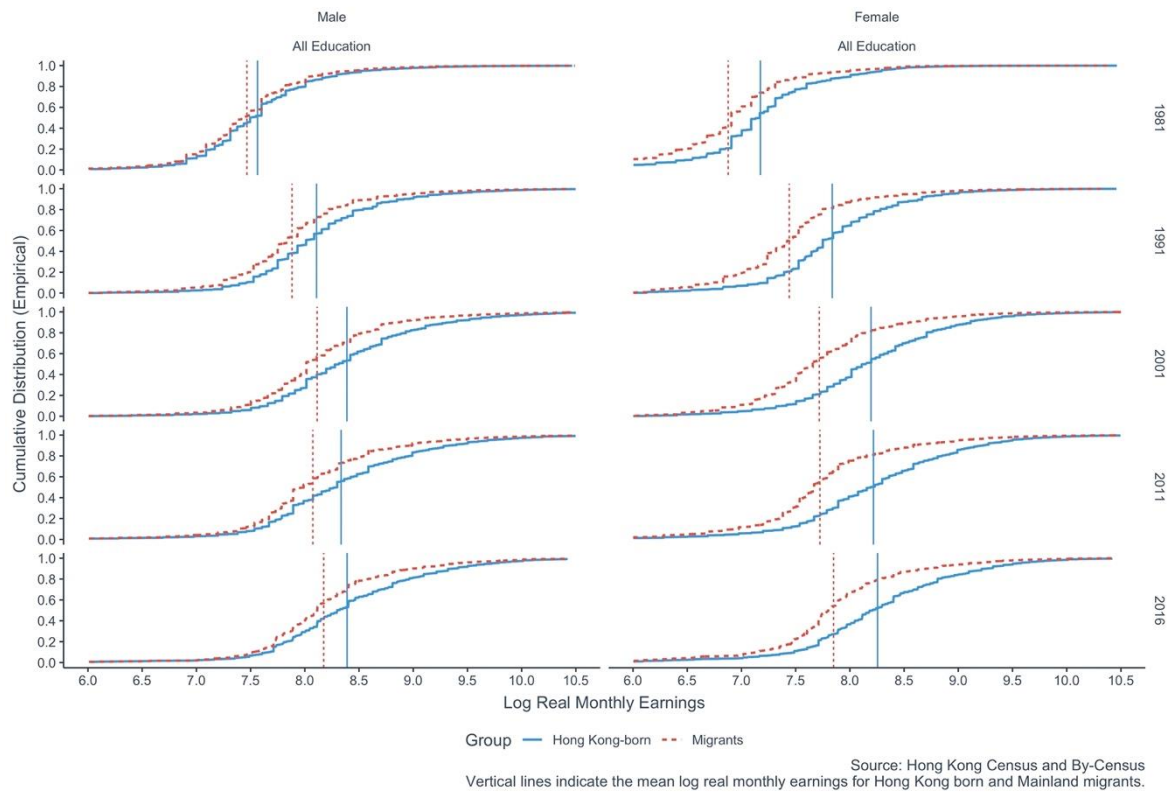
Divergence and Convergence in Earnings Distribution

So far we have analyzed the divergence/convergence of the average monthly earnings of migrants and the Hong Kong-born. Average earnings is a summary statistic. It does not tell us whether there is divergence/convergence at the high end or low end, or for that matter different points of the earnings distribution. To have a better understanding of the convergence dynamics, it is informative to examine whether there is divergence or convergence at different quintiles of the distribution. Figure 2 plots the cumulative earnings distribution of the migrants and the Hong Kong-born by gender for 1981, 1991, 2001, 2011 and 2016.[7] The vertical axis measures the cumulative density by percentile, marked at quintile intervals. The horizontal axis measures the log real monthly earnings. In every year the earnings distribution curve of the Hong Kong-born lies to the right of the migrants, indicating that at every percentile of the distribution, the earnings of the Hong Kong-born are higher. The two vertical lines represent the average log real monthly earnings of the two groups respectively. Previous discussion of earnings divergence or convergence is illustrated by the two vertical lines moving further apart or coming closer together over time.

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[7] The by-census earnings distributions (except 2016) are not shown to economize on space.

Figure 2: Distribution of Male and Female Log Real Monthly Earnings, 1981–2016

Source: Hong Kong Census and By-Census
Vertical lines indicate the mean log real monthly earnings for Hong Kong born and Mainland migrants.

Consider the male migrants and the Hong Kong-born with below university education. The divergence or convergence of the earnings distribution of the migrants and the Hong Kong-born is represented by the two earnings distribution curves moving further apart or coming closer together. Figure 2 shows that the two distribution curves move apart from 1981 to 2001 (divergence) before coming closer together (convergence) again mildly from 2001 to 2016, following the same time profile of divergence/convergence of the average earnings ratio discussed earlier. As for the female migrants the divergence /convergence of the earnings distribution also follows the same profile as the average earnings ratio with divergence up to 2011 and convergence thereafter. At every percentile of the distribution the earnings gap of the female migrants, as represented by the horizontal distance between the two distribution curves, is larger than the male migrants.

