Immigrants and Earnings Inequality: Evidence from Hong Kong

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Abstract:

Using data from 1991 to 2006 in Hong Kong, this paper documents how the distribution of workers' earnings and the inequality of immigrants' and natives' earnings changed over time. We decompose earnings inequality to explore how the changes in immigrants' share of the labor force have affected earnings inequality. We find that the increase in overall inequality can be explained by the increase in the within-group variance of natives. A nonnegligible part of the increase in inequality for women is due to the expansion of between-group variance caused by the large inflow of low-income immigrants from developing countries.

JEL codes: D31, J61, O15

1. INTRODUCTION

Hong Kong has experienced rapid social and economic transformation over the last three decades. Researchers have been interested in documenting the narrowing of the gender wage gap during this period. For example, studies (Chung, 1996; Sung, Zhang and Chan, 2001) have found that a large part of the reduction in the gender wage gap has been due to increased educational attainment for women and occupational segregation that favors women (e.g., high pay in traditionally female sectors such as personal services). In addition, as the political and economic relationship between Hong Kong and mainland China has strengthened, outsourcing to China has produced a significant transformation in Hong Kong's economy (Hsieh and Woo, 2005; Ho, Wei and Wong, 2005). The structural change from a manufacturing orientation to a service orientation has also played a role in narrowing the gender wage gap because women have a higher level of productivity in the service sector, which requires less intensive physical labor (Fan and Liu, 2003). When examining the gap along with the wage distribution, Ge and Zhang (2009)[1] find that the gap decreased for lower-paid positions but increased for higher-paid positions from 1981 to 2006.

However, very few studies[2] have examined the earnings inequality for male and female workers in Hong Kong. Given that other industrialized countries (including Germany and the US) have been experiencing a narrowing gender wage gap but rising inequality (Antonczyk, Fitzenberger, Sommerfeld, 2010; Black and Brainerd, 1999), it is important to examine whether this rising inequality exists in Hong Kong as well. In addition, studies on gender wage differences (e.g., Ge and Zhang, 2009) do not explicitly distinguish immigrants from natives. However, immigrants from mainland China have constituted a sizable portion of the population in Hong Kong (Lui, 1997). From 1991 to 2006, many changes have occurred in both the number and demographic composition of immigrants, particularly female immigrants. For example, in 1991, 46% of working men in Hong Kong were

nonnative,[3] but by 2006 the figure had decreased to 32%. These changes might relate to the local regulations on immigration.[4] For instance, immigration law was tightened in the late 1980s, sharply reducing the number of undocumented immigrants from mainland China.[5] In addition, a large inflow of low-skilled, domestic helpers from developing countries arrived in Hong Kong (Cortes and Pan, 2009) after the introduction of the Domestic Helpers' program. It is important to consider this demographic evolution in analyses of the gender wage distribution that include both immigrants and natives. Using the 1991, 1996, 2001, and 2006 Hong Kong Population Census and by-Census data, we examine how the distribution of workers' earnings has evolved in Hong Kong from 1991 to 2006. In particular, this paper documents the earnings inequality during this period. We investigate the subperiods to gain a better understanding of the different patterns in the changing earnings inequalities for male and female employees in Hong Kong. By the mid-1990s, most of Hong Kong's manufacturing investment shifted to South China (Wong, 2002). Moreover, the 1997 Asian financial crisis and the global economic downturn of 2001 also had huge impacts on the financial sector's employment and wages. Therefore, our findings shed light on how these structural economic changes have impacted earnings inequality.

We analyze the earnings inequality of immigrants and natives separately. Our results reveal that it is necessary to separate these two groups in earnings inequality analyses to identify the effects of population share and income dispersion within each group. Further, this paper looks at how the employment share of immigrants has changed over time and how earnings inequality for male and female employees changes depending on whether we include or exclude immigrants. This paper fills the gap in the current literature on the earnings distribution in Hong Kong and provide an updated picture of the demographics of Hong Kong's immigrants.

Furthermore, earnings inequality within immigrant groups has not yet been studied.

We examine the large inflow of immigrants to Hong Kong and its effects on overall earnings inequality. We extend the existing literature on earnings inequality in Hong Kong by examining variations in changes at different points along the income distribution and across demographic groups. We find that the earnings inequality between men and women in Hong Kong looks very different if we include immigrants in the picture. The large inflow of low-skilled female immigrants, especially those who arrived between 1991 and 1996, caused a sharp decline in the log real income between 1991 and 2006 for the bottom of the income distribution. It is interesting that we did not find any similar changes for male employees. Finally, we follow the variance decomposition method in Lam and Liu (1998) to explore how the changes in immigrants' share have affected earnings inequality. Lam and Liu (1998) found that a substantial portion of the increase in earnings inequality from 1981 to 1991 could be due to shifts in shares of heterogeneous population groups caused by the immigration policy. In contrast, we find that the increase in Hong Kong's overall inequality can be explained by the increase in the within-group variance of native employees. At the same time, a nonnegligible part of the increase in inequality for female employees is due to the expansion of between-group variance caused by the large inflow of low-income immigrants from developing countries.

2. DATA

The data used in this paper come from the full data sets of the 1991 and 2001 Hong Kong Population Census and the 1996 and 2006 Population By-census. Besides demographic information such as age, gender, education, household income, the Census and By-census datasets contain rich information on individual's employment (economic activity) status, monthly income from main employment,[6] industry, and occupation. To accommodate the changes of some industrial codes over the period and make them consistent over time, we

developed a crosswalk between industrial codes in four waves.[7] Income data are deflated to the 2006 level. We restrict our sample to employed workers ages 25 to 60 with positive monthly income from main employment.[8] Students and nondomestic household members are included in the sample. Further, we exclude self- and unpaid family workers in the income analysis. To attain a comparable measure of educational attainment, we recoded the categorical educational attainment into equivalent years of schooling. Consistent with previous literature (Lam and Liu 2002a, 2002b; Liu et al., 2004), we use place of birth to define natives and immigrants. Moreover, we distinguish between Chinese national immigrants, immigrants from developing countries, and immigrants from developed countries and compare their labor market outcomes with natives. Details of the variables and coding are provided in the following sections and the Data Appendix.

3. BASIC FACTS OF HONG KONG'S LABOR MARKET FROM 1991 TO 2006

First, we look at the labor force participation and unemployment rates for the working-age population (i.e., people who are age fifteen and above) in Hong Kong. Table 1 shows steady increases in the working-age population for both men and women, although the female population has increased at a faster rate than the male population. Similarly, the female labor force participation rate has also been increasing, while the male labor force participation rate has decreased from 83% to 70%. As a result, the Hong Kong labor market has experienced a substantial increase in the supply of female workers. Despite this increase in female labor supply, the unemployment rate has stayed lower for women than for men. Furthermore, although the unemployment rate has increased for both men and women, the rise was larger for male workers. From 1991 to 2006, the male unemployment rate doubled, whereas the increase in the female unemployment rate was less than 30%.

Women in the labor force are, on average, more educated than men. This educational

gap probably reflects women's positive selection into the labor force. Despite their higher educational attainment, the average real income of female employees is lower than that of male employees. The share of nonnative people (i.e., people who were not born in Hong Kong) in the labor force was higher for men than for women in 1991, but after steady decreases in the male percentage, the share for nonnative workers became higher for women in 2001.

