Labour Market Participation, Self-Employment and Entrepreneurship of Mainland Migrants

by

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Pak-Wai Liu and Kit-Chun Joanna Lam[#]

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Theoretical Framework of Labour Force Participation

Labour market participation is an important policy issue in the study of migration. The proportion of migrants joining the labour force after migration is a measure of the extent of their contribution to the production of the economy. As they take up employment or become self-employed or employer, they financially support themselves in the destination country and do not have to depend on social welfare or the support of relatives.

There is a large literature on the economics of labour supply and labour force particpation.[2] According to neoclassical human capital theory, an individual will participate in labour market if the individual's market wage is greater than his/her reservation wage. The market wage which reflects the value of market work depends on the human capital embodied in the individual, like schooling and post-schooling on-the-job training. For migrants, it is generally believed that as the duration of stay in the destination country increases, they will assimilate and acquire country-specific human capital, thus increasing their market wage. Therefore, given the same number of years of schooling and work experience, the probability of labour force participation will be higher for individuals with a longer duration of stay in the destination country. In other words, we expect the old migrants to have a higher probability of labour force participation than the new migrants, other things being the same. Schooling and

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[2] See for instance, Killingsworth (1983) on labour supply, Smith (1980) on female labour supply and Pencavel (1986) on male labour supply.

work experience (proxied by age) also increase market wage and thus the probability of labour force participation. Since part of the unobservable human capital investments are country-specific, the Hong Kong-born are expected to have a higher market wage and therefore a higher probability of labour force participation than the migrants, even if the observable years of schooling, work experience, and other factors are the same.

Reservation wage reflects the value of non-market time. It depends on an individual's non-labour income and wealth, the wage of spouse, transportation cost to work, personal attitude towards work which may in turn be affected by schooling, as well as family factors like marital status and the number of young children at home. For our specific interest, reservation wage may also depend on how well a migrant is assimilated into society. If the migrant knows more about the work environment and culture, his/her reservation wage may decrease. Therefore, we expect the probability of labour force participation to increase with the duration of stay in the country. In other words, we expect the Hong Kong-born to have a higher probability of labour force participation than migrants, while old migrants have a higher participation probability than the new migrants, other things being the same.

Females in general have a lower labour force participation rate than males since their market wage may be lower than their male counterparts, whereas their reservation wage is higher because females are generally expected to shoulder a greater share of housework and childcare. Similarly, females who are married in general may have a lower propensity to participate in the labour force than their unmarried counterparts since their reservation wage is higher because they may have to take care of household chores and childcare, other things being the same. Their non-labour income may also be higher if their husband works in the labour market. The effect of marital status on male individuals may work differently. A married man may have to earn more income in the labour market to support his family; at the same time household work may be done by his wife. Therefore, the reservation wage of a married man may be lower than that of a single man, with the result that the former may have a higher propensity to participate in the labour force than the latter. The number of young children at home would increase the value of time at home, and thus lower the probability of labour force participation.

The effect of age is not clear theoretically since its effect on both the market wage and the reservation wage is unclear. Age is a good proxy for work experience and on-the-job

training only to the extent that the individual has uninterrupted labour market experience, which may be more true for males than for females. How age affects the reservation wage depends on many factors, like whether the individual needs to take care of household work and childcare, schooling choices, as well as the migrant status. For male individuals, the market wage effect may dominate, and we may expect the probability of labour force participation to increase with age. In general, the effect of age on the probability of labour force participation is largely an empirical issue.

Probit Model of Labour Force Participation

To study the effect of migrant status on the probability of labour force participation, holding age, educational attainment, marital status and number of young children of constant, we use the probit model which is commonly used for empirical studies of dichotomous dependent variables. The form of the probit model we use is explained in the Appendix. The dichotomous dependent variable LFP indicates whether the individual participates in the labour force (LFP=1) or not (LFP=0). The key explanatory variable is migrant status - whether the individual was born in Hong Kong (HongKong-Born), a new migrant (NewMigrant) or an old migrant (OldMigrant). We also include variables on age and educational attainment categorized into five different levels of schooling. We include two additional variables reflecting family factors, marital status and number of young children in the family, which may have an important effect on the probability of labour force participation, especially for female individuals. The probit model can be used to estimate the marginal effect of various variables on the probability of labour force participation, holding other variables constant.

Table A1 depicts the summary statistics of variables used in our probit regressions. The probit regressions are performed on the census microdata. In the interest of space, only the probit regressions for the 1981, 2001 and 2016 census and by-census are reported in the Appendix. The estimates of the probit regressions for females are shown in Table A2 in the Appendix. Table A3 shows the corresponding estimates of the marginal effect of various variables, namely the change in the probability of labour force participation caused by a change in the explanatory variable, other variables being held constant.

In Table A3, the estimated marginal effect of the variable NewMigrant is positive in 1981, indicating that the probability of labour force participation of the female new migrants

is higher than their Hong Kong-born counterparts. The difference amounts to 0.16 without controlling for other variables and is as high as 0.18 after controlling for all other factors. Since the female migrants in general do not have a higher wage than the Hong Kong-born counterparts, their higher probability of labour force participation in 1981 suggests that the early cohort of female new migrants may have a lower reservation wage. However, this phenomenon is reversed in both 2001 and 2016—the female new migrants have a lower probability of labour force participation in all models. In 2016, the probability of labour force participation of female new migrants is lower than the Hong Kong-born by 0.14 and reduced to 0.12 when all other factors are held constant. Their lower propensity to participate in the labour market is consistent with the theoretical analysis that, given the same educational attainment level, because education may be country-specific the market wage of female migrants may be lower than the Hong Kong-born. At the same time, their reservation wage is higher since many female migrants have been admitted to Hong Kong for family reunion; their value of time at home is higher as they have to take care of household work and childcare.

The marginal effect of the variable OldMigrant is negative in all models, indicating that the probability of labour force participation of female old migrants is lower than that of the female Hong Kong-born. But the difference is small in magnitude and is decreasing over time. In year 2016, the difference in the probability is just 0.068, and the gap almost disappears when other factors are held constant. Our empirical results thus indicate that though female new immigrants have a lower probability of labour force participation than the Hong Kong-born, as they stay longer in Hong Kong and become old migrants, their participation probability approaches that of the Hong Kong-born.

Other empirical results by and large conform with our theoretical analysis. An increase in the schooling level tends to increase the probability of labour force participation. Marital status of females has a significant impact on the probability. Those who are currently married have a much lower probability than those who are not, the difference being 0.36 in 1981. The marginal effect of marital status of females diminishes over time, but the probability of labour force participation of currently married females is still 0.13 higher than those who are not married in 2016. As expected, the marginal effect of the number of young children on the probability of labour force participation is negative. The presence of one more young child at home lowers the probability by 0.06 in 1981 which increases to 0.1 in 2016. It seems to indicate that the cost of raising children in Hong Kong has increased over time.

Table A4 and Table A5 report the estimated results for male individuals. There are some notable differences across gender. A significant difference is that the male old migrants actually have a higher probability to join the labour market than the Hong Kong-born in 1981 and 2016. These results suggest that the early cohort of male migrants have a very strong work ethics or a very low reservation wage. As for the male new migrants the probability of labour force participation in 1981 is higher than the Hong Kong-born, like the female new migrants, though the magnitude is much smaller. The marginal effect of NewMigrant becomes negative in 2001 and 2016, as in the case of the females, but the magnitude is very small, indicating that the probability of labour force participation is only marginally lower than the Hong Kong-born. In terms of participation, male migrants, both old and new, assimilate well into the Hong Kong labour market in 2016.

There are a few notable differences in the empirical results between females and males in terms of the marginal effect of the marital status and the number of young children on the probability of labour force participation. First, marital status has a much stronger effect for females than for males. This is consistent with our assumption that females are expected to take up household work and childcare more than their male counterparts. Second, for the same reason the number of young children has a stronger effect for females than for males. Third, the marginal effect of the variable Married is negative in female regressions but positive in male regressions in 2001 and 2016. This result is consistent with our earlier theoretical analysis that the reservation wage of a married man may be lower than a single man since he may have to earn more income in the labour market to support his family, while household work may be done by his wife.

Education and Labour Force Participation Rate

The probit model shows that labour force participation behaviour of the Mainland migrants and the Hong Kong-born basically conform with theoretical predictions. In what follows we will present graphically in greater details graphically the trend of the labour force participation rate and how it varies with schooling, age and migrant status across all census years. We will also give economic interpretations of its changes over time and some conclusions on migrant labour market integration.