To be more precise about divergence/convergence in distribution than a qualitative shift of distribution curves, we illustrate quantitatively the magnitude at different points of the distribution, Table 2 shows the earnings gap by gender measured by the difference between the log real monthly earnings of the Hong Kong-born and the migrants by quintiles. The difference

in log earnings represents the earnings gap in proportional terms (up to log approximation). Several stylized facts are apparent. First, for both gender the earnings gap at the top quintile (80th percentile) is larger than the gap at the bottom quintile (20th percentile) in every year.[8] While the average earnings gap of the bottom quintile ranges from zero to 22.3% for the males and zero to 44.2% for the females, the gap at the top quintile (80th percentile) can get as high as 41.4% for the males and 69% for the females in 2011 (see Table 2). The top migrant earners fall far behind the Hong Kong-born top earners, more so than the bottom earners and the average earners. Second, the female migrant earnings gap is larger than the male at every quintile for all years. The differences in educational attainment and its return (skill prices) between the female migrants and the Hong Kong-born are apparently larger than the male migrants at every quintile and across all years. Third, for both gender, the earnings gap peaks in the decade 1996-2006 for the first two quintiles whereas for the top quintile males and top two quintiles females, the earnings gap peak later in 2006-2011.[9] Convergence takes place earlier and the earnings gap is smaller at the low earnings end of the distribution than the high earnings end. In short, among the top earners, there is a larger earnings gap and the migrants are slower in narrowing the gap than at the low end of the earnings distribution.

Table 2: Difference* in Male and Female Log Monthly Earnings at Various Percentiles, 1971–2016

Year	Male (All Education)				Female (All Education)			
	20th	*40th*	*60th*	*80th*	*20th*	*40th*	*60th*	*80th*
1971	0.000	0.000	0.201	0.260	0.000	0.000	0.201	0.000
1981	0.080	0.065	0.000	0.182	0.379	0.277	0.241	0.288
1986	0.049	0.148	0.154	0.223	0.393	0.252	0.262	0.421
1991	0.169	0.182	0.223	0.318	0.336	0.347	0.405	0.531
1996	0.223	0.223	0.262	0.288	0.413	0.348	0.462	0.511
2001	0.194	0.191	0.288	0.386	0.398	0.511	0.549	0.554
2006	0.143	0.163	0.310	0.395	0.442	0.460	0.523	0.511
2011	0.118	0.182	0.268	0.414	0.304	0.410	0.575	0.693
2016	0.122	0.176	0.255	0.349	0.223	0.336	0.486	0.511

* Difference = Log Monthly Earnings of Hong Kong-born – Log Monthly Earnings of Mainland Migrants

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[8] The only exception is female migrant earnings gap in 1981.
[9] Whether 2006 and 2011 constitute the peak or just an inflection of the earnings gap for the top two quintiles need to be confirmed with future censuses.

Tracking Young Migrant Cohorts

The previous analysis pertains to an aggregate comparison of the average earnings of the Mainland migrants and the Hong Kong-born as a whole group. The two groups may have different years of schooling, work experience and other unobserved or unmeasurable attributes that may impact on earnings. These human capital attributes of the migrants may also change over time as the characteristics and the quality of the new migrant cohorts change over time. Similarly, the average years of schooling of the Hong Kong-born will also be increasing as the educational system expands and provides more educational opportunity. To isolate the effect of changing characteristics and quality on the change in relative earnings, we can compare earnings of the migrants and the Hong Kong-born after controlling for the educational attainment and the work experience (proxied by age) over time.

This control notwithstanding, the unobserved or unmeasured characteristics of migrants may still change over time due, for instance, to a change in the quality of schooling received in the country of origin or a change in the policy of the destination country selecting different types of migrants for entry. In other words, male migrants with below university education of say, age 20-24 in 1981 could be rather different in other characteristics relevant to earnings from those of the age 20-24 group in 2016, even though they have the same gender, educational attainment and years of work experience. To control for the effect of a change in unobservable migrant cohort qualities, we can track a given migrant age cohort as individuals in the cohort advance in age over time. For instance, we can track a cohort of migrants when they are, say, age 20-24 in 1981, and follow them when they become 25-29 in 1986, 30-34 in 1991, 35-39 in 1996 and so on, until they become 55-59 in 2016, and study their relative earnings with respect to the Hong Kong-born of the same age in each year. Since we are following the cohort as cohort members age over time, we have largely reduced (but not entirely eliminated) the cohort effect arising from a change in cohort membership. The cohorts we track are synthetic cohorts composed of migrants in a given age bracket in a given census year. Synthetic cohorts are not the same as cohorts in a panel study that researchers follow over time since there can still be entries due to new arrivals of that particular age group between censuses as well as exits from that age group due to say, outmigration or return migration. In other words, while the age cohort 55-59 in 2016 is made up of largely migrants who were 20-24 in 1981, it is not exclusively so

since there can be new arrivals of the relevant age bracket captured in each census in between 1981 and 2016 as well as exits.[10]

Taking note of this caveat, we will use this tracking methodology to track the relative earnings of two young cohorts for the migrants with below university education and the university- educated migrants. The reason for choosing young cohorts is that it allows us to track their relative earnings over a long period of 35 years starting from 1981 until they are 59 to 64 in 2016. For migrants with below university education, we will track two cohorts of age 20-24 and 25-29 in each census year. Age 20-24 is the age when many of them first enter the labour market after secondary school and age 25-29 is the age when they have some work experience. As for the university-educated, we will track two young cohorts of age 25-29 and 30-34. For those who have university degree or post-graduate education, by age 25-29 (but not age 20-24) practically all of them will have completed their schooling and start to work full time. Age 30-34 is the next youngest age cohort of the university-educated working full time.

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[10] We can further reduce the cohort effect by controlling for the year of arrival in Hong Kong, making use of the information on the duration of stay in Hong Kong in the census. However, the sample size of the age cohorts will be reduced too much as to make the statistics on average earnings unreliable.