[Insert Table 1 about here]

Next, we look at the industry composition of employees ages 25-60. As illustrated in Table 2, the share of manufacturing jobs decreased drastically from 1991 to 2006, both for men and women. The share of male employees increased in wholesale and business services. The share of female employees increased in those industries as well, but the share of jobs in the personal-service industry increased drastically for women only.

[Insert Table 2 about here]

4. TRENDS IN OVERALL INEQUALITY

As stated in a report from the International Monetary Fund (Wang et. al, 2002), the Hong Kong economy has shown a steady increase in overall income inequality, as measured by percentile gaps. Figure 1 confirms this observation with our data: the differences between the upper and lower tails in the income distribution are increasing over time, especially for women. Further, this increase is mainly driven by increases in income of the top 10%.

[Insert Figure 1 about here]

To illustrate in more detail how income distribution has changed for both men and women in Hong Kong, Figure 2 plots the change in log real monthly income at percentiles of the income distribution for male and female employees over the past two decades. In particular, we measure changes in the log real income at the nth percentile within each gender group

from 1991 to 1996, 1996 to 2001, and 2001 to 2006.[9] We also examine longer term changes between 1991 and 2006.

[Insert Figure 2 about here]

In all four graphs in Figure 2, the lines for both men and women are upward sloping, which implies that income inequality is increasing for both men and women. This finding is consistent with the trends in Figure 1. A notable difference between men and women is that female employees who fell right around the bottom 20th percentile marker of the income distribution experienced a drop in their average real income. In contrast, women in the other income percentiles had similar trends as men. Among the three subperiods, this decline was most clearly observed in Panel B (i.e., 1991–1996). Although such a fall of income at the bottom 20% is indiscernible in Panel C, it appears again in Panel D. Note that from 2001 to 2006, the real income fell multiple percentiles, is likely resulted from the recession caused by the SARS pandemic. Therefore Panel D of Figure 2 is noisier than the other panels, but the general trends remained the same.

One reason for the variation between male and female trends might be the different immigrant profiles of men and women. As shown in Table 1, the share of immigrants in the labor force remained stable for women but decreased for men.

[Insert Figure 3 about here]

Figure 3 shows the log real income changes for various percentiles among workers who were born in Hong Kong. One interesting finding is that we do not observe a fall in log real earnings in the bottom 20% for women (as shown in Figure 2).[10] Furthermore, when the sample is limited to native workers, female earnings increased faster than male earnings over the study period. This indicates that the income gap between men and women has narrowed for native workers. Given that Figure 2 does not show such convergence as clearly as Figure 3, female immigrant workers must have experienced slower growth or even declines in their

incomes.

In the next section, we discuss immigrant profiles and further investigate the differences between native and immigrant workers.

5. CHANGING PROFILE OF IMMIGRANTS IN HONG KONG

Figure 4 plots the changes in the share of immigrants at each percentile for men and women. The data reveal a substantial inflow of female immigrants at the bottom of the income distribution. Panel A shows that the overall share of immigrants among female employees increased slightly, and this increase was concentrated at the bottom of the income distribution, both when looking at the whole study period of 1991 to 2006 (Panel A) or at different subperiods (Panels B and D). In contrast, except at around the 80th percentile, the share of immigrants in male employees decreased by about 20% during the period of 1991 to 2006.

[Insert Figure 4 about here]

Given the policy context on immigration regulations and demographic changes during 1991 to 2006 discussed above, we want to understand the differences in the profiles of male and female immigrants by their origin. We divide our sample into four groups by their place of birth: people who were born in Hong Kong (hereafter *natives*; Group A); people who were born in Mainland China, Taiwan, and Macau (hereafter *Chinese immigrants*; Group B); people who were born in Japan, Korea, Australia, New Zealand, North America, and West and North European countries (hereafter *immigrants from developed countries*; Group C); and people who were born in countries other than the ones listed in Groups A, B, and C (hereafter *immigrants from other countries*; Group D).

[Insert Table 3 about here]

Table 3 presents the basic summary statistics of each group. Panel A shows that, over

the study period, the share of native employees increased only for men (from 56% in 1991 to 70% in 2006). The share for native female decreased very slightly or remained quite stable for 25 years. Because natives constituted about two-thirds of the labor force, the overall trends were similar to the trends observed in Table 1.

Panel B reports the statistics of Chinese immigrants. As discussed above, this is the largest group of immigrant workers in Hong Kong. However, the share of immigrants in Chinese employees has been decreasing. Compared to the natives (Panel A), Chinese immigrants on average have less education and lower earnings, although their unemployment rate is similar to that of the natives. The labor force participation rate of Chinese immigrants is much lower than that of the natives, especially for women.

Panel C shows that male immigrants from developed countries are much more educated and earn much more than native men. For example, the average immigrant in Hong Kong's labor force who comes from a developed country has about 15 years of schooling, which is 4 years higher than the average amount for native men. The labor force participation rate of the former group is high (76% to 90%) and their unemployment rate is low (less than 1.7%). Female immigrants from developed countries are also much more educated than native women, and those who work earn more than native female workers on average. However, their labor force participation rate is not as high as that of native female workers, which might be due to the fact that a substantial portion of this group came to Hong Kong as spouses of male immigrant workers.

For immigrants from other countries (Group D), Panel D shows some interesting contrasts between men and women. First, among this immigrant group, employees ages 25 to 60 made up a larger proportion of total workers for women than for men, whereas this age group comprised a higher proportion for men in Groups A to C (see Panels A, B, and C). Moreover, the share of the immigrants from other countries in the labor force increased for

women from 1991 to 2006 but not for men.[11] The female labor force participation rate of this group is the highest among all four groups (Group A to D). In 2001 and 2006, the labor force participation rate was even higher for female than for male immigrants from other countries. Compared to native male workers, male immigrant workers in this group tended to be slightly more educated and to earn a bit more. In contrast, though female immigrant employees in this group had similar levels of education as female native employees, the former group earned much less income. For example, the average log real income of female employees from other countries was under 5,600 in Hong Kong dollars, which was just half to one-third of what their native counterparts earned. The source of such a large gap might due to the large inflow of immigrants at the bottom of income distribution for women.

[Insert Table 4 about here]

Next, we turn to industry composition to further understand the earnings differences among native and immigrant workers. Table 4 presents the industry composition of employees by gender and country of origin. As shown in Panel A of Table 2, native employees' industry composition was quite similar to that of all employees. The major difference was that the percentage working in personal services was much lower for native women (2% to 3% vs. 10% to 16% for all employees). Chinese immigrants (Panel B) also had a similar distribution across industries, except for their slightly larger shares in blue-collar intensive industries (manufacturing, construction) and the retail sector. This might correspond to the lower educational attainment of Chinese immigrant workers on average (Table 3, Panel B). In contrast, Panel C shows that the industry composition of immigrants from developed countries was quite different. Male immigrants were concentrated in finance, business services and public administration sectors.

Panel D presents the industry composition of immigrants from other countries. The distribution for men was similar to the distribution of all male employees. However, the

industry composition for women was very different. About 80% of women in this group were working in personal services, which is a low-paid sector. The immigrant women in this sector earn on average about 4,000 Hong Kong dollars,[12] which is less than half of average earnings of all female employees in Hong Kong. Therefore, the fall in the log real income shown at the bottom of the income distribution among female employees was most likely caused by the inflow of female workers from developing countries to Hong Kong's personal services industry.

