Structural Change and the Narrowing Gender Gap in Wages: Theory and Evidence from Hong Kong

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Abstract: This paper offers a theoretical and empirical analysis on the sources of the narrowing gender gap in wages, based on two census data sets in Hong Kong. Extending a recent important contribution by Galor and Weil (1996), the model implies that when an economy transforms from a manufacturing-oriented economy to service-oriented economy, a woman's productivity relative to a man's will generally increase. The model, together with the Galor-Weil model, predicts that the gender gap is smaller in the occupations in which physical labor is less intensively used. The implication of the theoretical analysis is then tested based on one percent random sub-samples of 1981 and 1991 population censuses. The empirical results are strongly supportive of the predictions of our model.

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I. Introduction

The phenomenon of narrowing gender gap in wages has been observed in many developed countries in recent decades (e.g. Goldin, 1990; Blau and Khan, 1996). Relatively little attention, however, has been devoted to the explanation why this phenomenon occurred. The purpose of this paper is to provide a theoretical analysis and an empirical study on the sources of the narrowing gender gap in wages.

The existing literature on gender inequality is generally based on the theories of gender discrimination. For example, Becker (1957) posits a model in which men and women are perfect substitute in the labor market. Suppose that employers prefer to hire men over women, due to their "taste discrimination." Then, in equilibrium, men's wage rate is higher than women's, and the difference between male and female wage rate is the "discrimination coefficient" in terms of Becker. Consequently, the narrowing gender gap is explained as the decreasing of "discrimination coefficient."

This paper first tries to offer a theoretical explanation of narrowing gender gap from a different perspective. It is based on a recent important contribution by Galor and Weil (1996), who argue that as economies develop, they are more prone to reward the attributes in which women have a comparative advantage. Specifically, their model assumes that a man and a woman are equally endowed with mental labor, but a man is endowed with more physical labor than a woman. Meanwhile, they assume that capital is complementary to mental labor, but substitutable to physical. Thus, capital deepening, which leads to economic growth, also reduces the gender gap in wages.

This model will extend Galor and Weil by considering that structural change as another source of the narrowing gender gap. By similar logic as Galor and Weil, when an economy transforms

from a manufacturing-oriented economy to service-oriented economy, a woman's productivity relative to a man's will generally increase. For example, a man may be more productive than a woman when working in a factory because he is stronger. However, a man's physical strength will not give him any advantage if working as a real estate agent or working for a bank.

In our model, there are two sectors of production in the economy in the model: A manufacturing sector and a service sector. The manufacturing sector is physical labor intensive, while the the service sector is mental labor (or human capital) intensive. Then, the model implies that the gender gap is smaller in the service sector, and the structural change from an manufacturing oriented economy to a service oriented economy will result in a narrowing gender gap. In essence, our model as well as the Galor-Weil model indicates that the gender gap is smaller in the occupations in which physical labor is less intensively used.

The implication of the theoretical analysis is then tested based on one percent random sub-samples of 1981 and 1991 population censuses. The Hong Kong data are good for testing our theory for two reasons. First, between 1981 and 1991, Hong Kong had experienced very dramatic structural change, which turned Hong Kong from an manufacturing oriented economy into a service oriented economy (e.g. Suen, 1995). Second, because the law and regulation on sex discrimination was not introduced in Hong Kong until very recently, Hong Kong provides a unique natural setting to test our model in the absence of explicit policy intervention.

The empirical results are strongly supportive of the predictions of our model that the gender gap is larger in the occupations in which physical labor is more intensively used. For example, we find that the gender gaps were much larger in primary and manufacturing sectors than those in service sectors. Moreover, we observed larger gender gap in the occupations that are more physical labor intensive. Finally, the paper suggests that sectoral shifts is one of the factor in explaining the

narrowing gender gap experienced in Hong Kong.

In what follows, Section 2 sets up a simple model that guides the empirical analysis; Section 3 describes the data; Section 4 presents the empirical results; Section 5 concludes.

II. The Model

The aggregate production function is defined

$$Y = G(X,S) \tag{1}$$

where Y, X, S denote total output, the total input of (manufactured) goods, and the total input of services. Meanwhile, we assume that the production function has the property of diminishing returns, and that the inputs of goods and services are complementary in production. (One may image that X and S represent industrial production and sales respectively.) Formally, we have

$$P_X \equiv \frac{\partial G}{\partial X} > 0, P_S \equiv \frac{\partial G}{\partial S} > 0$$
$$P_{XX} \equiv \frac{\partial^2 G}{\partial X^2} < 0, P_{SS} \equiv \frac{\partial^2 G}{\partial S^2} < 0, P_{XS} \equiv \frac{\partial^2 G}{\partial X \partial S} > 0$$

For the purpose of this paper, the manufacturing sector and the service sector differ in that the manufacturing sector is more physical labor intensive than the service sector. A simple modelling strategy is that we assume that both mental labor and physical labor are needed in the manufacturing sector, but only mental labor is needed in the service sector. In other words, the difference of physical strength among individuals does not matter to their productivity in the service sector. Specifically, we assume

$$X = AH_X^{\acute{a}} L^{1-\acute{a}} \tag{2}$$

$$S = BH_S \tag{3}$$

where H, L denote mental labor input and physical labor input respectively, all of the parameters are positive.