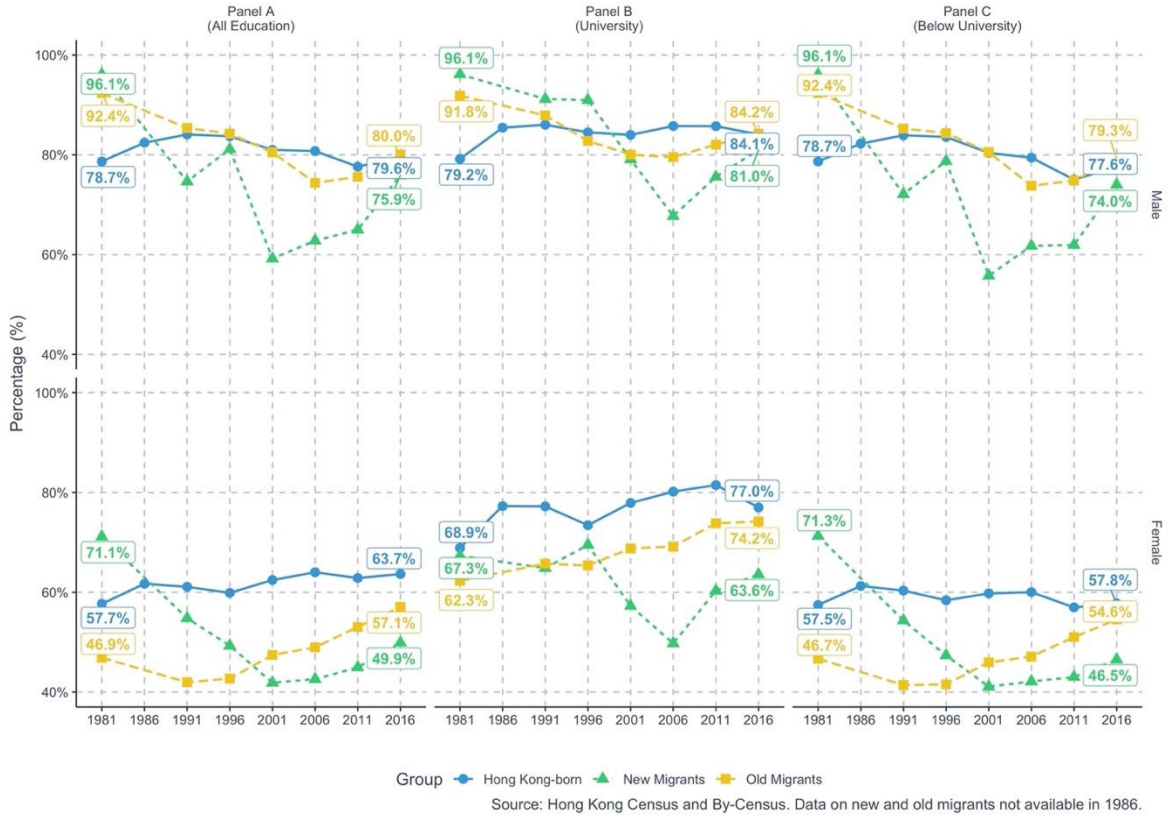
Figure 1 shows the overall labour force participation rate as well as by educational attainment level and gender for the three birth/migrant groups from 1981 to 2016.[3] Educational attainment is categorized as university or above and below university. It is clear that the overall participation rate in Panel A closely replicates Panel C in profile over time for both gender for the reason that below university education groups dominates in number in each of the population sub-groups. As predicted in the probit model, the university-educated of both gender has a higher labour force participation rate than the less-educated for all three birth/migrant groups in all years (except 1981). This is consistent with the theoretical prediction that higher the market wage, the greater the likelihood that it will exceed the reservation wage and hence the higher the labour force participation rate.

In the 1980s and part of the 1990s the male new migrants have a higher participation rate than the Hong Kong-born. In particular in 1981 the labour force participation rate of the new male new university-educated and less-educated migrants is as high as 96.1% as compared with 79.2% and 78.7% for the Hong Kong-born counterparts. This is a reflection of the dramatic change in the source of Mainland migrants after the abolition of the reached-base policy in October 1980. New migrants captured in the 1981 census are mostly illegal immigrants who arrived between 1974 to 1981. Since they risked to cross the border illegally to seek a better life in Hong Kong, they are willing to take up any low-pay jobs available to make a living. In other words, their reservation wage is very low. The relatively high participation rate of the male old migrants relative to the Hong Kong-born in 1981-1991 is a continuing reflection of the same phenomenon since many of the old migrants were formerly

[3] There are no data in the 1986 census.

illegal immigrants who arrived earlier. This feature is less salient among the female migrants as most of the illegal immigrants are male.

Figure 1: Labour Force Participation Rate by Educational Attainment, 1981-2016 (%)



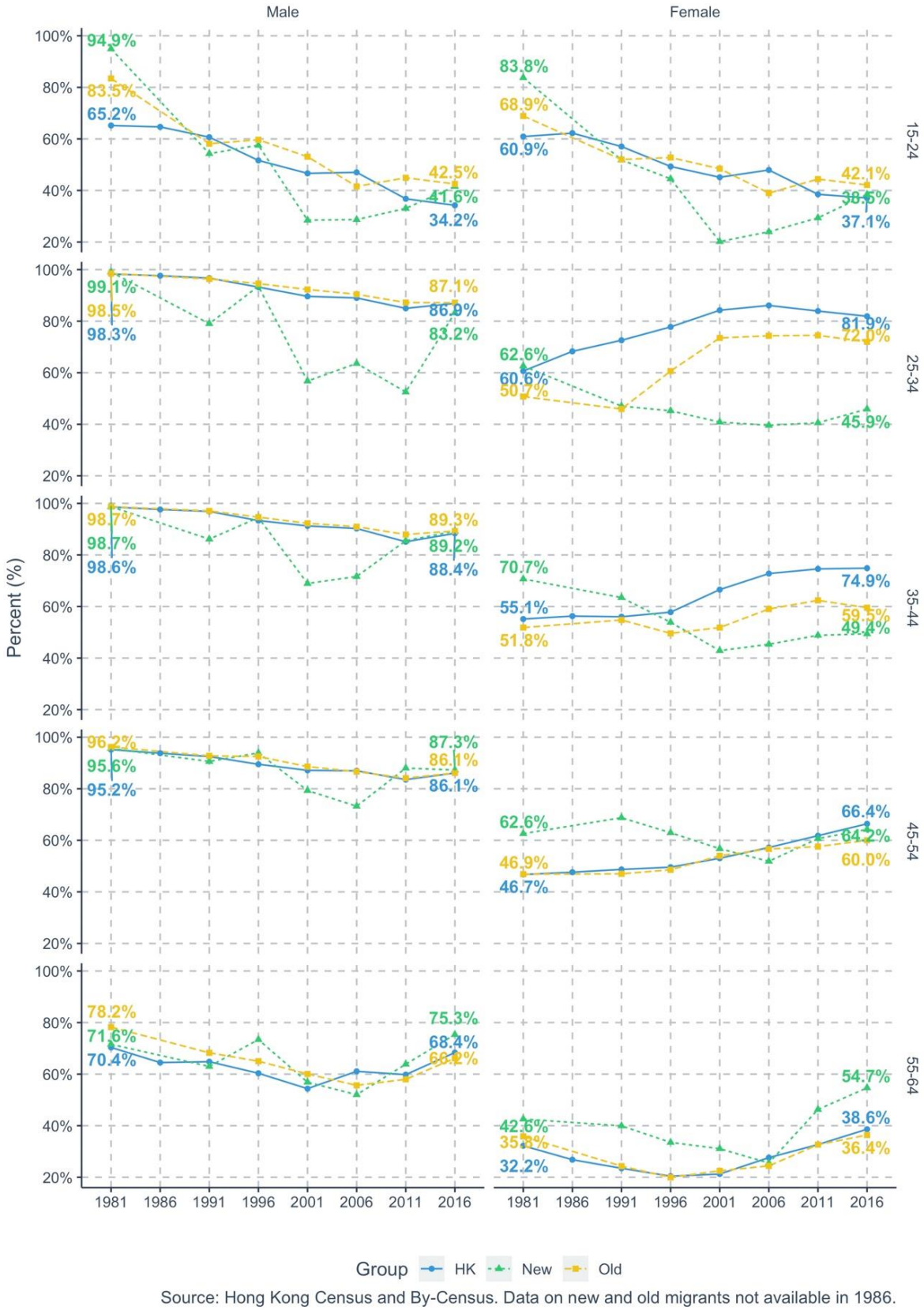
Comparing across Panels B and C of Figure 1, the university-educated are more actively participating in the labour force than the less-educated in each birth/migrant group in all years, as predicted in theory. It should be noted that irrespective of the educational attainment, the time trend of the male old migrants' labour force participation rate follows that of the Hong Kong-born. The gap in participation rate has narrowed in the last ten years from 2006 to 2016, so much so that by 2016 the participation rate of the university-educated (less-educated) male old migrants is actually 0.1% (1.7%) higher than the Hong Kong-born. The male old migrants have converged with the Hong Kong-born as far as the labour participation rate is concerned. The integration of female old migrants in the labour market is also making progress. Starting from a much larger gap in participation rate, by 2016 the participation rate of the university–educated female old migrants is only 2.8 percentage points below the Hong Kong-born and 3.2 percentage points below for the less-educated.