6. DECOMPOSITION OF INCOME INEQUALITY

So far, we have shown that the fall in real income at the bottom of income distribution for female employees can be explained by the inflow of immigrant workers from countries other than China and by the flux of women from developed countries entering Hong Kong's personal service sector. The fall in real income at the lower tail indicates an expansion in income inequality. Lam and Liu (1998) argue that a substantial portion of the increase in income inequality in Hong Kong from 1981 to 1991 was attributable to the increase in the share of immigrants from countries other than China, which are more heterogeneous than natives in terms of race and ethnicity, cultural heritage, educational background, and accumulated human capital. We apply Lam and Liu (1998)'s methodology to our data from 1991 to 2006. This analysis reveals how immigrants of different origins relate to the earnings inequality in Hong Kong given the changing immigration policies and corresponding demographic profiles in recent years. To explore the implications that changes in the shares of immigrant groups have for income inequality, we decompose income variance into between- and within-group components.

First, we decompose total variance of log real income into between- and within-group components:

$$(1) \quad \mathrm{Var}(\log Y_{ij}) = \frac{1}{n}\sum_{i=1}^{4}\sum_{j}(\log Y_{ij} - \overline{\log Y}) = \sum_{i=1}^{4}\frac{n_i}{n}(\overline{\log Y_i} - \overline{\log Y}) + \sum_{i=1}^{4}\frac{n_i}{n}V_i \quad,$$

where Y_{ij} is the income of jth individual in population group i, $\overline{\log Y}$ is the average income of

the entire population, $\overline{\log Y_i}$ is the average income of group i, n is the total population, and n_i

is the population of group i. $V_i \equiv \mathrm{Var}(\log Y_{ij} \mid i)$ is the within-group variance of group i. The

between-group component can be written as $\sum_{i=1}^{4}\frac{n_i}{n}(\overline{\log Y_i} - \overline{\log Y})$, which is the variance in the

average income of each group. The within-group component is the weighted average of the

within-group variance.

[Insert Table 5 about here]

Table 5 shows the decomposition results for male and female employees with positive

income. The total inequality increased substantially from 1991 to 2006 for both genders,

especially for women. The increase in total earnings inequality was about 40% for men and

59% for women. For men, most of the inequality and thus its changes can be attributed to

within-group inequality. The share of between-group variance in the total variance declined

from 9.5% to 4.8% from 1991 to 2006, implying that the difference caused by the country of

origin became less and less important to the total inequality among male employees

throughout this period. For women, both between-group and within-group inequality

increased over time. In contrast to men, however, the share of between-group inequality in

total inequality increased for female employees over time: the contribution for between-group

inequality changes from 12% in 1991 to 23% in 2006. The increases in between-group

inequality and its contribution to the total inequality among women were most likely related

to the increase in the percentage of immigrants from other countries in the Hong Kong

workforce because their average income is much lower than women from the greater China

region and developed countries, as discussed in earlier sections.

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To understand which group contributed to the increases in within-group inequality, we further decompose the changes in within-group inequality between 1991 and 2006 using 1991 weights as follows: [13]

$$
\begin{aligned}
(2) \quad V^{06} - V^{91} &= \sum (\frac{n_i}{n})^{06} V_i^{06} - \sum (\frac{n_i}{n})^{91} V_i^{91} \\
&= \sum (\frac{n_i}{n})^{91} \{V^{06} - V^{91}\} + \sum \{(\frac{n_i}{n})^{06} - (\frac{n_i}{n})^{91}\} V_i^{91} + \sum \{(\frac{n_i}{n})^{06} - (\frac{n_i}{n})^{91}\} (V_i^{06} - V_i^{91})
\end{aligned}
$$

where superscripts indicate the year of the data. Hereafter, we label the first term *change in variance*, the second term *change in shares*, and the last term *interaction terms*. The advantage of this decomposition is that we can tell whether the changing earnings inequality was due to shifts in the population-group structure or to earnings dispersion.

[Insert Table 6 about here]

Table 6 presents V_i^{91}, V_i^{06}, the contribution of each group and the three terms in the equation for each group. As shown in the first two columns, regardless of gender, the increase in within-group variance was most pronounced among the natives. Consequently, a large part of the changes in within-group inequality can be attributed to the increase in within-group variance of natives: for men, the increase in within-group inequality among natives (0.181) exceeded the overall increase in within-group inequality (0.169), and for women the increase in inequality among natives (0.115) consisted of 85% of the overall increase (0.136). For men, the change of variance was the largest for natives. The rising percentage of natives also contributed to the increase in the within-group variance for this group. For women, the share of natives slightly decreased over the study period, and this reduced share of native employees worked to reduce the inequality. At the same time, however, the increase in variance among the native employees was so large that it cancels out the decrease in within-group inequality due to the shift in native's share of the workforce. In addition, there was a large increase in the share of immigrants from other countries, although the change in their earnings dispersion itself was small.

In summary, the increase in overall inequality in Hong Kong can be explained by (a) increase in within-group variance of native employees, and (b) for women, expansion in between-group variance that is due to the inflow of low-earning immigrants from developing countries.

7. CONCLUSION

This paper has documented the earnings inequality of Hong Kong from 1991 to 2006, a period when Hong Kong's economic and demographic structures changed substantially. We find that the evolution of earnings inequality differed across gender, which could have been due to the different changes in immigrants' shares in the working populations for men and women. In particular, there was a large increase in immigrants' share in the female labor force at the bottom 20% of the earnings distribution throughout the study period. This inflow of low-earning immigrants can explain the decline of real earnings of female employees who fell right around the bottom 20th percentile marker of the income distribution Motivated by this, we further decomposed the immigrant population into the three groups by their country of origin: Chinese, developed countries, and others. We showed that these three groups varied substantially in their demographic backgrounds and in their distribution across industries. These differences are important to understanding the changing earnings inequality in Hong Kong. In addition, we examined earnings inequality by decomposing the variance of log earnings into within-group and between-group components. Following Lam and Liu's (1998) method, we explored the role of shifts in each group's population share and earnings dispersion in the changes in overall earnings inequality. We found that a large part of the changes in within-group inequality could be attributed to the increase in the within-group variance of natives. Unlike Lam and Liu's (1998) findings, the within-group variances among immigrants in our study were smaller than the within-group variances for natives.

Our findings show the importance of considering the inflow of immigrants in studying wage inequality in general and the gender wage gap in particular in Hong Kong. Further, little is known about female immigrants from developing countries who are working in low-paid service sectors. Future research should look at the labor market participation of this group and their impact on the overall wage structure in Hong Kong. Scholars can also further decompose income inequality to understand the roles of observed and unobserved skills of immigrants.

Footnotes

[1] Another recent study (Ge, Li and Zhang, 2011) draws a similar conclusion using 2006 data only.

[2] Lui (1997) discusses the income inequality between male and female workers from 1976 to 1991 using a quantile ratio of log earnings.

[3] The proportion of immigrants from mainland China or Taiwan in Hong Kong's labor force was 35% (Suen, 2000).

[4] See Ou and Pong (2012) for a review on policies related to Chinese immigrants.

[5] We do not include the 1981 and 1986 data because most Chinese immigrants were illegal during that period (Lam and Liu, 2002a, 2002b).

[6] The Census data are limited in that they do not include indicators for the number of hours worked per week or full-time versus part-time work. This makes it difficult for our analysis (and previous analyses using Census data) to exclude other factors that might affect gender wage gaps directly.

[7] The codes are available upon request.