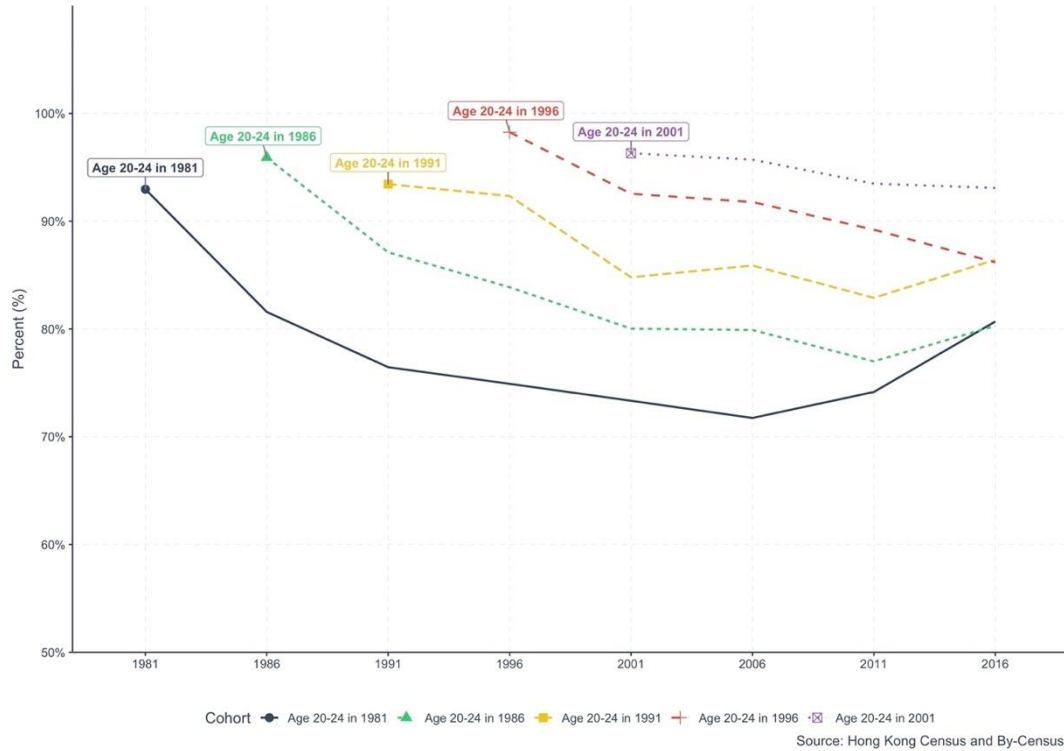**Relative Earnings of Young Migrant Cohorts with Below University Education**

In Table 3 we track over time the average earnings ratios of two young male migrant cohorts age 20-24 and 25-29 who have below university educational attainment. The earnings of the migrants are relative to the earnings of the Hong Kong-born of the same age bracket in each year. We follow the earnings ratios as the migrants and the Hong Kong-born age across censuses starting from 1981 by going down the diagonal of the tables until 2016 when they will be age 55-59 in 2016.[11] Similarly we track over time the earnings ratios of the 20-24 age cohort in 1986, 1991, 1996, 2001 and 2006. We repeat the exercise for the age 25-29 cohort. The earnings ratios of the male age 20-24 and 25-29 cohorts are plotted in Figures 3a and 3b respectively.

Table 3: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
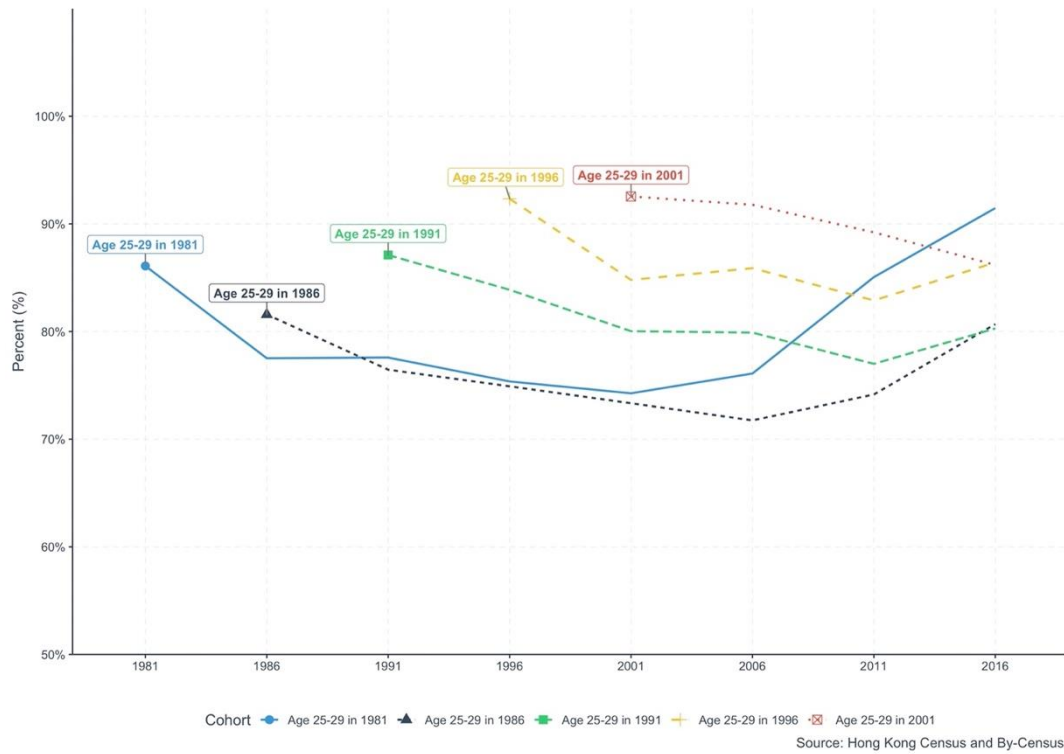**(Male, Below University), 1981–2016**

Age group	1981	1986	1991	1996	2001	2006	2011	2016
20-24	0.930	0.959	0.934	0.983	0.963	0.924	0.945	0.940
25-29	0.861	0.816	0.871	0.923	0.925	0.957	0.900	0.937
30-34	…	0.775	0.765	0.839	0.848	0.918	0.935	0.917
35-39	…	…	0.776	0.749	0.800	0.859	0.892	0.931
40-44	…	…	…	0.754	0.733	0.799	0.829	0.862
45-49	…	…	…	…	0.743	0.717	0.770	0.864
50-54	…	…	…	…	…	0.761	0.742	0.803
55-59	…	…	…	…	…	…	0.851	0.807
60-64	…	…	…	…	…	…	…	0.915

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[11] The 1971 census dataset is too small to yield reliable earnings ratios after stratification by gender, age and educational attainment.