The time trend of the labour force participation rate of the male new migrants is however, very different. Starting from a very high level of 96.1% (see Panel A), it falls sharply to about 60% in 2001 before it picks up again. The sharp fall can be attributed to the drastic change in the profile of the new migrants after 1980. In place of illegal immigrants who come to Hong Kong eager to make a living, the new migrants arriving before and after the changeover of sovereignty in 1997 are mainly for family re-union under the One-way Permit scheme, and are less likely to join the labour force. The sharp rise in the participation rate of the university-educated after 2006 (2011 in the case of the less-educated) can be explained by the rapid rise in the proportion of new migrants admitted under the various professionals, talents and graduates schemes who come for employment rather than for family re-union. By 2016 the participation rate of the new male migrants is only 3.1-3.6 percentage points below the Hong Kong-born. There is convergence in participation rate. As for the female new migrants, while there is a minor narrowing of the gap in participation rate since 2001-2006, it remains large in 2016. The male new migrants are much more successful than the female new migrants in their integration into the Hong Kong labour market.

Age-specific Labour Force Participation Rate by Gender

We turn now to the effect of gender and age in labour force participation. Figure 2 presents the age-specific labour force participation rate by gender and by age. It shows that beyond the youngest age cohort of 15-24, the male labour force participation rate is higher than the female in every age cohort for all three birth/migrant groups in every year. This is consistent with the theoretical prediction that males have a higher market wage and a lower reservation wage than the females, except for the age 15-24 cohort when many are still in school.

Figure 2: Labour Force Participation Rate by Gender and Age, 1981-2016 (%)



Source: Hong Kong Census and By-Census. Data on new and old migrants not available in 1986.

Male Labour Force Participation by Age

There are several interesting observations pertaining to different male age groups.

Male Age 15-24

From 1981 to 2016, there has been a substantial decline in the labour force participation rate of the Hong Kong-born and the old migrants. Many individuals in this age group are secondary, post-secondary or university students. The decline is due to the expansion of education opportunity at the post-secondary and tertiary levels over time, especially after 1990.[4] With regard to the new migrants the much sharper decline in the participation rate from 1981 to 2001 can be attributed to the dramatic change in the source of new migrants after October 1980, as reported earlier. Many arrive as teenagers before and after the changeover of sovereignty in 1997. Unlike the earlier arrival cohorts, they will be attending school and not in the labour force.

Male Age 25-34, 35-44 and 45-54

The labour force participation rates of the old migrants and the Hong Kong-born track each other closely, indicating convergence in labour market participation of prime age male migrants and the Hong Kong-born. While the market wage of the old migrants are lower than the Hong Kong-born, their reservation wage is also lower as their non-labour income is also lower. Their labour force participation rate declines gradually from about 95%-99% in 1981 to 86%-89% in 2016. It is well known in the labour economics literature that a higher income increases the demand for leisure and reduces labour supply. As wage increases, on the one hand the substitution effect lowers the demand for leisure because it becomes more costly and, ipso facto, increases the labour supply. On the other hand, the income effect of the higher wage increases the demand for leisure and therefor reduces the supply of labour. Beyond a certain age the labour supply curve of prime age males tends to be backward-bending when the income effect of a higher wage dominates the substitution effect on labour supply. The secular decline in the average working hours in the advanced economies over the last few decades as wage

[4] In response to the outflow of well-educated emigrants in the years leading up to the changeover of sovereignty of Hong Kong in 1997, the government dramatically increased the university first degree intake from 7% of the relevant age cohort to 18% starting in 1990. See Lam and Liu (2019) for further details.

increases provides ample empirical evidence which supports the pre-dominance of the income effect in reducing male labour supply in the long term. This explanation is also applicable to the decline in the labour force participation rate of prime age males in Hong Kong from 1981 to 2016 when wages have gone up considerably. A decline in the labour force participation rate over time simply means that an increasing number of prime age males reduce their labour supply to zero as market wage rises.

The labour force participation rate of the new migrants is different from that of the Hong Kong-born and the old migrants. It follows an initial declining trend after 1981 but depending on the age group it starts to rise in 2001-2011. The rise in the recent decade is likely due to the change in the composition of the new migrants. Professionals, talents and graduates make up an increasing proportion of the new migrants. As they come to Hong Kong to take up employment, the overall labour force participation rate increases.

Male Age 55-64

The trend in the labour force participation rate for this age group is different from that of the prime age males. After an initial decline after 1981 the participation rate starts to increase after 2001 for the Hong Kong-born, and after 2006 for the old and the new migrants. The rise in the last decade is probably due to the deferral of employee retirement age in the private sector in response to the lengthening of life expectancy and population ageing in Hong Kong.

To summarize, it should be pointed out that by 2016, the labour force participation rate of the old and the new male migrants are very close to, if not higher than that of the Hong Kong-born. There is convergence in the labour force participation rate. With essentially the same participation rate migrants contribute to the labour force to the same extent as the Hong Kong-born. Besides slowing down the ageing of the population, they add to the labour force in proportion to their size in the population.

Female Labour Force Participation by Age

Female Age 15-24

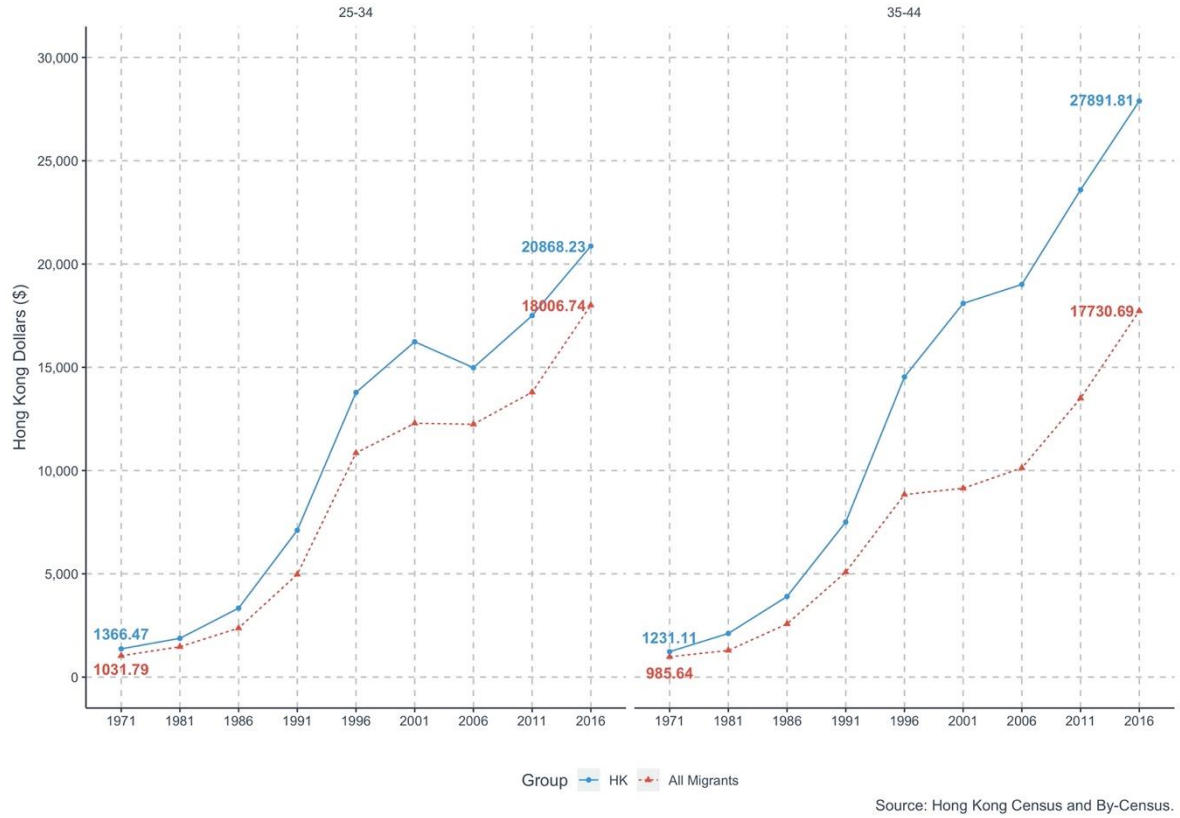
The trend of the female labour force participation rate for all three birth/migrant groups follows the same pattern as the males and has the same explanation. The secular decline for the Hong Kong-born and the old migrants is the consequence of the expansion in educational opportunity whereas the sharp decline for the new migrants in the initial decades is due to the change in their composition from a large proportion of illegal immigrants to mainly dependants for family re-union. The rise after 2001 can be accounted for by the increase in the proportion of new migrants who are talents, professionals and local university graduates.

Female Age 25-34, 35-44

In contrast to the gradual secular decline of the male participation rate of the same age bracket, the labour force participation rate of the Hong Kong-born and the female old migrants age 25 to 54 has been on a rising trend for three and half decades from 1981 to 2016. This phenomenon is not unusual among advanced economies. Female wage has been increasing over time. The substitution effect of a higher wage encourages greater participation in the labour market, though partly offset by the income effect which favours more leisure. For female workers the wage increase has not reached a level that generates a sufficiently large income effect to induce backward-bending supply as in the case of males. As for the new migrants the initial fall in the labour force participation rate followed by a rise after 2001-2006 can be explained by the change in the migrant composition as in the 15-24 age group.