[8] For the calculation of labor force participation, however, we included individuals who were at least 15 years old to be consistent with the government's publication of labor market statistics.

[9] If the number of people who have exactly the same amount of income exceeds the width of a percentile bin, we assign the same income level for multiple percentiles to make sure that we have observations for all percentiles for all years.

[10] Meanwhile, trends in the log-real wage changes among immigrants are similar to the one for all men and women. See Appendix Figure A1.

[11] The increase was substantially large from 1991 to 1996 (from 8.5% to 13%). This might due to the large export of female domestic helpers by Thailand and Indonesia.

[12] Please note that this is the average of women *in this sector,* not the average of all immigrant women (Table 3).

[13] This equation corresponds to equation (6) in Lam and Liu's (1998) study.

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Data Appendix

To measure income we use the variable *monthly income from the main employment*. We exclude workers who had a nominal monthly income greater than 99,990 Hong Kong dollars in 1991 or 1996 and those who had a nominal income greater than or equal to 150,000 Hong Kong dollars in 2001 or 2006.

To measure education we use the variable *educational attainment* (i.e., highest level of education completed. Educational attainment is categorized into eight groups: (1 less than a primary school education (in Hong Kong, those who have not yet completed Grade 6), (2) completed primary school education, (3) completed lower secondary school (in Hong Kong, those who have completed Form 3), (4) completed upper secondary school (in Hong Kong, those who have completed Form 5), (5) Matriculation (in Hong Kong, those who have completed Form 5 and Form 6), (6) subdegree or higher diploma (similar to associates or technical degree), (7) first degree (in Hong Kong, the equivalent of an undergraduate college or university degree), and , (8) postgraduate degree. We also convert the original levels into years of schooling. Details are available upon request.

To measure industry we group the industries into fourteen categories: (1) agriculture and mining; (2) manufacturing; (3) utilities and construction; (4) wholesale (including exporting and importing); (5) retail, restaurants, and hotels; (6) transportation (including storage) and communication; (7) finance; (8) business services; (9) public administration; (10) sanitary and similar services; (11) social and related community services; (12) amusement and recreational services; and (13) personal services; (14) others. Detailed codes are available upon request.

TABLE 1: Basic Statistics

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Population over age 15	2,174,894	2,471,361	2,629,343	2,665,716	2,125,273	2,516,762	2,807,139	3,034,685
Labor force	1,728,690	1,912,791	1,922,530	1,872,601	1,063,250	1,252,035	1,479,112	1,625,880
Labor force participation rate	83.0%	77.4%	73.1%	70.2%	50.0%	49.7%	52.7%	53.6%
Unemployed	55,692	91,511	128,770	127,034	39,809	46,883	55,447	76,923
Unemployment rate	3.2%	4.8%	6.7%	6.8%	3.7%	3.7%	3.7%	4.7%
Average real monthly income of employees ages 25-60	11383.7	13501.8	16482.9	15896.2	8198.1	10482.7	11885.6	11970.4
Average years of schooling of the labor force	8.93	9.90	10.24	10.83	9.18	10.35	10.64	11.02
Share of nonnative people in the labor force	45.5%	40.8%	36.4%	31.8%	38.6%	38.9%	39.7%	39.0%

TABLE 2: Employment Share of Industries

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Agriculture & Mining	0.6%	0.3%	0.2%	0.1%	0.2%	0.1%	0.1%	0.1%
Manufacturing	25.5%	19.0%	12.6%	9.4%	31.4%	18.3%	10.5%	8.3%
Utility & Construction	12.4%	11.1%	8.0%	9.2%	1.3%	1.6%	1.1%	1.1%
Wholesale (incl. export/import)	4.8%	6.1%	7.4%	7.9%	7.0%	8.9%	10.4%	10.5%
Retail, Restaurants, Hotels	14.3%	14.8%	14.2%	15.1%	15.1%	16.9%	18.1%	18.5%
Transportation (incl. Storage) & Communication	13.3%	14.1%	14.5%	15.3%	4.5%	6.3%	5.5%	5.9%
Finance	4.1%	4.6%	4.8%	5.2%	6.3%	7.1%	7.0%	6.7%
Business Services	6.8%	9.3%	12.6%	13.8%	5.4%	7.0%	7.9%	8.6%
Public Administration	5.4%	5.3%	5.6%	5.5%	3.0%	3.6%	3.2%	3.1%
Sanitary and Similar Services	0.8%	0.6%	0.9%	1.1%	1.3%	1.4%	2.3%	3.2%
Social and Related Community Services	4.5%	5.3%	6.0%	6.6%	11.7%	13.1%	14.5%	15.1%
Amusement and Recreational Services	1.7%	2.0%	1.9%	2.3%	1.7%	2.1%	2.0%	2.0%
Personal Services	4.3%	3.8%	3.4%	3.1%	9.8%	13.0%	16.1%	15.8%
Other	1.6%	3.6%	7.9%	5.4%	1.2%	0.6%	1.2%	1.0%

TABLE 3: Basic Statistics by Gender and Immigrant Status

A. Native (born in HK)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Population over age 15	1,134,997	1,376,393	1,534,644	1,626,525	1,098,892	1,325,593	1,474,093	1,615,141
Labor force participation rate	83.05%	82.33%	79.66%	78.53%	59.44%	57.66%	60.47%	61.45%
Unemployment rate	3.40%	4.77%	6.32%	6.27%	4.00%	4.23%	4.22%	4.91%
Average real monthly income of employees age 25-60	12089.23	14409.52	17579.16	16756.92	9399.084	12240.67	14680.42	14707.34
Average years of schooling of LF	9.87	10.54	10.85	11.32	10.07	10.87	11.27	11.73
Share in employees ages 25-60	56.39%	60.99%	65.40%	70.08%	62.38%	61.15%	60.05%	60.93%

B. Chinese (not born in HK)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Population over age 15	961,491	995,232	997,743	948,100	883,676	963,878	1,039,910	1,123,291
Labor force participation rate	74.59%	69.56%	62.40%	55.98%	35.59%	33.30%	34.57%	35.73%
Unemployment rate	3.09%	5.06%	7.79%	8.32%	3.71%	3.90%	4.39%	6.36%
Average real monthly income of employees age 25-60	9110.916	10715.93	12420.36	11986.46	6238.978	8525.032	9111.099	9294.651
Average years of schooling of LF	7.41	8.45	8.70	9.36	6.69	8.40	8.67	9.36
Share in employees aged 25-60	39.74%	34.79%	30.66%	26.69%	28.21%	24.59%	23.36%	23.68%

C. Immigrants from developed countries

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Population over age 15	27,765	42,151	36,034	35,637	24,784	35,532	29,184	27,246
Labor force participation rate	89.04%	89.68%	81.83%	76.15%	43.62%	48.89%	46.93%	45.30%
Unemployment rate	1.49%	1.35%	1.91%	2.52%	3.94%	3.44%	2.78%	5.02%
Average real monthly income of employees ages 25-60	47004.33	37631.07	52221.06	44315.76	21566.6	23381.32	30709.36	29336.88
Average years of schooling of LF	14.33	15.03	15.36	14.81	13.29	14.20	14.86	14.36
Share in employees ages 25-60	1.35%	1.69%	1.44%	1.34%	0.95%	1.29%	0.87%	0.69%