Figure 3a: Migrant/Hong Kong-born Average Earnings Ratio by Cohort (Male, Below University), 1981–2016
[Age 20-24]

Cohort: ● Age 20-24 in 1981 ▲ Age 20-24 in 1986 ■ Age 20-24 in 1991 ┼ Age 20-24 in 1996 ⊠ Age 20-24 in 2001

Source: Hong Kong Census and By-Census.

Figure 3b: Migrant/Hong Kong-born Average Earnings Ratio by Cohort (Male, Below University), 1981–2016
[Age 25-29]

Cohort: ● Age 25-29 in 1981 ▲ Age 25-29 in 1986 ■ Age 25-29 in 1991 ┼ Age 25-29 in 1996 ⊠ Age 25-29 in 2001

Source: Hong Kong Census and By-Census.

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Similarly, the 20-24 and 25-29 age cohorts of female migrants with below university education are tracked in Table 4 and their earnings ratios are plotted in Figures 4a and 4b respectively.

Table 4: Migrant/Hong Kong-born Average Earnings Ratio by Cohort (Female, Below University), 1981–2016

Age group	1981	1986	1991	1996	2001	2006	2011	2016
20-24	0.868	0.841	0.880	0.955	0.933	0.888	0.906	0.897
25-29	0.808	0.732	0.734	0.863	0.851	0.870	0.866	0.916
30-34	…	0.696	0.663	0.726	0.709	0.753	0.731	0.816
35-39	…	…	0.680	0.646	0.542	0.631	0.649	0.727
40-44	…	…	…	0.673	0.558	0.544	0.585	0.671
45-49	…	…	…	…	0.634	0.577	0.544	0.645
50-54	…	…	…	…	…	0.696	0.609	0.613
55-59	…	…	…	…	…	…	0.725	0.664
60-64	…	…	…	…	…	…	…	0.787

Figure 4a: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Female, Below University), 1981–2016
[Age 20-24]

Source: Hong Kong Census and By-Census.
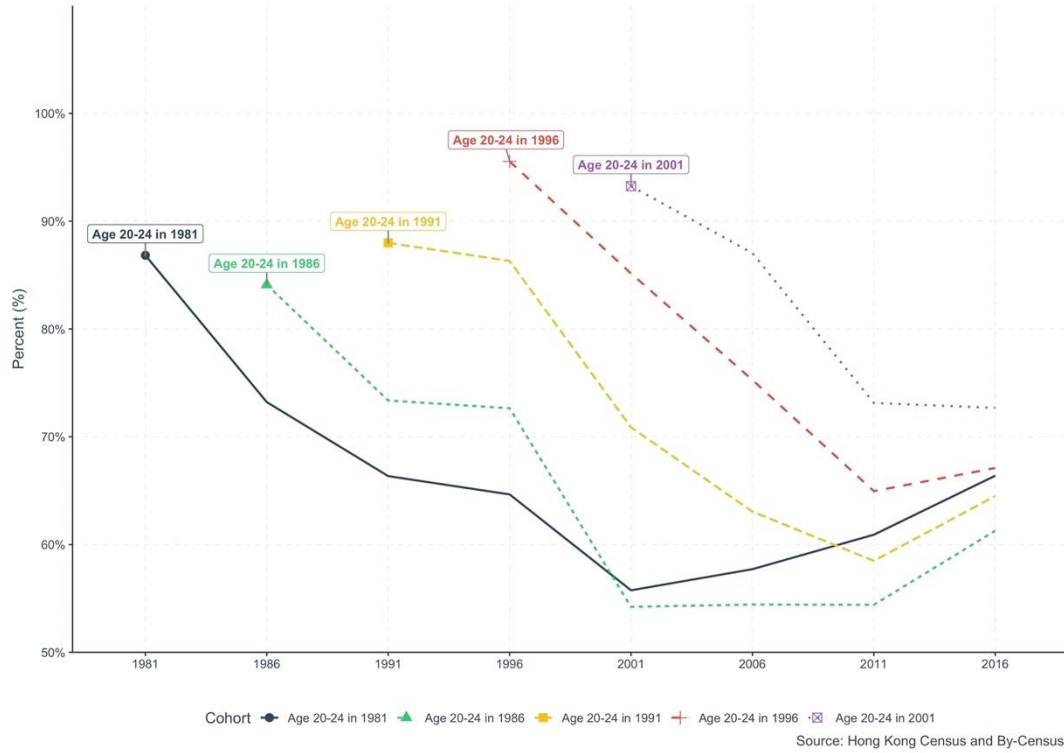
Figure 4b: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Female, Below University), 1981–2016
[Age 25-29]