The two age groups 25-34 and 35-44 fall within the child-bearing age of women. Childcare has a significant impact on the mother's labour force participation as it increases her value of time at home and therefore her reservation wage. Hong Kong-born females in general have more schooling and higher income than the migrants (See Figure 3). Their opportunity cost of staying home for childcare and housework, in other words the earnings they forego, is higher than the migrants. They can purchase childcare and domestic helper service to substitute for their own time at home. This explains why Hong Kong-born females of the child-bearing age have a consistently higher labour force participation rate than the old migrants.

Figure 3: Average Monthly Earnings of Female Age 25-34 and 35-44, 1981-2016



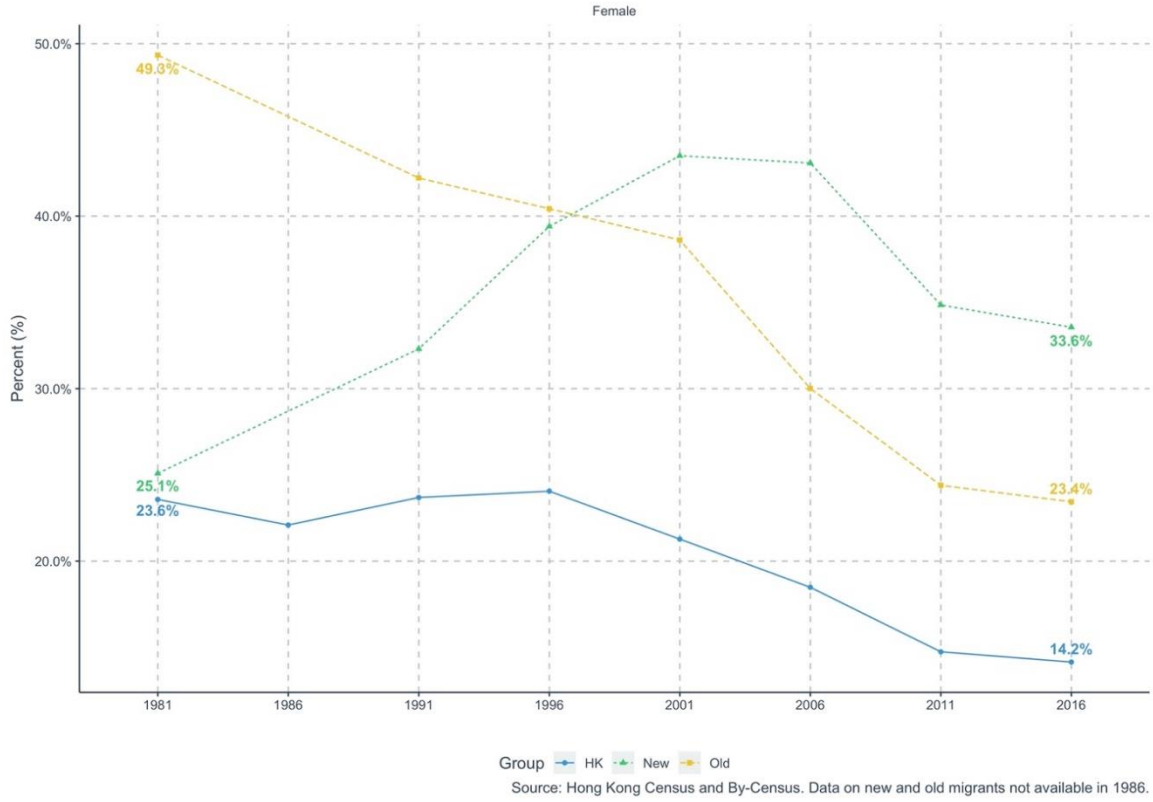
Female Age 45-54,55-64

Beyond child-bearing age, the labour force participation rates of the Hong Kong-born and the old migrants are almost the same. The new migrants, however, are different. Their participation rate of the 45-54 age group is substantially higher than the Hong Kong-born in the initial decades but becomes about the same after 2011. As for the 55-64 age group, the new migrants are in fact more active participating in the labour market over the entire time period. This may be because female new migrants of this age group are less likely to be dependent on their husbands who may be in retirement. Even though their market wage is lower than the Hong Kong-born, their reservation wage is even lower. They have to enter the labour market to earn a living on their own.

Female Migrants as Homemakers

As a corollary to the rising trend of labour market participation of the female old migrants and the Hong Kong-born, the percentage of homemakers of these two groups declines steadily from 1981 to 2016 (See Figure 4). There is a perception that the female new migrants arriving Hong Kong to join their husbands become homemakers and do not engage in the labour market. Figure 4 indeed bears out this perception for the period 1981-2001 for the female new migrants but not the old migrants. The percentage of the female new migrant homemakers rises steadily, reflecting the change in the source of migrants in favour of family reunion after the abolition of the reach-base policy in 1980. Female spouses who arrive after 1981 under the One-way Permit scheme are more likely to be homemakers than previous arrivals as illegal immigrants. However, in the last decade, there has been a change in the composition of the new migrants. An increasing proportion are admitted as professionals, talents and graduates of local universities. These female new migrants are more likely to be economically active and are less likely to be homemakers. Hence we witness a steady decline in the percentage of homemaker among the female new migrants after 2001, in line with the falling trend of the old migrants and the Hong Kong-born.

Figure 4: Proportion of Homemaker within Birth/Migrant Groups (Female), 1981-2016 (%)



Specifically, the perception that female new migrants, in comparison to the Hong Kong-born, mostly stay home as homemakers and do not work in the labour market is borne out by statistics only for women in the child-bearing age but not for women of age 45 and above. In fact within the higher age groups of 45-54 and 55-64, new migrants generally are more active participating in the labour market than the Hong Kong-born. Even for the very young group of 15-24, by 2016 the participation rate of the new female migrants (38.5%) is slightly higher than the Hong Kong-born (37.1%). There is a misconceived perception that female migratns are in general not active in the labour market. From a policy point of view, if adequate childcare support is provided for the female migrants of child-bearing age, in particular the new migrants, the female migrants could be just as active participating in the labour market as the Hong Kong-born.

Economic Activity Status

The census classifies the economic activity status of individuals into employee, self-employed, employer, unemployed, homemaker, full-time student, retired and others. Individuals participate in the labour market as either employees, self-employed, employers or unemployed. Unlike numerous studies that use the terms self-employed, employer, entrepreneur and business owner synonymously, the Hong Kong censuses make a clear distinction between self-employed and employer.[5] A self-employed is defined as a person who works for profit or fees in his-her own business/profession, neither employed by someone nor employing others whereas an employer is a person who works for profit or fees in his/her own business/profession and employs one or more persons to work for him/her. Under this distinction, the role of an entrepreneur or business owner is more akin to the role of an employer, than of a self-employed. It is relevant to note that in the Hong Kong census, hawker is separately categorized under the self-employed. Table 1 reports the percentage distribution of the Hong Kong-born, the old migrants and the new migrants by their economic activity status from 1981 to 2016.

[5] See for instance Fairlie and Lofstrom (2015), and Clark et al. (2017).

Table 1: Percent Distribution by Economic Activity Status, Age 15-64

	Economic Activity Status	1981	1986	1991	1996	2001	2006	2011	2016
Hong Kong-born	Employee	60.1%	63.2%	63.5%	61.8%	61.1%	61.8%	59.6%	60.4%
	Employer	1.45%	1.96%	3.22%	3.95%	3.97%	3.72%	2.96%	2.26%
	Self Employed	2.05%	2.76%	2.69%	2.44%	2.59%	2.55%	4.02%	4.96%
	Hawker	0.67%	0.56%	…	0.25%	0.12%	0.08%	0.13%	0.11%
	Unemployed	2.08%	3.22%	2.66%	3.29%	3.91%	4.11%	3.50%	3.92%
	Homemaker	11.7%	10.9%	11.7%	11.8%	10.5%	9.40%	7.77%	7.51%
	Student	17.4%	14.2%	12.3%	12.3%	12.4%	10.8%	11.1%	9.81%
	Retired	0.65%	0.87%	1.33%	1.69%	1.49%	3.04%	4.88%	5.19%
	Others	4.67%	2.88%	2.55%	2.67%	4.02%	4.60%	6.24%	5.99%
Old Migrants	Employee	56.4%	…	53.2%	52.3%	51.3%	48.6%	51.4%	54.7%
	Employer	3.97%	…	4.93%	5.73%	5.69%	4.76%	3.52%	2.72%
	Self Employed	6.81%	…	5.19%	3.76%	3.47%	3.03%	4.49%	5.58%
	Hawker	3.10%	…	…	0.76%	0.41%	0.23%	0.28%	0.21%
	Unemployed	2.05%	…	2.14%	3.11%	4.39%	4.74%	3.62%	3.70%
	Homemaker	22.1%	…	18.8%	18.4%	18.0%	15.7%	14.0%	14.0%
	Student	1.03%	…	3.11%	3.46%	3.28%	6.07%	5.56%	5.07%
	Retired	3.46%	…	8.51%	9.43%	8.59%	11.5%	10.3%	7.69%
	Others	4.20%	…	4.15%	3.76%	5.23%	5.63%	7.09%	6.63%
New Migrants	Employee	79.3%	…	55.2%	52.6%	40.8%	41.1%	43.3%	49.6%
	Employer	0.64%	…	1.89%	2.87%	1.01%	0.96%	0.92%	1.03%
	Self Employed	1.86%	…	1.64%	1.04%	0.57%	0.76%	1.71%	2.55%
	Hawker	0.97%	…	…	0.13%	0.07%	0.06%	0.09%	0.09%
	Unemployed	2.07%	…	2.69%	3.36%	3.35%	4.08%	4.34%	4.41%
	Homemaker	10.1%	…	20.5%	25.9%	32.9%	33.6%	25.6%	24.0%
	Student	1.90%	…	9.09%	9.40%	14.7%	13.0%	15.0%	11.6%
	Retired	0.67%	…	1.94%	1.98%	1.35%	1.23%	0.77%	0.98%
	Others	3.51%	…	7.04%	2.87%	5.39%	5.25%	8.41%	5.83%