D. Immigrants from other countries

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Population over age 15	50641	57,585	60,922	55,454	117921	191,759	263,952	269,007
Labor force participation rate	87.38%	85.99%	77.91%	67.49%	71.90%	77.86%	81.28%	81.67%
Unemployment rate	2.49%	4.04%	5.20%	5.54%	1.87%	0.94%	0.78%	0.93%
Average real monthly income of employees ages 25-60	13705.61	14382.21	17834.81	18432.42	5587.702	5240.217	4871.663	4659.477
Average years of schooling of LF	10.65	11.62	11.38	11.75	10.98	11.40	11.07	10.66
Share in employees ages 25-60	2.52%	2.53%	2.49%	1.89%	8.46%	12.97%	15.72%	14.70%

TABLE 4: Employment Share of Industries by Gender and Immigrant Status

A. Native (born in HK)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Agriculture & Mining	0.55%	0.27%	0.18%	0.11%	0.21%	0.12%	0.07%	0.03%
Manufacturing	22.23%	17.68%	11.88%	9.09%	28.24%	18.50%	11.42%	9.44%
Utility & Construction	9.66%	8.84%	6.08%	6.75%	1.42%	1.85%	1.16%	1.21%
Wholesale (incl. export/import)	5.06%	6.34%	7.61%	8.13%	8.97%	11.03%	13.18%	13.43%
Retail, Restaurants, Hotels	13.08%	13.84%	13.22%	14.04%	14.48%	15.61%	16.10%	16.54%
Transportation (incl. Storage) & Communication	15.57%	15.80%	15.93%	16.26%	5.67%	7.61%	7.07%	7.47%
Finance	5.46%	5.55%	5.78%	5.96%	8.56%	9.43%	9.72%	9.17%
Business Services	7.38%	9.28%	12.64%	13.87%	7.23%	8.93%	10.45%	10.81%
Public Administration	7.24%	6.96%	7.29%	6.91%	4.04%	4.79%	4.56%	4.28%
Sanitary and Similar Services	0.66%	0.52%	0.71%	0.89%	0.72%	0.75%	1.05%	1.38%
Social and Related Community Services	5.14%	5.94%	6.70%	7.49%	13.88%	16.00%	18.50%	19.30%
Amusement and Recreational Services	1.92%	2.24%	2.14%	2.58%	1.99%	2.48%	2.47%	2.53%
Personal Services	4.35%	3.58%	3.29%	2.98%	3.34%	2.19%	2.80%	3.18%
Other	1.69%	3.14%	6.57%	4.95%	1.27%	0.72%	1.45%	1.23%

B. Chinese (not born in HK)

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Agriculture & Mining	0.58%	0.31%	0.32%	0.20%	0.29%	0.19%	0.30%	0.17%
Manufacturing	30.28%	21.44%	14.33%	10.24%	45.30%	25.91%	14.33%	10.06%
Utility & Construction	16.84%	15.43%	12.24%	15.91%	1.32%	1.66%	1.72%	1.62%
Wholesale (incl. export/import)	4.25%	5.48%	6.58%	6.80%	4.60%	7.93%	9.49%	8.73%
Retail, Restaurants, Hotels	16.56%	16.94%	16.90%	18.23%	19.96%	27.59%	33.22%	33.16%
Transportation (incl. Storage) & Communication	10.54%	11.62%	11.75%	12.88%	2.41%	4.90%	4.30%	4.82%
Finance	1.84%	2.61%	2.38%	2.60%	2.91%	4.23%	4.23%	3.83%
Business Services	5.51%	8.86%	11.85%	13.08%	2.38%	4.68%	5.40%	7.22%
Public Administration	2.31%	2.54%	2.41%	2.36%	1.34%	2.34%	1.99%	1.81%
Sanitary and Similar Services	0.96%	0.81%	1.24%	1.73%	2.73%	3.53%	6.52%	9.06%
Social and Related Community Services	3.40%	4.11%	4.29%	4.37%	9.06%	11.19%	12.20%	12.70%
Amusement and Recreational Services	1.35%	1.45%	1.39%	1.55%	1.46%	1.87%	1.84%	1.77%
Personal Services	4.19%	3.91%	3.19%	3.11%	5.10%	3.28%	3.14%	4.09%
Other	1.40%	4.48%	11.14%	6.92%	1.14%	0.69%	1.30%	0.94%

C. Immigrants from developed countries

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Agriculture & Mining	0.14%	0.18%	0.04%	0.10%	0.16%	0.10%	0.05%	0.00%
Manufacturing	14.39%	13.93%	11.73%	7.71%	9.88%	8.57%	6.43%	5.40%
Utility & Construction	5.12%	6.70%	3.18%	3.55%	0.59%	1.63%	0.47%	0.45%
Wholesale (incl. export/import)	8.74%	9.51%	11.75%	14.47%	4.62%	4.94%	7.39%	8.39%
Retail, Restaurants, Hotels	5.59%	7.96%	6.03%	8.98%	10.49%	9.81%	8.62%	13.45%
Transportation (incl. Storage) & Communication	8.54%	9.42%	11.27%	11.34%	7.83%	13.50%	9.73%	10.61%
Finance	11.18%	11.34%	13.22%	16.38%	6.59%	9.44%	10.12%	13.78%
Business Services	16.18%	19.51%	21.24%	17.03%	13.69%	15.85%	19.13%	16.06%
Public Administration	15.92%	5.27%	2.18%	2.18%	6.72%	2.38%	0.73%	1.58%
Sanitary and Similar Services	0.20%	0.11%	0.24%	0.31%	0.70%	0.19%	0.32%	1.15%
Social and Related Community Services	9.40%	9.85%	11.92%	9.90%	29.26%	24.67%	29.45%	22.09%
Amusement and Recreational Services	2.46%	3.23%	2.43%	3.29%	4.05%	3.99%	3.22%	3.63%
Personal Services	0.96%	1.02%	0.62%	1.16%	3.91%	3.34%	2.83%	2.18%
Others	1.19%	1.97%	4.16%	3.61%	1.50%	1.58%	1.51%	1.25%

D. Immigrants from other countries

	Male				Female			
	1991	1996	2001	2006	1991	1996	2001	2006
Agriculture & Mining	0.35%	0.23%	0.07%	0.09%	0.06%	0.03%	0.02%	0.02%
Manufacturing	30.96%	19.58%	11.84%	8.25%	11.11%	3.87%	1.66%	1.03%
Utility & Construction	8.39%	9.47%	9.75%	9.31%	0.22%	0.26%	0.15%	0.15%
Wholesale (incl. export/import)	6.08%	8.11%	9.29%	9.88%	1.20%	1.31%	1.15%	1.23%
Retail, Restaurants, Hotels	10.56%	12.09%	10.92%	11.92%	4.09%	3.76%	4.06%	3.50%
Transportation (incl. Storage) & Communication	10.14%	10.69%	11.32%	14.35%	2.08%	1.99%	1.16%	1.19%
Finance	4.88%	4.86%	5.42%	6.43%	1.20%	0.96%	0.85%	0.84%
Business Services	7.30%	10.67%	17.78%	17.60%	1.28%	1.11%	0.97%	1.00%
Public Administration	6.32%	2.80%	1.05%	1.28%	0.38%	0.30%	0.14%	0.18%
Sanitary and Similar Services	0.35%	0.61%	0.82%	1.18%	0.61%	0.57%	0.89%	1.28%
Social and Related Community Services	4.04%	5.04%	4.16%	5.22%	2.87%	2.07%	1.58%	1.38%
Amusement and Recreational Services	1.91%	2.00%	1.63%	2.18%	0.31%	0.38%	0.30%	0.36%
Personal Services	7.35%	10.86%	8.76%	7.94%	74.05%	83.27%	86.82%	87.73%
Other	1.36%	2.98%	7.18%	4.36%	0.54%	0.14%	0.26%	0.11%