Source: Hong Kong Census and By-Census.
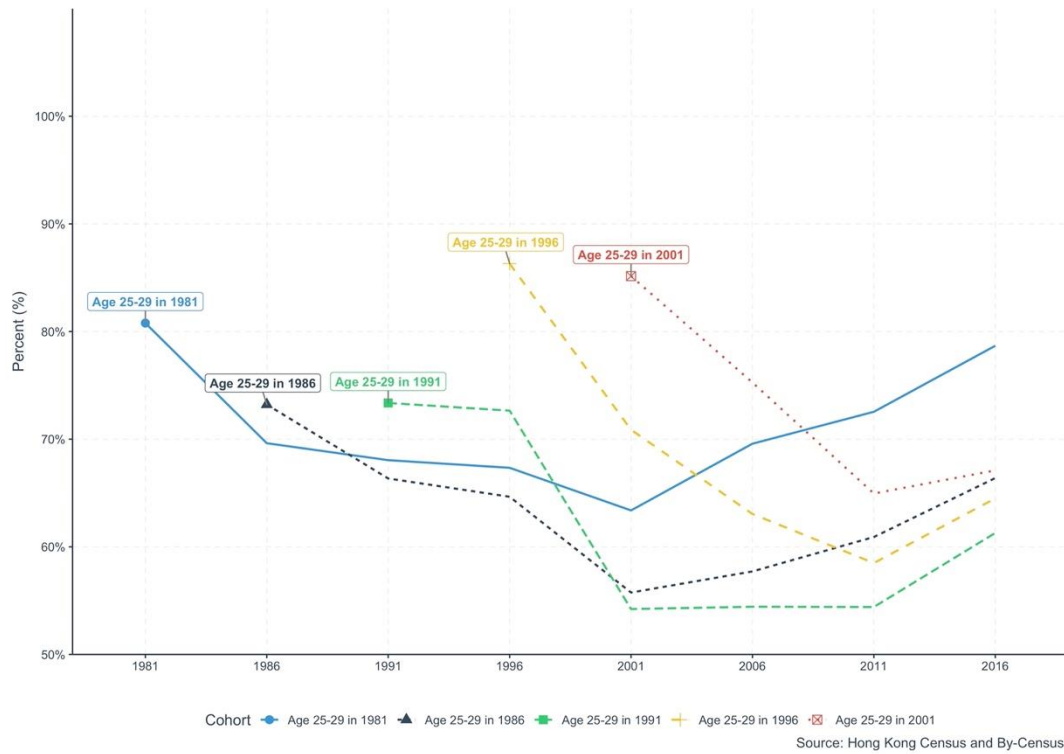
The earnings ratios curves of Figures 3a, b and 4a, b reveal several stylized facts. First, The earnings ratio curves of the more recent age 20-24 cohorts in general lie above the curves of the earlier cohorts, suggesting that the earnings ratios of the former are consistently higher than the latter in each year as the cohorts age over time. The same observation applies to the age 25-29 cohorts perhaps with the exception of the age 25-29 cohort in 1981. Bearing in mind that we are comparing earnings of the migrants of the same educational attainment and age (a proxy for work experience) this is clear evidence that the unmeasured quality of the recent cohorts that impact earnings has improved relative to the Hong Kong-born. This could be due to an improvement in the quality of Mainland schooling over time which migrants receive relative to Hong Kong schooling. An alternative explanation is that over time there has been more interaction between Hong Kong and the Mainland through travelling and the media leading to a better understanding and greater exposure to the Hong Kong culture of the migrants before arrival. This could enhance the productivity of the more recent migrants in the Hong Kong labour market. The young migrants of the early cohorts are more likely to grow up in rural China whereas the recent cohorts are more likely from the cities. The rural-urban difference could account for the part of the difference in migrant cohort quality over time.

The second stylized fact is that the female earnings ratio curves are wider apart than the male curves, suggesting that there is a larger difference in qualities between the more recent and the earlier young female migrant cohorts than the male. This may be because a greater proportion of the young female migrants in the early cohorts come to Hong Kong for family reunion under the OWP scheme and they do not have work experience in the Mainland before migration, whereas all along the young male migrants come to Hong Kong for work. The quality of female migrants arriving under the OWP scheme has improved substantially in recent years. Hence the difference in quality between the more recent and the earlier cohorts is larger for the young female migrants than the male.

The third stylized fact is that for the earnings of the young male and female cohorts diverge until 2001-2011 before convergence begins to take place. The year of convergence is consistent with the earlier result for male and female migrants as a whole group regardless of age (Figure 1) and has the same economic interpretation. Table 5 summarizes the year and the age of the cohort when earnings convergence begin to take place for age 20-24 and 25-29 cohorts from 1981 to 2006 of both gender. It is interesting to note that for the three early age 20-24 cohorts of 1981, 1986 and 1991, convergence begins to take place at the age of 40-44 or

45-49, after having been in the labour market on average more than 20 or 25 years. Convergence tends to take place at a younger age of age 35-39 for the more recent cohorts of age 20-24 in 1996 and age 25-29 in 2001. More data from future censuses will be needed for confirmation of this observation. As for the very recent cohorts in 2001-2016, there is no sign of convergence probably because the length of period up to 2016 is apparently too short for it to take place.

Table 5: Earnings Convergence of Age 20-24 and 25-29 Migrant Cohorts with Below University Education

Cohorts	Convergence Begins in		Age of Cohort When Convergence Begins	
	Male	Female	Male	Female
Age 20-24 in 1981 (25-29 in 1986)	2006	2001	45-49	40-44
Age 20-24 in 1986 (25-29 in 1991)	2011	2001	45-49	40-44
Age 20-24 in 1991 (25-29 in 1996)	2011	2011	40-44	40-44
Age 20-24 in 1996 (25-29 in 2001)	*	2011	*	35-39
Age 20-24 in 2001 (25-29 in 2006)	*	*	*	*
Age 25-29 in 1981	2001	2001	45-49	45-49

* No convergence up to 2016 census

## Relative Earnings of Young Migrant Cohorts with University Education

In Tables 6 and 7 we track the earnings ratios of the male and female migrant cohorts of age 25-29 across censuses. The results are charted in Figure 5 for the male migrants and Figure 6 for the female.