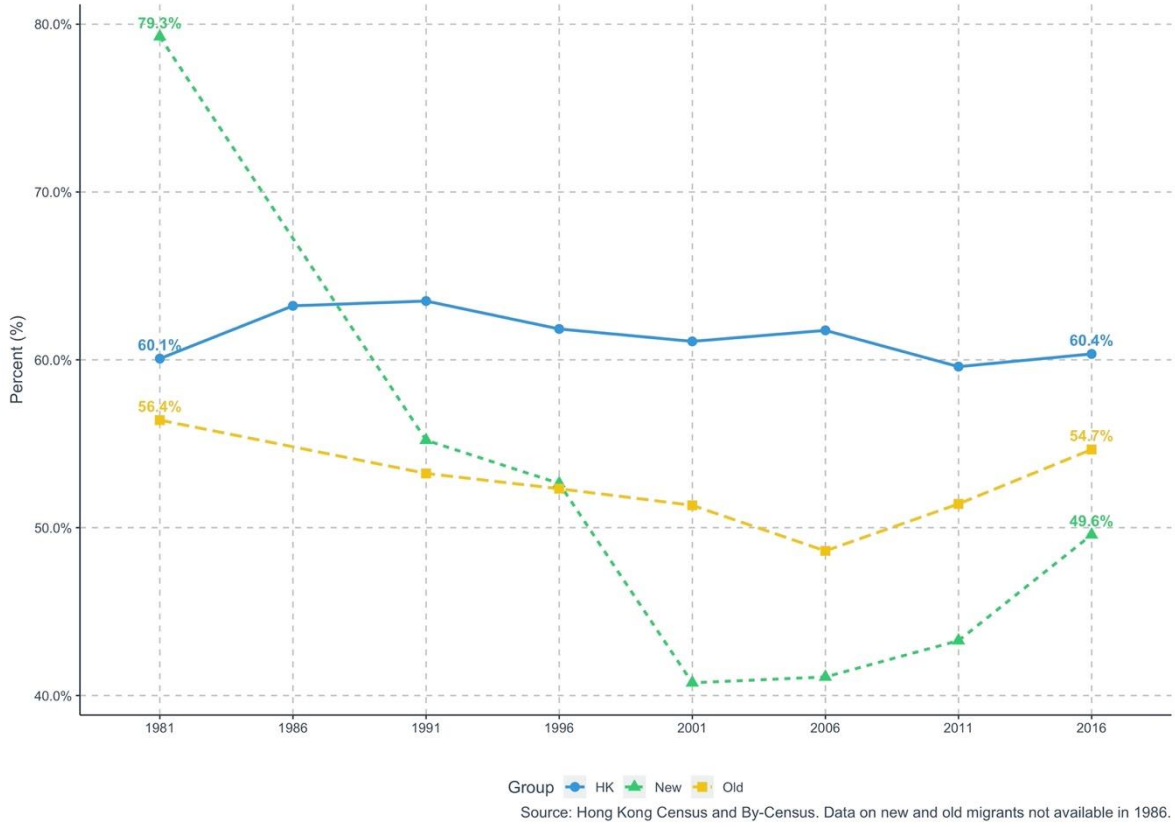
Mainland Migrants as Employees[6]

Within the working age population of 15-64, the percentage of employees among the Hong Kong-born follows a stable trend and that of the old migrants a gradual declining trend over time up to 2006-2011. These trends are broadly consistent with the respective trend in labour force participation rate (Panel A, Figure 1). The fall in the percentage of employees among new migrants is more dramatic. As high as 79.3% of the new migrants are employees in 1981. The new migrants at that time were mostly illegal immigrants who came to Hong Kong and sought employment. Since 1981 this percentage falls sharply to 40.8% in 2001 as the new migrants during this period were mainly legal who came to Hong Kong for family reunion (in particular the female migrants), and among them were many school age youngsters.

[6] In the following analysis we will not differentiate between the male and the female as there is little gender difference for all the birth/migrant groups.

This accounts for the large drop in the percentage of new migrants who are employees up to 2001. After 2001 the percentage of employees begins to rise as the composition of new migrants changes in favour of professionals and talents who come to be employed. By 2016 the percentages of employee among the Hong Kong-born, the old and new migrants converge to about 50-60% (See Figure 4).

Figure 4: Proportion of Employee within Birth/Migrant Groups, 1981-2016 (%)



Source: Hong Kong Census and By-Census. Data on new and old migrants not available in 1986.

Determinants of Migrant Self-Employment and Entrepreneurship

A number of studies have shown that migrants are more likely to be self-employed than similarly skilled native-born workers (Borjas, 1986). Business ownership is higher among the foreign-born than the native-born in many developed countries such as the U.S., United Kingdom, Canada and Australia (Clark and Drinkwater, 2000; Lofstrom, 2002; Fairlie et al., 2010). The longer the migrants stay in the destination country, the higher the probability of self-employment (Borjas, 1986). Self-employment is recognized as a pathway to economic advancement and social mobility for the migrants and ethnic groups (Glazer and Moynihan, 1970). Studies have shown that the success of Chinese and Japanese migrants in the U.S. is substantially due to their ownership of small businesses (Light, 1972; Loewen, 1971).

There are a number of determinants of self-employment and entrepreneurship of migrants. The literature discusses the push and pull factors related to destination country-specific human capital.[7] Migrants face obstacles in seeking salaried employment in the destination country arising from the non-transferability of their home country human capital. Impediments can be due to the non-recognition of credentials and qualifications, the lack of labour market information and deficient local language skills, and even racial discrimination. They tend to push migrants towards self-employment (Levie, 2007). Self-employment is sometimes also considered a way out of employment discrimination (Light and Roach, 1996; Clark and Drinkwater, 1998). It follows that as the migrants stay in the destination country longer and acquire country-specific skills such as local language proficiency, knowledge of the work permits, business and tax regulations, and access to sources of capital and workers, they will be pulled towards self-employment and business ownership (Le, 2000; Constant and Zimmermann, 2006). The longer the stay, the more likely it is that the migrants will build up personal savings to finance the start-up of a business (Evans, 1989). However, acquisition of country-specific skills with the length of stay in the destination country also facilitates migrants' salaried employment as employees, thereby offsetting-partially or all- the pull effect towards self-employment (Sanders and Nee, 1996; Bates, 1997). Whether the duration of stay in the destination country increases or decreases the probability of migrant self-employment or business ownership is, therefore, an empirical issue. In this connection, the average self-employment earnings of the migrants relative to their average salary earnings as employees

[7] For a literature survey see Fairlie and Lofstrom (2015).

will be an important consideration (Fairlie and Meyer, 1996). In fact a number of studies have examined the relative economic returns of self-employment and business ownership of migrants in comparison to their salaried counterparts (Rees and Shah, 1986; Evans and Leighton, 1989).

Another factor that contributes to migrant business ownership is the presence of ethnic enclaves, residential concentrations of migrants of the same ethnicity. Ethnic enclaves provide ethnic resources that are determinants of whether the migrants' choice to be self-employed or owner of business (Light 1972; Light and Bonacich, 1988). These resources include skills and knowledge in providing goods and services for a ready-made ethnic market, availability of low cost labour, transfer of managerial skills, as well as social support networks assisting in obtaining start-up capital (Glazer and Moynihan, 1970; Aldrich and Waldinger, 1990). Other determinants of entrepreneurship include the migrants' previous experience as entrepreneurs in their home countries before migration and their attitude towards risk. Migrants are perceived to be less risk averse than those who do not migrate as well as the native-born by virtue of the fact they take the bold decision to move to a different country (Chiswick, 1978; Todaro,1980; Constant and Zimmermann, 2006). That may explain why migrants are more prone to be self-employed or business owners than the native-born.