TABLE 5: Decomposition of Income Inequality

A. Male employees with positive wages

	1991	1996	2001	2006
Total measured inequality	0.400	0.430	0.498	0.558
Between-Group	0.038	0.033	0.038	0.027
Within-group	0.362	0.396	0.460	0.531

B. Female employees with positive wages

	1991	1996	2001	2006
Total measured inequality	0.397	0.463	0.580	0.632
Between-Group	0.048	0.092	0.149	0.146
Within-group	0.350	0.372	0.432	0.486

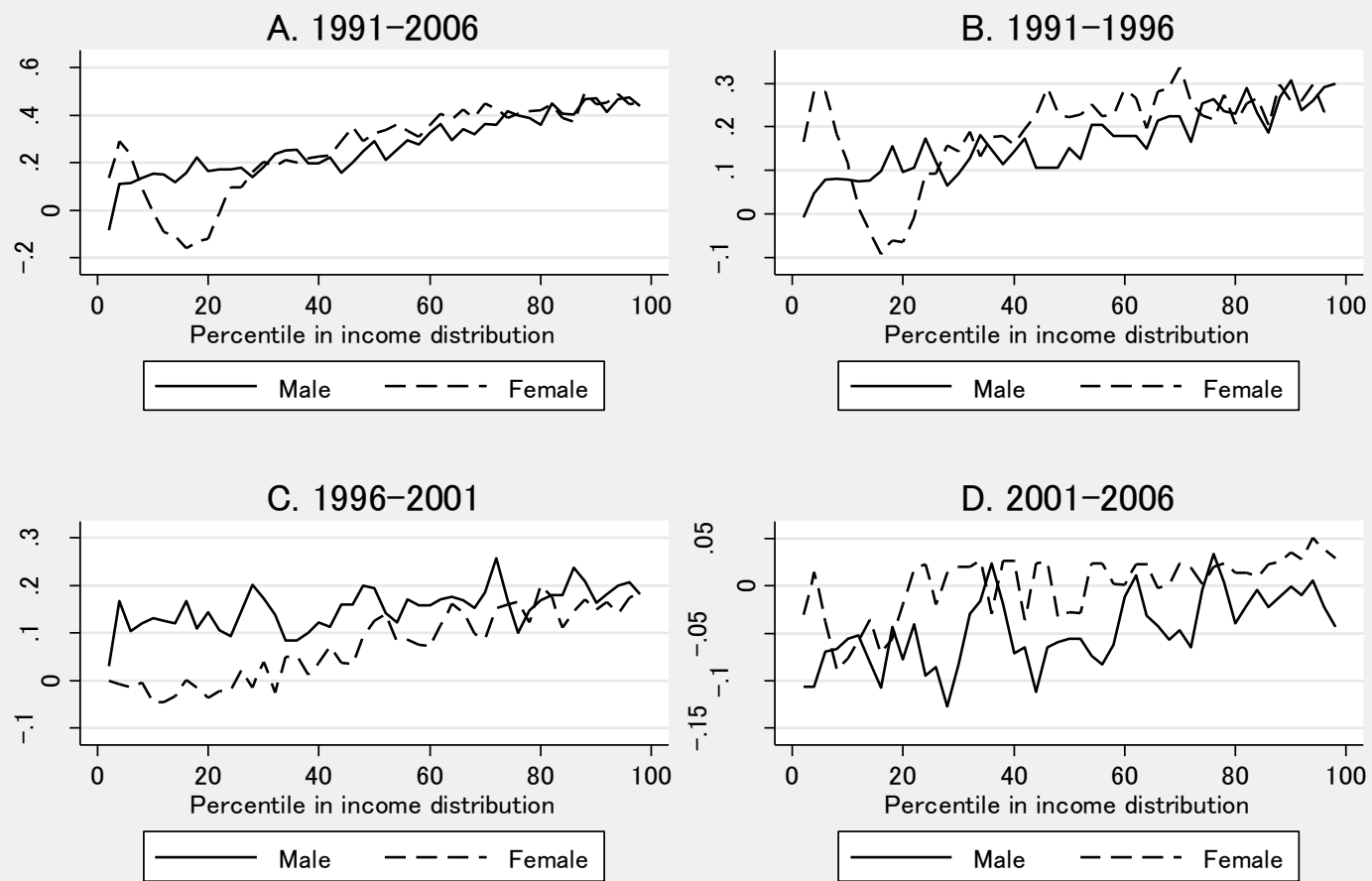**TABLE 6: Decomposition of Within-group Inequality into Four Population Groups**

A. Male employees with positive wages

	Variance within each group in 1991	Variance within each group in 2006	(A)=(B)+(C)+(D) Contributions to Change in Within-group Inequality	(B) Change in Variance	(C) Change in Share	(D) Interaction Terms
Natives	0.212	0.393	0.181	0.104	0.052	0.025
Chinese (not born in HK)	0.126	0.111	-0.015	0.039	-0.041	-0.013
Immigrants from developed countries	0.010	0.013	0.002	0.003	0.000	0.000
Immigrants from other countries	0.014	0.014	0.001	0.005	-0.003	-0.001
Aggregate within-group inequality	0.362	0.531	0.169			