**Table 6: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
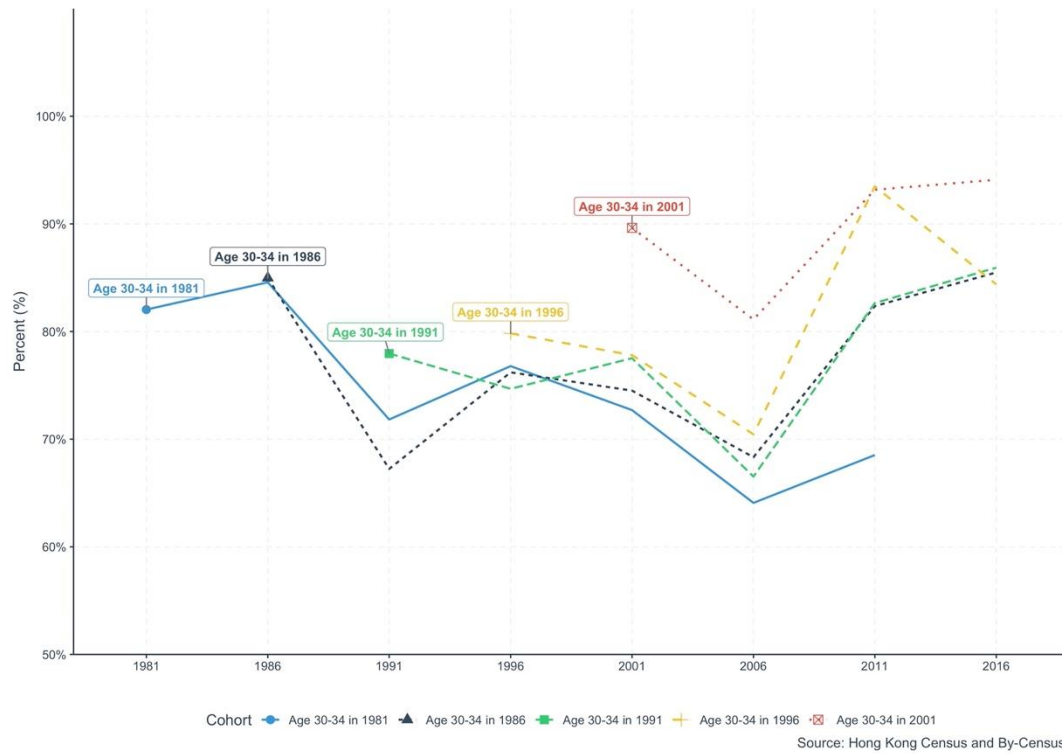(Male, University), 1981–2016**

Age group	1981	1986	1991	1996	2001	2006	2011	2016
20-24	0.994	0.811	0.622	1.007	0.895	0.971	0.821	1.021
25-29	**0.907**	**0.904**	**0.750**	**0.870**	**0.903**	0.928	0.996	0.995
30-34	**0.820**	**0.850**	**0.780**	**0.798**	**0.896**	**0.919**	1.008	1.058
35-39	…	**0.846**	**0.672**	**0.747**	**0.778**	**0.811**	**0.996**	1.017
40-44	…	…	**0.718**	**0.762**	**0.775**	**0.705**	**0.932**	**0.966**
45-49	…	…	…	**0.768**	**0.745**	**0.665**	**0.935**	**0.941**
50-54	…	…	…	…	**0.727**	**0.683**	**0.827**	**0.844**
55-59	…	…	…	…	…	**0.641**	**0.824**	**0.859**
60-64	…	…	…	…	…	…	**0.685**	**0.855**