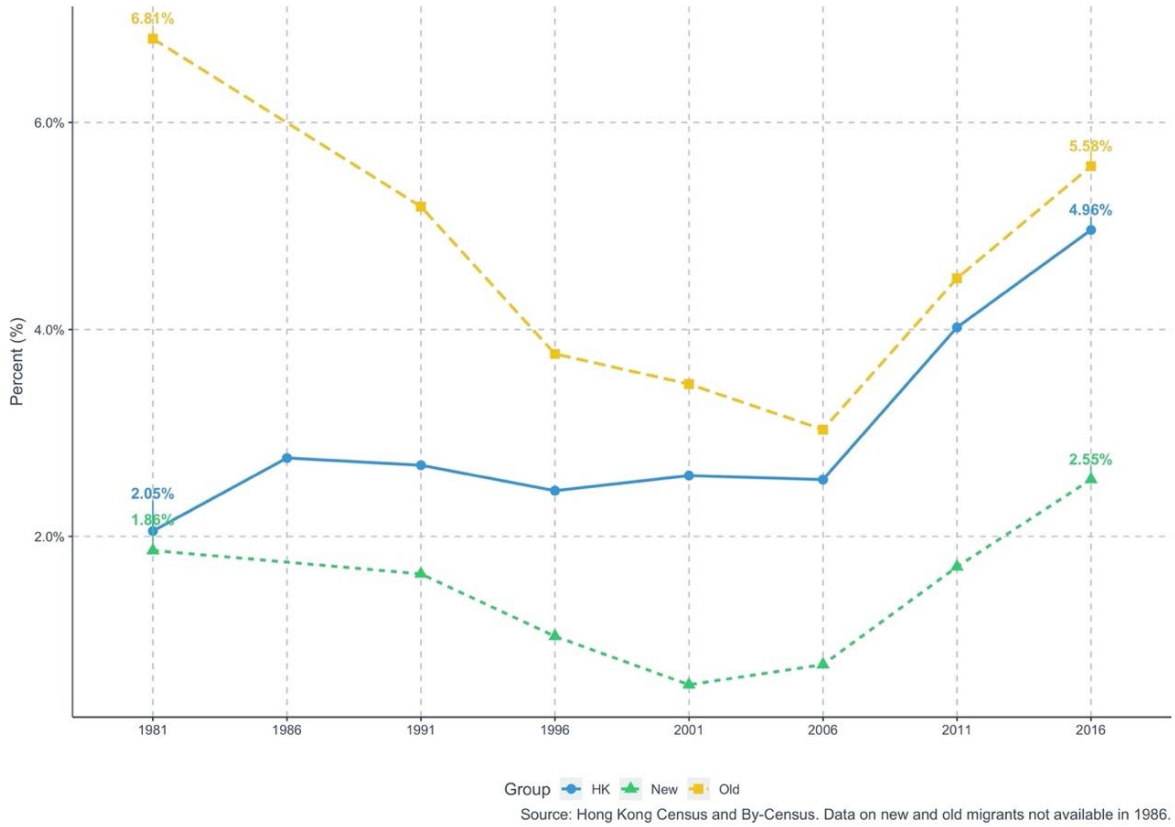
Mainland Migrants as Self-employed and Employer in Hong Kong

Figures 5 and 6 show the percentage of self-employed and employer among the Hong Kong-born, the old migrants and the new migrants respectively. Two stylized facts are apparent. First, the percentage of self-employed and employer among the old migrants is higher than the Hong Kong-born for all years. This is in line with previous studies in different countries that migrants are more likely to be self-employed or business owners than the native-born (Borjas, 1986; Clark and Drinkwater, 2000; Lofstrom, 2002; Fairlie et al., 2010). This finding together with the lower percentage of employees among old migrants than the Hong Kong-born (Figure 4) is consistent with the hypothesis that migrants are pushed towards self-employment as they face impediments in salaried employment in the destination country (Levie, 2007). As they acquire country-specific human capital they are pulled towards self-employment and business ownership (Le, 2000; Constant and Zimmermann, 2006). It also supports the hypothesis that the migrants are more adventurous and prone to take risk than the native-born (Chiswick, 1978; Todaro, 1980; Constant and Zimmermann, 2006). It is interesting to note that the percentage

of the self-employed and employer of the old migrants is much higher than that of the Hong Kong-born in 1981 but this percentage gap narrows substantially over time so that by 2016 there is only a minor difference. The large percentage gap in 1981 may be attributable to the fact that many of the old migrants are illegal immigrants who arrive Hong Kong before the abolition of the reached-base policy in 1980. By self-selection they are more likely to be more adventurous and less risk averse than the Hong Kong-born in becoming self-employed or starting a business. Over time, as new migrant cohorts admitted mainly for family re-union or under different manpower schemes are added to the stock of the old migrants, the old migrants become more similar to the Hong Kong-born in terms of risk attitude. They also face less obstacles in seeking salaried employment. Consequently the self-employment and employer percentages of the old migrants and the Hong Kong-born converge.

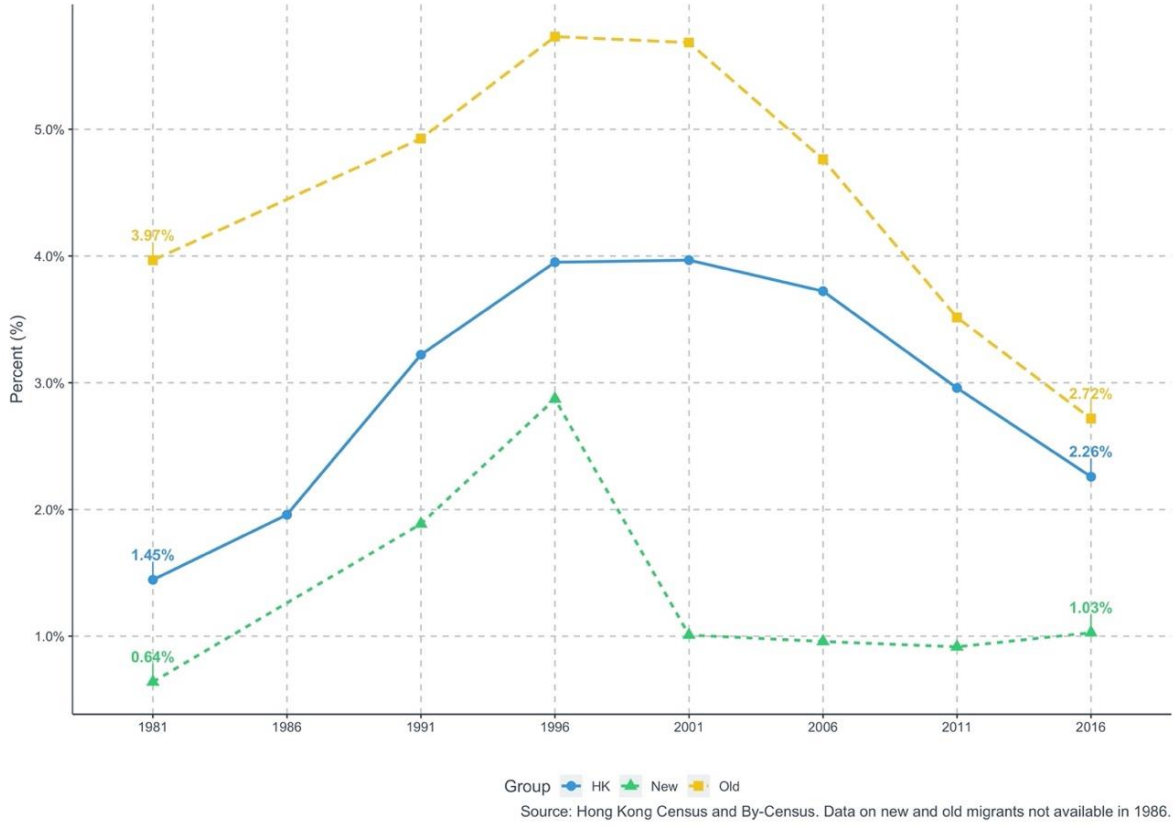
Second, it is clear that the percentage of new migrants who are self-employed or employers is lower than the old migrants (and the Hong Kong-born as well) in all years. This finding is in line with studies which show that the longer the stay in the destination country, the more probable the migrants will take up self-employment or business ownership (Borjas, 1986). It also supports the hypothesis that the longer the stay, the more likely the migrants will acquire country-specific skills, build up personal savings and have access to financial resources for starting a business (Evans, 1989), noting that the new migrants have been in Hong Kong for less than seven years whereas the old migrants have stayed any length of time beyond seven years.

Figure 5: Proportion of Self-employed within Birth/Migrant Groups, 1981-2016 (%)



Source: Hong Kong Census and By-Census. Data on new and old migrants not available in 1986.

Figure 6: Proportion of Employer within Birth/Migrant Groups, 1981-2016 (%)



Source: Hong Kong Census and By-Census. Data on new and old migrants not available in 1986.