B. Female employees with positive wages

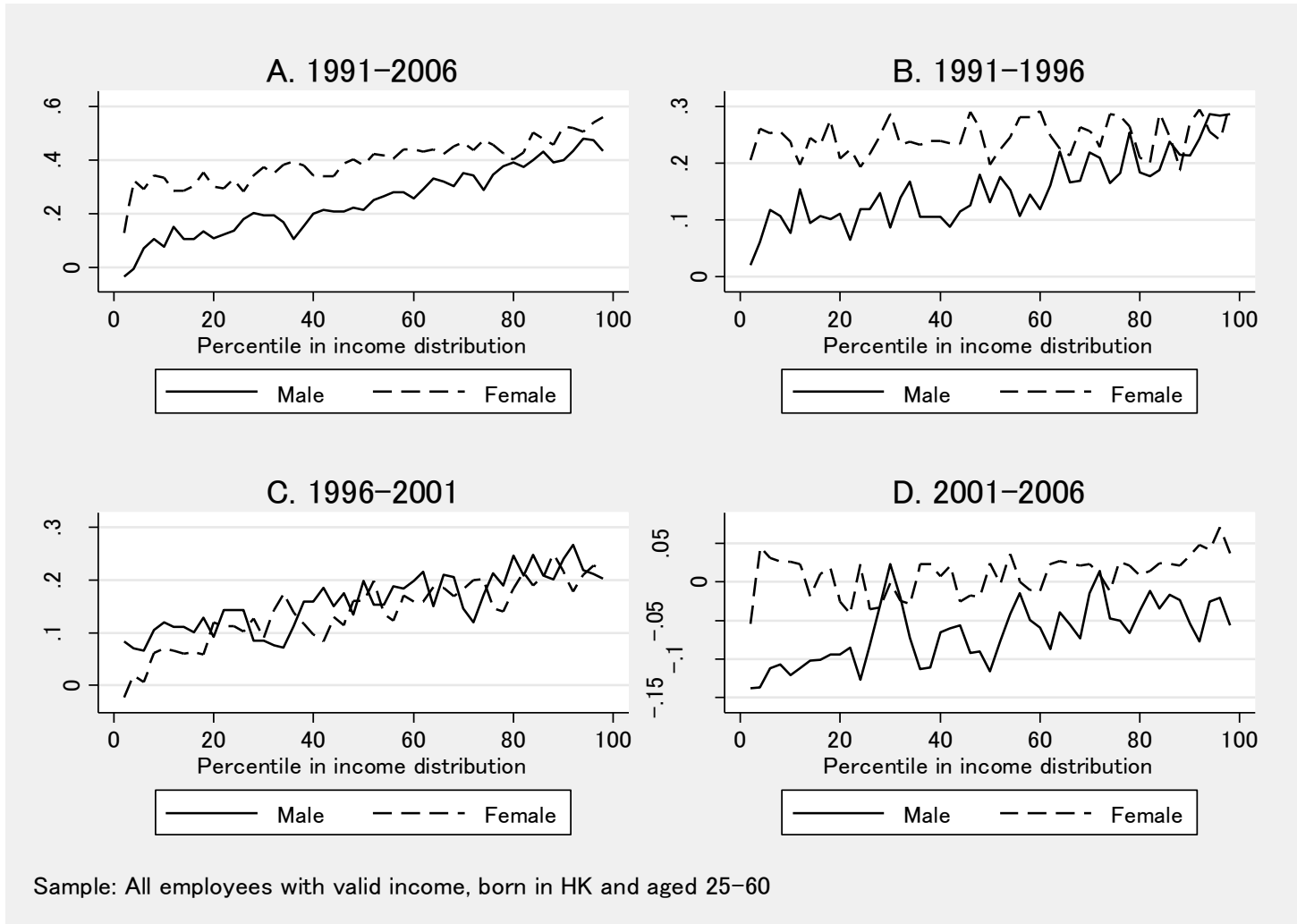|	Variance within each group in 1991	Variance within each group in 2006	(A)=(B)+(C)+(D) Contributions to Change in Within-group Inequality	(B) Change in Variance	(C) Change in Share	(D) Interaction Terms
Natives	0.226	0.341	0.115	0.123	-0.005	-0.003
Chinese (not born in HK)	0.099	0.110	0.011	0.032	-0.016	-0.005
Immigrants from developed countries	0.008	0.006	-0.002	0.001	-0.002	0.000
Immigrants from other countries	0.016	0.028	0.012	0.000	0.012	0.000
Aggregate within-group inequality	0.350	0.486	0.136			
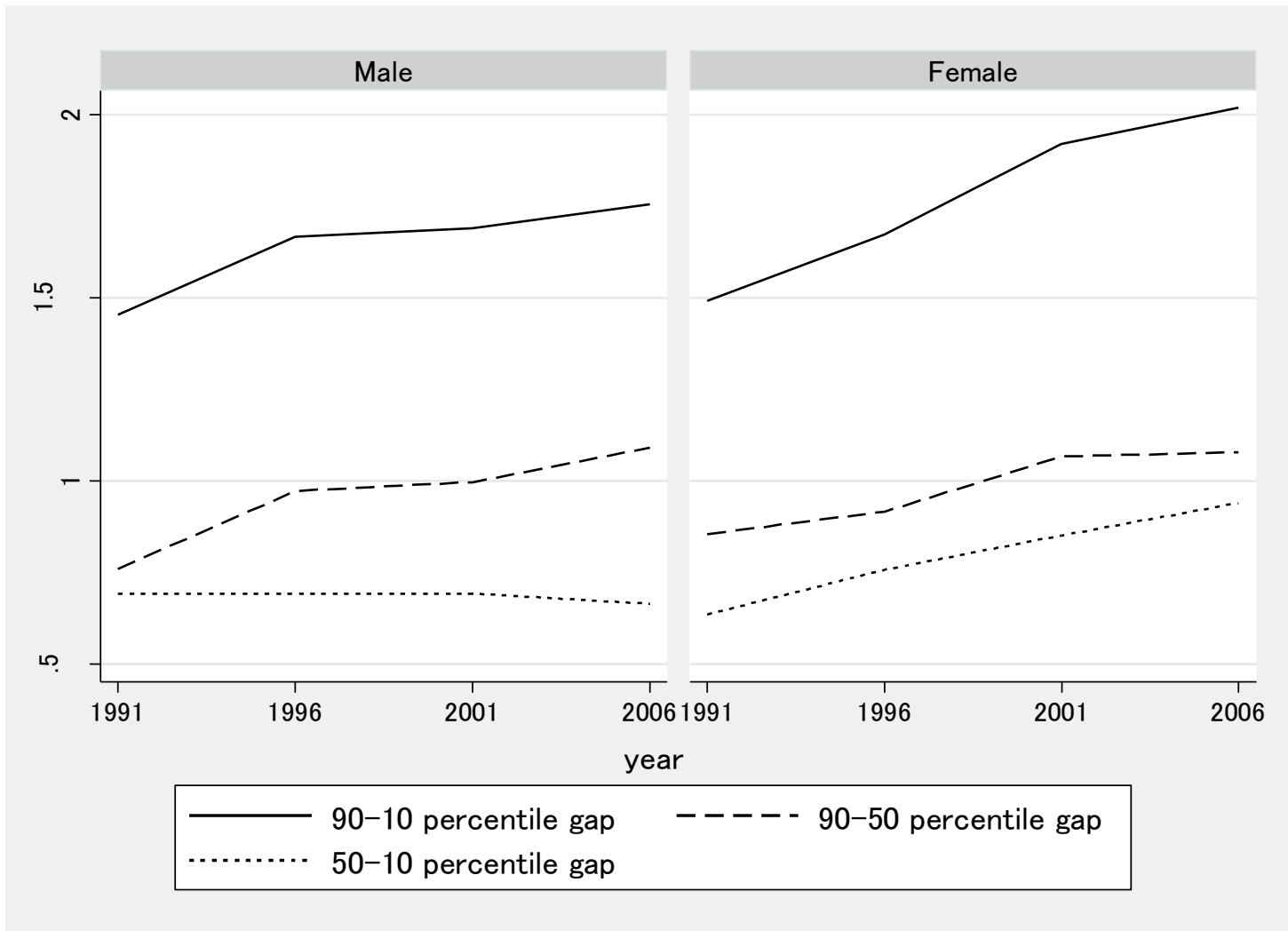