**Figure 5a: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Male, University), 1981–2016**
[Age 25-29]

Source: Hong Kong Census and By-Census.
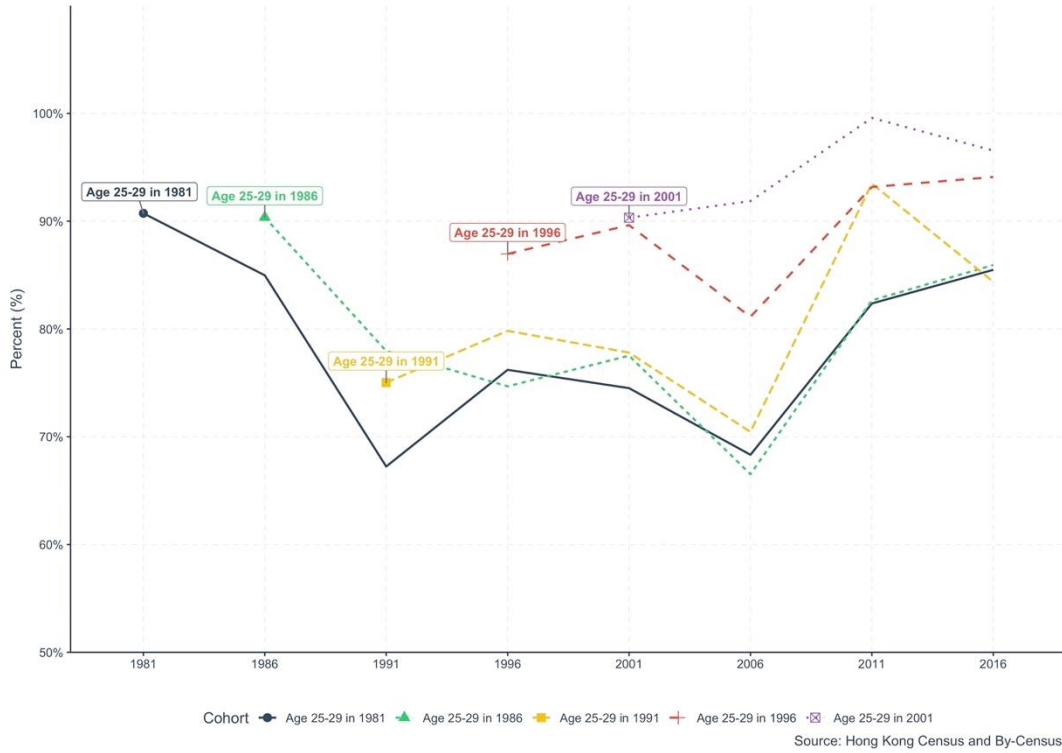
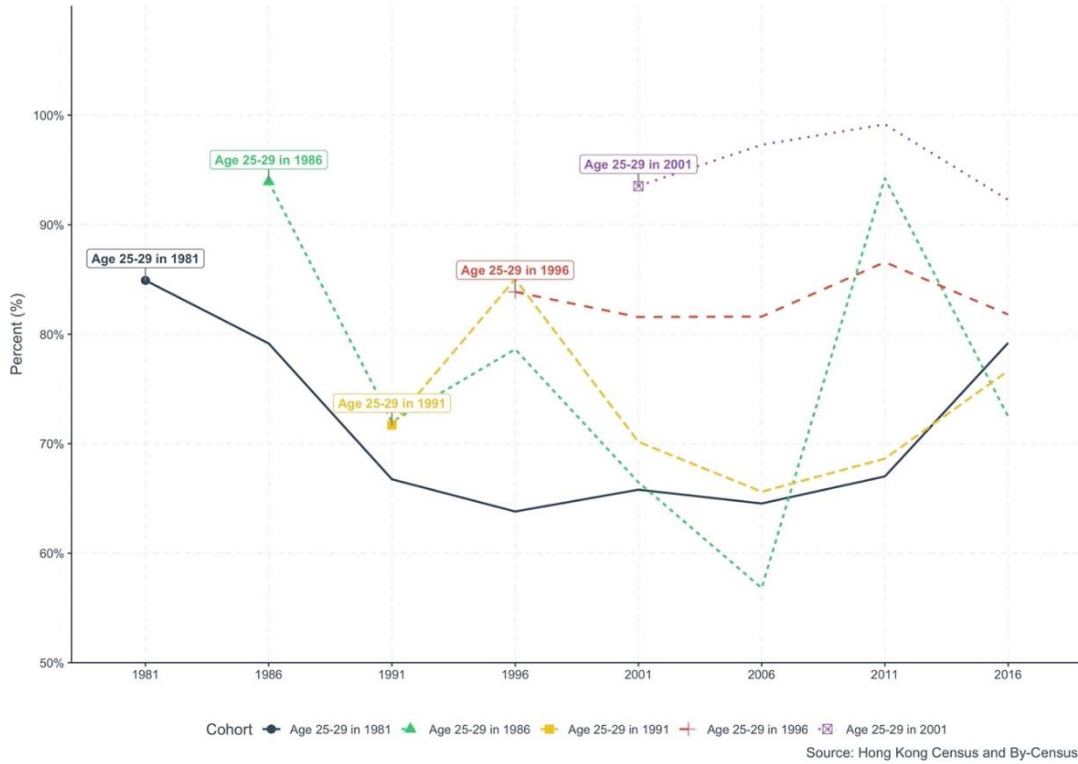**Figure 5b: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Male, University), 1981–2016**
*[Age 30-34]*

Source: Hong Kong Census and By-Census.

Table 7: Migrant/Hong Kong-born Average Earnings Ratio by Cohort (Female, University), 1981–2016

Age group	1981	1986	1991	1996	2001	2006	2011	2016
20-24	0.872	0.645	0.688	0.943	0.892	0.945	0.930	1.035
25-29	**0.849**	**0.939**	**0.717**	**0.839**	**0.935**	0.980	0.959	0.954
30-34	**0.665**	**0.792**	**0.720**	**0.850**	**0.816**	**0.973**	0.993	1.006
35-39	…	**0.787**	**0.668**	**0.786**	**0.702**	**0.816**	**0.992**	0.991
40-44	…	…	**0.604**	**0.638**	**0.665**	**0.656**	**0.866**	**0.923**
45-49	…	…	…	**0.696**	**0.658**	**0.568**	**0.686**	**0.818**
50-54	…	…	…	…	**0.669**	**0.645**	**0.942**	**0.767**
55-59	…	…	…	…	…	**0.676**	**0.670**	**0.725**
60-64	…	…	…	…	…	…	**0.862**	**0.792**

Figure 6a: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Female, University), 1981–2016
[Age 25-29]

Source: Hong Kong Census and By-Census.

Figure 6b: Migrant/Hong Kong-born Average Earnings Ratio by Cohort
(Female, University), 1981–2016
[Age 30-34]