It should be noted that in 1981 the percentage of the old migrants who are self-employed (6.81%) is more than three times higher than the Hong Kong-born (2.05%). This is an indication that in the earlier years the old migrants face more impediments in seeking salaried employment in the labour market. They are pushed towards the alternative of self-employment. Another supporting evidence is that 3.1% out of the 6.81% or nearly half of the self-employed old migrants are hawkers, which is close to half. In comparison, less than a third of the self-employed Hong Kong-born are hawkers. The average monthly earnings of hawkers in 1981 is $1,680 which is substantially lower than the $2,253 of the other self-employed old migrants. In those days peddling merchandise on the street as a hawker is the only way of making a living when there is no better alternative. Over time the percentage of the self-employed old migrants has fallen to less than half in 2006 while the percentage of self-employed Hong Kong-born remains stable. There is only a minor difference in the percentage between the old migrants and the Hong Kong-born. From 2006 to 2016 the percentage of self-employment for all birth/migrant groups increases significantly, by 54% for the old migrants, by 3.4 times among the new migrants and nearly double in the case of the Hong Kong-born. Self-employment has become a new trend in the labour market. This increasing trend coincides with the decline in the percentage of employers among the old migrants and the Hong Kong-born over this period.

It is pertinent to note that the percentage of employers for all three birth/migrant groups rises from 1981 to 1996 when it peaks and since then has been on the decline. Business ownership and entrepreneurship are rife in the 1980s and early 1990s when opportunities in starting a business or operating a manufacturing concern abound for the migrants and the Hong Kong-born alike. 1997 marks the changeover of sovereignty of Hong Kong and the beginning of the Asian financial crisis during a period when manufacturing in Hong Kong has been losing its competitiveness vis-à-vis the Pearl River Delta and factories have been re-locating across the border. The decline in business ownership since 1996 may be due to a sleuth of factors such as macroeconomic environment and changes in the financial markets. Higher wage and rental costs also make starting a business challenging. A more in-depth study on the topic is needed to ascertain the major cause. Suffice it to say the decline in entrepreneurial spirit has far-reaching consequences on the vibrancy of Hong Kong as a place for starting new businesses and a land of opportunities for upward mobility for both the migrants and the Hong Kong-born, as it was in the 1960s to the 1980s.

Concluding Remarks

The male labour force participation rate of the Hong Kong-born follows a secular downward trend for all age groups because of the backward-bending labour supply.[8] In contrast to the males, female labour force participation rate of the Hong Kong-born has been rising over time as female market wage increases, except for the youngest group of 15-24 who have lower participation because of the expansion in education opportunity.

The participation rates of old migrants of both gender are by and large the same as the Hong Kong-born over the period, except for female old migrants of child-bearing age of 25-34 and 35-44. With this exception, migrants tend to be just as active as the Hong Kong-born in participating in the labour market as they stay longer in Hong Kong. During the child-bearing age, however, female migrants, old or new, tend to have lower participation rate in the labour market because they have fewer alternatives to personally spending time in childcare and housework. Beyond the child-bearing age, the female old migrants have the same participation rate as the Hong Kong-born while the female new migrants actually have a higher participation rate. The perception that female migrants from Mainland China come to Hong Kong for family re-union and do not contribute in the labour market is mostly unwarranted.

Old migrants are more likely than the Hong Kong-born to be self-employed or employer. As migrants stay longer in Hong Kong and become old migrants, their distribution in the labour market as employees, self-employed and employers converge to that of the Hong Kong-born. Not only do they become more similar to the Hong Kong-born in the rate of labour force participation but also in the types of economic activities in which they engage. There is evidence that given time the Mainland migrants integrate into the Hong Kong labour market.

[8] Except for the age 55-64 male migrants, who experience a rise in participation rate on account of the deferral of retirement age.

Appendix

A probit model to study the effect of migrant status and other variables on probability of labour force participation (LFP)

The probit model takes the form Pr (LFP=1|X) = F(XB)

where Pr denotes probability, and F is the cumulative distribution function of the standard normal distribution. X is a set of explanatory variables which affect the probability of labour force participation through affecting market wage and reservation wage. The key variables are a set of dummy variables on migrant status–**HongKong-born**, **NewMigrant**, **OldMigrant**. HongKong-born is the reference group. The definition of other explanatory variables are given below.

Schooling dummies:

S1=1 if education attainment is Primary 6 or below, =0 otherwise (reference group);
S2=1 if education attainment is from Form 1 to Form 3, =0 otherwise;
S3=1 if education attainment is Form 4 to Form 7 plus craft level courses, =0 otherwise;
S4=1 if education attainment is non-degree courses not captured by S1-S3; =0 otherwise;
S5=1 if education attainment is degree courses and above; =0 otherwise;

Marital status dummy variable:

Married=1 if the individual is currently married, =0 otherwise;

NChild15 = number of children aged 15 or below;

Age = age of the individual;

AgeSquared = square term of age.

The marginal effect of each variable is the average of the marginal effect of all observations.

Table A1. Summary statistics of variables used in the Probit regressions[9]

	Male			Female		
Variable	1981	2001	2016	1981	2001	2016
Age	33.863	37.646	41.221	34.034	37.384	41.417
	(13.925)	(13.055)	(14.197)	(14.379)	(12.68)	(13.671)
AgeSquared	1340.583	1587.671	1900.723	1365.048	1558.358	1902.281
	(1057.319)	(1009.749)	(1151.666)	(1097.08)	(978.746)	(1112.917)
HongKong-born	0.486	0.673	0.741	0.538	0.661	0.660
	(0.5)	(0.469)	(0.438)	(0.499)	(0.473)	(0.474)
NewMigrant	0.080	0.024	0.027	0.058	0.076	0.058
	(0.272)	(0.154)	(0.163)	(0.234)	(0.265)	(0.233)
OldMigrant	0.434	0.302	0.232	0.404	0.263	0.282
	(0.496)	(0.459)	(0.422)	(0.491)	(0.44)	(0.45)
S1	0.420	0.182	0.094	0.532	0.244	0.132
	(0.494)	(0.386)	(0.292)	(0.499)	(0.429)	(0.338)
S2	0.230	0.242	0.186	0.164	0.179	0.164
	(0.421)	(0.428)	(0.389)	(0.37)	(0.383)	(0.37)
S3	0.278	0.357	0.332	0.257	0.384	0.336
	(0.448)	(0.479)	(0.471)	(0.437)	(0.486)	(0.472)
S4	0.037	0.076	0.126	0.031	0.076	0.118
	(0.188)	(0.265)	(0.332)	(0.173)	(0.264)	(0.323)
S5	0.036	0.142	0.262	0.016	0.118	0.250
	(0.185)	(0.35)	(0.44)	(0.125)	(0.323)	(0.433)
Married	0.520	0.583	0.573	0.586	0.591	0.564
	(0.500)	(0.493)	(0.495)	(0.492)	(0.492)	(0.496)
NChild15	1.104	0.591	0.389	1.325	0.636	0.396
	(1.332)	(0.913)	(0.793)	(1.385)	(0.943)	(0.761)
Sample Size	311,342	156,270	113,318	279,237	153,190	123,916

[9] Standard deviation in parentheses

Table A2. Probit regressions[10] - Female

	Dependent variable:								
	Labour Force Participation (LFP)								
	1981			2001			2016		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
NewMigrant	0.431	0.469	0.483	-0.501	-0.369	-0.128	-0.361	-0.438	-0.295
	(39.142)***	(41.928)***	(41.524)***	(-40.544)***	(-27.879)***	(-9.352)***	(-23.282)***	(-26.447)***	(-17.465)***
OldMigrant	-0.264	-0.096	-0.073	-0.382	-0.079	0.029	-0.174	-0.075	-0.023
	(-53.299)***	(-15.021)***	(-11.061)***	(-51.392)***	(-9.125)***	(3.215)***	(-21.557)***	(-8.403)***	(-2.582)***
Age		0.056	0.184		0.202	0.281		0.190	0.243
		(50.199)***	(123.113)***		(124.307)***	(140.165)***		(102.931)***	(115.399)***
AgeSquared		-0.001	-0.002		-0.003	-0.004		-0.002	-0.003
		(-62.815)***	(-132.272)***		(-123.217)***	(-141.829)***		(-101.764)***	(-115.523)***
S2		-0.154	-0.187		0.087	0.119		0.028	0.036
		(-20.765)***	(-24.360)***		(8.027)***	(10.673)***		(1.970)**	(2.540)**
S3		0.043	-0.165		0.503	0.485		0.246	0.244
		(6.482)***	(-23.577)***		(48.797)***	(45.844)***		(18.547)***	(18.136)***
S4		0.400	0.084		0.863	0.712		0.584	0.542
		(26.624)***	(5.327)***		(54.321)***	(43.575)***		(34.590)***	(31.675)***
S5		0.278	-0.007		0.830	0.621		0.665	0.610
		(13.806)***	(-0.316)		(60.263)***	(43.688)***		(43.760)***	(39.576)***
Married			-0.961			-0.465			-0.338
			(-130.079)***			(-46.641)***			(-34.454)***
NChild15			-0.163			-0.344			-0.296
			(-84.991)***			(-76.611)***			(-48.745)***
Constant	0.179	-0.584	-1.929	0.317	-3.547	-4.452	0.351	-3.381	-4.071
	(54.950)***	(-29.492)***	(-81.039)***	(78.971)***	(-114.568)***	(-124.725)***	(78.334)***	(-95.623)***	(-104.715)***
Observations	279,237	279,237	279,237	153,190	153,190	153,190	123,916	123,916	123,916
Log Likelihood	-190,003.200	-185,318.700	-171,313.400	-102,842.600	-90,503.240	-85,010.520	-82,425.470	-73,484.630	-71,028.540
Akaike Inf. Crit.	380,012.400	370,655.300	342,648.800	205,691.200	181,024.500	170,043.000	164,856.900	146,987.300	142,079.100