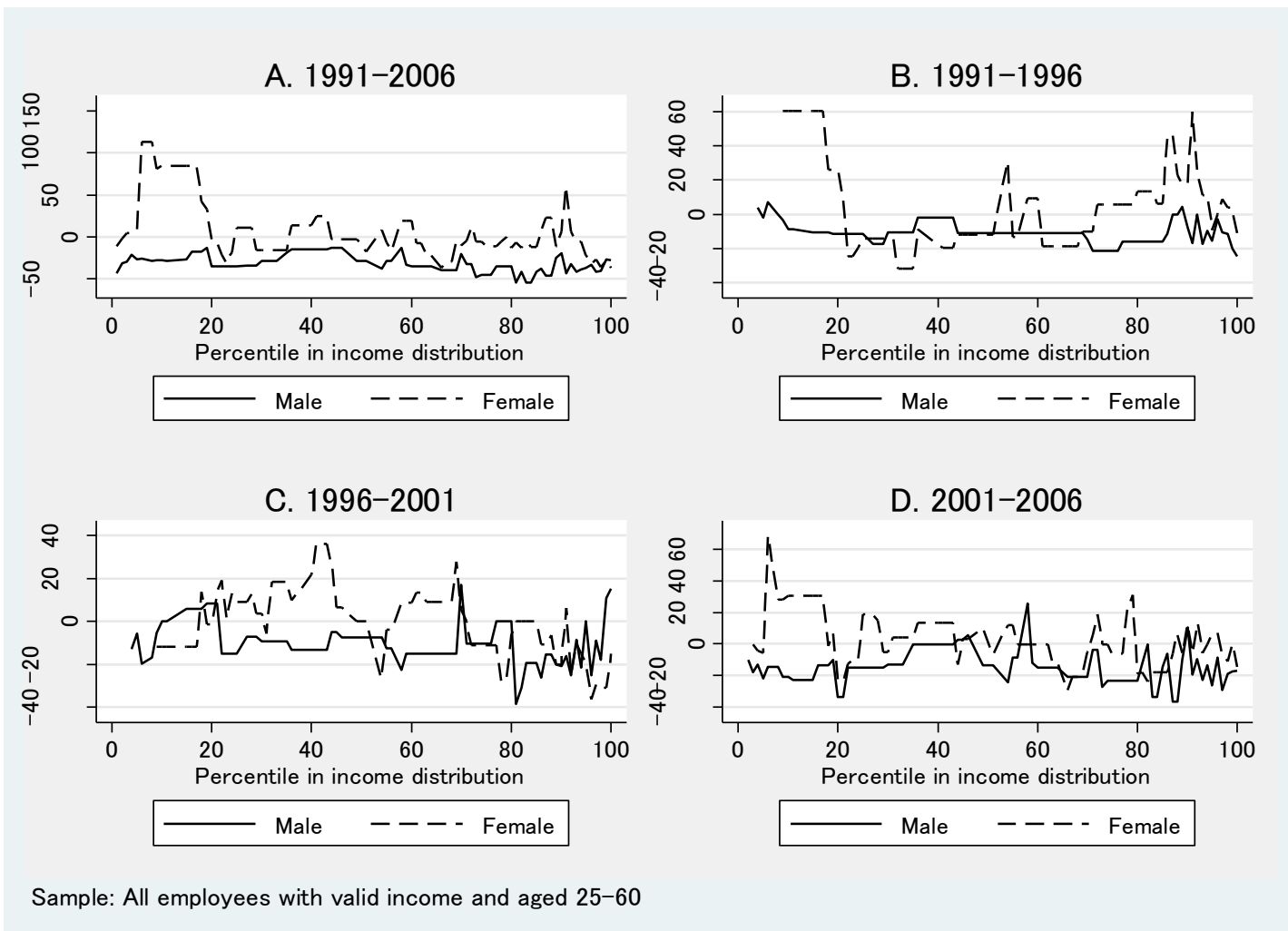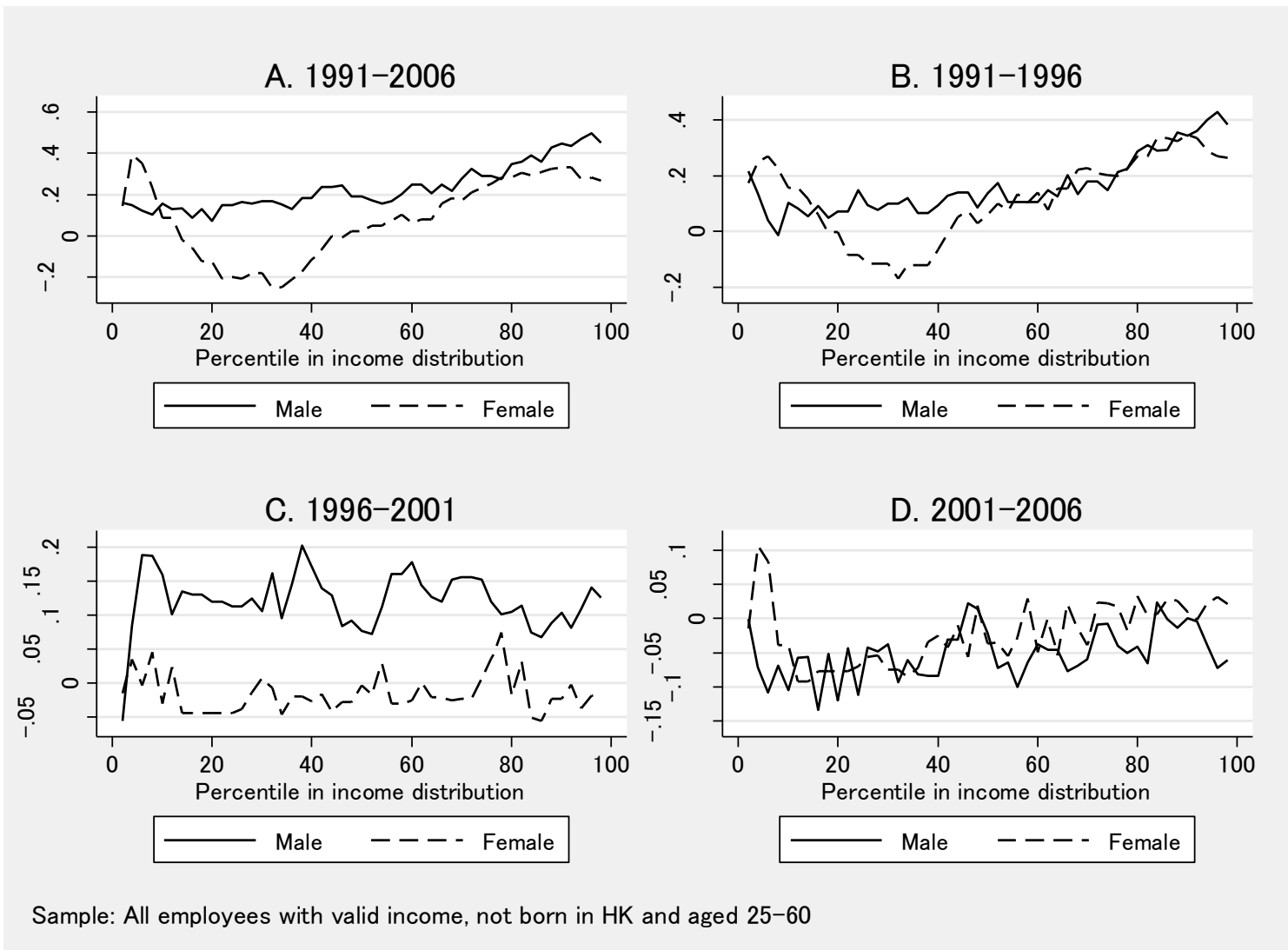**FIGURE 1: Changes in Percentile Gaps in Monthly Labor Income.**

FIGURE 2: Changes in Log Real Monthly Labor Income at Percentiles: All Workers.

FIGURE 3: Changes in Log Real Monthly Labor Income at Income Percentiles: Native-Born Workers.

A. 1991–2006

B. 1991–1996

C. 1996–2001

D. 2001–2006

Sample: All employees with valid income and aged 25–60

FIGURE 4: Percentage Changes in the Share of Immigrants at Income Percentiles.

FIGURE A1: Changes in Log Real Monthly Labor Income at Income Percentiles: Immigrant (incl. Chinese) Workers.