Source: Hong Kong Census and By-Census.
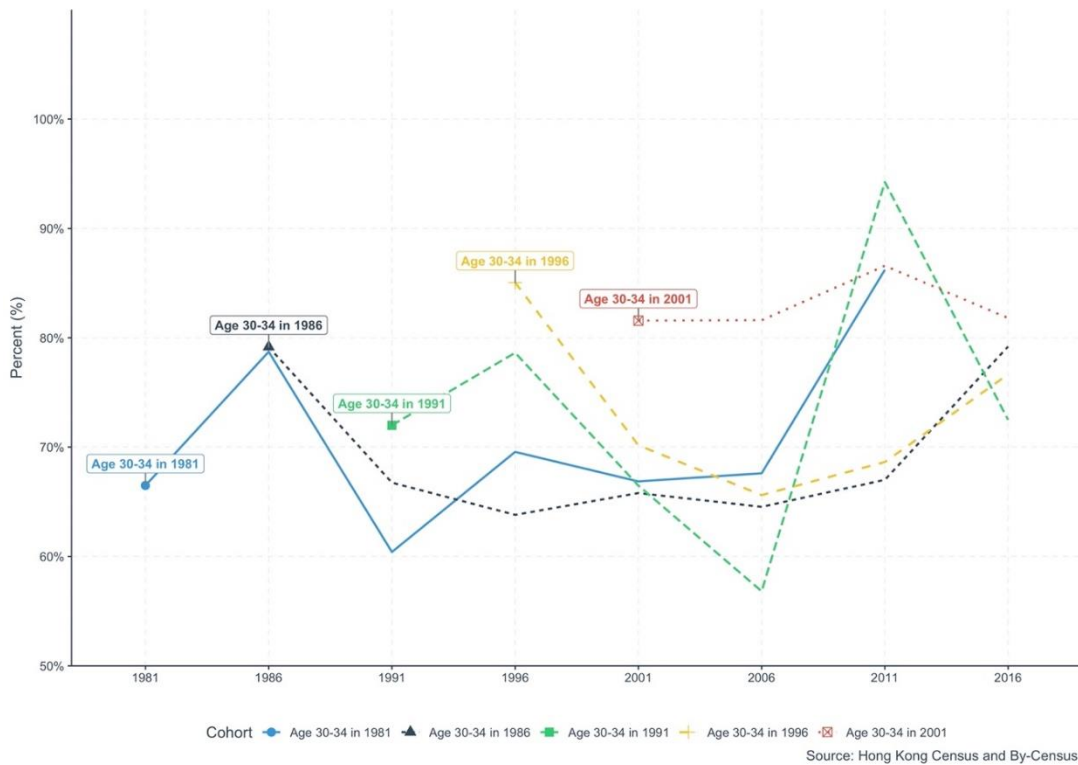
Unlike the migrant cohorts with below university education where the earnings ratios curves in Figures 3a, b and 4a, b are smooth, there are some fluctuations in the earnings ratios curves of the university-educated cohorts in Figures 5a, b and 6a, b. This may be due to the smaller population of the university-educated of both the earlier migrant (in particular female migrant) cohorts as well as the Hong Kong-born, rendering the earnings ratios less stable. Notwithstanding the fluctuations, stylized facts 1 and 2 of the less-educated cohorts still hold for the university-educated. With regard to stylized fact 3, Table 8 summarizes the year and the age at which convergence begins to take place for the male and female university-educated migrant cohorts. It shows that with the exception of the age 25-29 cohort in 1981, convergence mostly begins in 2006. Convergence takes place at the earlier age of 30-39 for the more recent age 25-29 cohort in 1996, implying that it occurs after the migrants have worked a shorter period of time in the labour market.

Table 8: Earnings Convergence of Age 25-29 and 30-34 Migrant Cohorts with University Education

Cohorts	Convergence Begins in		Age of Cohort When Convergence Begins	
	Male	Female	Male	Female
Age 25-29 in 1981 *(30-34 in 1986)*	1991	1996	35-39	40-44
Age 25-29 in 1986 *(30-34 in 1991)*	2006	2006	45-49	45-49
Age 25-29 in 1991 *(30-34 in 1996)*	2006	2006	40-44	40-44
Age 25-29 in 1996 *(30-34 in 2001)*	2006	2001	35-39	30-34
Age 25-29 in 2001 *(30-34 in 2006)*	*	*	*	*
Age 30-34 in 1981	2006	1991	55-59	40-44

* No convergence up to 2016 census

Concluding Remarks

Lam and Liu (2002a) shows that there has been divergence in earnings of Mainland migrants of the pre-1981 arrivals with respect to the Hong Kong born over the period 1981-1991, indicating that migrants are not doing well after migration to Hong Kong. This finding cannot be explained by the conventional theory on assimilation. Lam and Liu (2002a) attributes it to the change in the economic structure that causes migrants' skills to become less productive in the labour market. In this paper we extend the analysis and show that earnings divergence persists beyond 1991. Convergence only begins to occur in the decade of 2001-2011.

Two effects, the cohort effect and the time effect, appear to be in play that may have a differential impact on the relative earnings of the migrants. Migrant cohorts have been changing in composition from mostly illegal immigrants pre-1981, to migrants for family re-union before and after the changeover of sovereignty in 1997, to an increasing proportion of migrants who are professionals, talents and local university graduates. By selection there has been an improvement in the quality of new migrants, especially the university-educated, over time. The ASMTP and IANG schemes will have selected university graduates with higher unobserved skills than earlier university graduates who migrated for family reunion. This cohort effect may explain why convergence of the university-educated migrants takes place earlier and at an earlier age than the less educated and why the convergence effect is stronger. It also explains why young university-educated migrant cohorts on average actually earn more than the Hong Kong-born of the same educational attainment level in 2016 with an earnings ratio greater than one.

We eliminate the cohort effect as much as possible by tracking the earnings ratio of the young less-educated migrants of age 20-24 and 25-29 and the university-educated of age 25-29 and 30-34 in each census year starting from 1981 and follow them as they advance in age across censuses until 2016. We find that earnings convergence of the earlier less-educated migrant cohorts of both gender begins to occur in the decade of 2001-2011. For the earlier university-educated migrant cohorts of both gender, convergence takes place mostly around 2006. This indicates there is a strong time effect arising from macroeconomic changes in the economy that impact on the relative earnings of the migrants, causing convergence around the middle of the decade.

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