Note: *p<0.1; **p<0.05; ***p<0.01

Census used: 1981 (20%), 2001 (1/14), 2016 (5%)

[10] z-scores in parentheses

Table A3. Marginal effects [11] – Female

	Dependent variable:								
	Labour Force Participation (LFP)								
	1981			2001			2016		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
NewMigrant	0.164	0.177	0.181	-0.198	-0.146	-0.051	-0.142	-0.172	-0.115
	(42.013)***	(45.523)***	(45.458)***	(-41.700)***	(-28.069)***	(-9.293)***	(-23.086)***	(-26.298)***	(-17.181)***
OldMigrant	-0.105	-0.038	-0.029	-0.151	-0.031	0.011	-0.068	-0.029	-0.009
	(-53.511)***	(-15.020)***	(-11.057)***	(-51.612)***	(-9.101)***	(3.220)***	(-21.413)***	(-8.368)***	(-2.578)***
Age		0.021	0.064		0.068	0.089		0.064	0.079
		(50.190)***	(123.124)***		(123.614)***	(139.340)***		(102.635)***	(114.960)***
AgeSquared		-0.0003	-0.001		-0.001	-0.001		-0.001	-0.001
		(-62.797)***	(-132.253)***		(-122.431)***	(-140.755)***		(-101.464)***	(-115.044)***
S2		-0.061	-0.074		0.034	0.046		0.010	0.014
		(-20.757)***	(-24.350)***		(8.080)***	(10.780)***		(1.976)**	(2.550)**
S3		0.017	-0.065		0.193	0.186		0.092	0.091
		(6.490)***	(-23.559)***		(50.504)***	(47.367)***		(18.888)***	(18.471)***
S4		0.152	0.033		0.289	0.247		0.200	0.187
		(28.478)***	(5.362)***		(70.594)***	(52.780)***		(39.930)***	(36.048)***
S5		0.108	-0.003		0.286	0.223		0.234	0.216
		(14.338)***	(-0.316)		(74.580)***	(49.946)***		(48.839)***	(43.601)***
Married			-0.362			-0.179			-0.127
			(-142.715)***			(-48.031)***			(-35.050)***
NChild15			-0.057			-0.108			-0.096
			(-85.004)***			(-76.428)***			(-48.683)***
Constant	0.070	-0.222	-0.676	0.122	-1.192	-1.403	0.134	-1.140	-1.324
	(55.467)***	(-29.465)***	(-80.844)***	(82.004)***	(-113.292)***	(-123.239)***	(83.689)***	(-94.323)***	(-103.110)***
Observations	279,237	279,237	279,237	153,190	153,190	153,190	123,916	123,916	123,916
Akaike Inf. Crit.	380,012.400	370,655.300	342,648.800	205,691.200	181,024.500	170,043.000	164,856.900	146,987.300	142,079.100

Note: *p<0.1; **p<0.05; ***p<0.01

Census used: 1981 (20%), 2001 (1/14), 2016 (5%)

[11] z-scores in parentheses

Table A4. Probit regressions[12] - Male

	Dependent variable:								
	Labour Force Participation (LFP)								
	1981			2001			2016		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
NewMigrant	1.037	0.880	0.854	-0.627	-0.317	-0.365	-0.133	0.025	-0.015
	(66.309)***	(47.130)***	(45.423)***	(-29.793)***	(-12.641)***	(-14.214)***	(-5.309)***	(0.859)	(-0.514)
OldMigrant	0.673	0.065	0.068	-0.014	-0.011	-0.024	0.010	0.076	0.052
	(107.052)***	(5.609)***	(5.882)***	(-1.697)*	(-1.047)	(-2.185)**	(0.984)	(6.619)***	(4.479)***
Age		0.463	0.459		0.351	0.330		0.314	0.300
		(222.139)***	(204.585)***		(190.003)***	(164.642)***		(140.581)***	(128.448)***
AgeSquared		-0.006	-0.006		-0.004	-0.004		-0.004	-0.004
		(-223.375)***	(-214.839)***		(-181.942)***	(-169.218)***		(-133.682)***	(-127.384)***
S2		-0.016	-0.017		0.341	0.322		0.190	0.186
		(-1.366)	(-1.454)		(24.328)***	(22.777)***		(10.566)***	(10.278)***
S3		-0.544	-0.567		0.311	0.282		0.219	0.212
		(-52.522)***	(-54.422)***		(22.737)***	(20.435)***		(12.695)***	(12.229)***
S4		-0.891	-0.924		0.329	0.300		0.393	0.385
		(-48.906)***	(-50.581)***		(17.111)***	(15.394)***		(18.593)***	(18.130)***
S5		-0.794	-0.821		0.202	0.174		0.300	0.289
		(-38.057)***	(-39.462)***		(12.713)***	(10.754)***		(15.895)***	(15.215)***
Married			0.011			0.435			0.345
			(0.840)			(31.031)***			(24.623)***
NChild15			-0.060			-0.126			-0.085
			(-20.228)***			(-21.889)***			(-10.259)***
Constant	0.791	-5.948	-5.816	0.876	-5.486	-5.068	0.830	-5.129	-4.861
	(218.805)***	(-182.519)***	(-163.611)***	(196.613)***	(-157.959)***	(-136.283)***	(169.000)***	(-123.742)***	(-112.886)***
Observations	311,342	311,342	311,342	156,270	156,270	156,270	113,318	113,318	113,318
Log Likelihood	-117,118.000	-73,856.510	-73,656.270	-77,084.490	-54,231.120	-53,644.140	-57,245.730	-44,327.250	-44,008.290
AkaikeInf.Crit.	234,242.100	147,731.000	147,334.500	154,175.000	108,480.200	107,310.300	114,497.500	88,672.500	88,038.570

Note: *p<0.1; **p<0.05; ***p<0.01

Census used: 1981 (20%), 2001 (1/14), 2016 (5%)

[12] z-scores in parentheses

Table A5. Marginal effects [13] - Male

	Dependent variable:								
	Labour Force Participation (LFP)								
	1981			2001			2016		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
NewMigrant	0.122	0.043	0.044	-0.212	-0.081	-0.094	-0.040	0.006	-0.004
	(133.256)***	(72.459)***	(71.194)***	(-26.185)***	(-11.091)***	(-12.268)***	(-5.069)***	(0.869)	(-0.510)
OldMigrant	0.130	0.006	0.006	-0.004	-0.002	-0.005	0.003	0.018	0.012
	(113.913)***	(5.665)***	(5.940)***	(-1.694)*	(-1.045)	(-2.175)**	(0.986)	(6.756)***	(4.542)***
Age		0.063	0.062		0.068	0.063		0.069	0.065
		(134.972)***	(127.823)***		(175.554)***	(147.646)***		(138.380)***	(123.926)***
AgeSquared		-0.001	-0.001		-0.001	-0.001		-0.001	-0.001
		(-136.085)***	(-131.814)***		(-168.815)***	(-152.369)***		(-132.611)***	(-124.196)***
S2		-0.001	-0.002		0.068	0.064		0.044	0.042
		(-1.355)	(-1.443)		(27.106)***	(25.239)***		(11.276)***	(10.955)***
S3		-0.061	-0.065		0.065	0.058		0.051	0.049
		(-42.426)***	(-43.567)***		(23.963)***	(21.448)***		(13.200)***	(12.700)***
S4		-0.153	-0.164		0.062	0.056		0.082	0.080
		(-32.185)***	(-33.135)***		(20.473)***	(18.134)***		(22.114)***	(21.511)***
S5		-0.128	-0.137		0.041	0.035		0.068	0.065
		(-25.433)***	(-26.261)***		(13.836)***	(11.579)***		(17.156)***	(16.385)***
Married			0.001			0.098			0.085
			(0.841)			(30.276)***			(24.230)***
NChild15			-0.008			-0.024			-0.018
			(-19.636)***			(-21.750)***			(-10.223)***
Constant	0.164	-0.811	-0.789	0.241	-1.064	-0.972	0.235	-1.122	-1.056
	(257.042)***	(-123.961)***	(-116.057)***	(325.111)***	(-143.512)***	(-122.374)***	(293.805)***	(-116.980)***	(-105.819)***
Observations	311,342	311,342	311,342	156,270	156,270	156,270	113,318	113,318	113,318
Akaike Inf. Crit.	234,242.100	147,731.000	147,334.500	154,175.000	108,480.200	107,310.300	114,497.500	88,672.500	88,038.570

Note: *p<0.1; **p<0.05; ***p<0.01

Census used: 1981 (20%), 2001 (1/14), 2016 (5%)

[13] z-scores in parentheses

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