Based on equations (2) and (3), we can calculate the wage rates for the mental and physical labor inputs as follows.

$$\begin{aligned} w_H^X &= P_X \mathrm{a} A H_X^{\mathrm{a}-1} L^{1-\mathrm{a}} \\ w_L^X &= P_X (1-\mathrm{a}) A H_X^{\mathrm{a}} L^{-\mathrm{a}} \\ w_H^S &= P_S B \end{aligned}$$

Suppose one is endowed with h units of mental labor and l units of physical labor, then, if she (he) chooses to work in the manufacturing sector, her (his) earning will be

$$I^X(h,l) = P_X[\mathrm{a} A H_X^{\mathrm{a}-1} L^{1-\mathrm{a}} h + (1-\mathrm{a}) A H_X^{\mathrm{a}} L^{-\mathrm{a}} l]$$

if she (he) chooses to work in the service sector, her (his) earning will be

$$I^S(h,l) = P_S B h$$

Now, we discuss the distribution of mental labor and physical labor among the population of the economy. For the purpose of this paper, it is adequate to assume that the population can be divided into four categories: (1) educated men, (2) uneducated men, (3) educated women, and (4) uneducated women. Their endowments are as follows:

$$\begin{aligned}
\text{an eduacted man}: &\quad h = \bar{h}_m, l = 1 + a \\
\text{an uneduacted man}: &\quad h = \underline{h}, l = 1 + a \\
\text{an eduacted woman}: &\quad h = \bar{h}_w, l = 1 \\
\text{an uneduacted woman}: &\quad h = \underline{h}, l = 1
\end{aligned}$$

where a is a positive parameter, which captures the assumption that men are endowed in physical labor than a woman. Also, we assume that an uneducated man is endowed with the same amount of mental labor as an uneducated woman, while an educated man's endowment of mental labor may or may mot be the same as a woman's. Finally, note that an individual's mental labor may come both from education and predetermined ability of intelligence.

Based on the above description and assumptions, we have the following propositions.

Proposition 1:

The gender gap in terms of earnings (i.e. the ratio between a man's earnings and a woman's) for uneducated men and women is smaller in the service sector; the gender gap in terms of earnings for uneducated men and women is smaller in the service sector if the following condition is satisfied.

$$a > \frac{\bar{h}_m}{\bar{h}_w} - 1 \tag{4}$$

Proof: Let h_m and h_w denote the endowment of mental labor for a man and a woman respectively. Then, clearly, the gender gap in the service sector is,

$$\frac{P_S B h_m}{P_S B h_w} = \frac{h_m}{h_w} \tag{5}$$

and the gender gap in the manufacturing sector is,

$$\frac{P_X[\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_m+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}(1+a)]}{P_X[\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_w+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}]} = \frac{\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_m+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}(1+a)}{\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_w+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}} \tag{6}$$

Thus, the gender gap is smaller in the service sector if and only if

$$\frac{\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_m+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}(1+a)}{\mathrm{a}AH_X^{\mathrm{a}-1}L^{1-\mathrm{a}}h_w+(1-\mathrm{a})AH_X^{\mathrm{a}}L^{-\mathrm{a}}} > \frac{h_m}{h_w} \tag{7}$$

By some algebraical rearrangement, we can see (7) is equivalent

$$a > \frac{h_m}{h_w} - 1 \tag{8}$$

Thus, for educated workers, the gender gap in terms of earnings is smaller in the service sector when condition (4) is satisfied.

For uneducated workers, because

$$h_m = h_w = \underline{h},$$

(8) will always be satisfied. Thus, the gender gap in terms of earnings for uneducated men and women is always smaller in the service sector.

QED.

Comment on Proposition 1: The right hand side of the inequality (4) or (8) represents the gender gap in terms of mental labor, while *a* represents the gender gap in terms of physical labor. Thus, the inequality is satisfied if and only if the gender gap in terms of physical labor is greater than the

gender gap in terms of mental labor. *The essence of this proposition is that the gender gap is smaller in the occupations in which physical labor is less intensively used.*

Finally, the structural change can be modelled as caused by the increase of the relative price of service resulting from the expansion of the manufacturing sector in other parts of the world. This is clearly the case in Hong Kong: The industrial development in Southern China greatly increases the demand for services (international trade, finance, etc.) from Hong Kong.

III. The Data Sets

The data sets used in this study are the one percent random sub-samples of the 1981 and 1991 Hong Kong Population Census. Since we are interested in the behaviour of the working population, only individuals that meet the following conditions are included in our analysis: (i) those aged 15 or above; (ii) those with positive main employment income; and (iii) those born in Hong Kong or in Mainland China. Based on the above selection criteria, there are 21,265 and 23,321 individual observations in the 1981 and 1991 one percent random sub-samples respectively. We understand that it is advisable to exclude part-time workers in our analysis. Unfortunately, the 1991 Hong Kong Population Census did not collect hours of work data which makes it impossible to exclude part-time workers from the sub-sample. Earlier researches, however, indicate that coefficient of the hours of work variable is small and insignificant (see for example Lui and Suen 1993). Hence, including part-time workers in our analysis should not affect the overall results of our analysis.

Insert Table 1 here

Table 1 presents the summary statistics of the two one percent random sub-samples. In 1981, the average age was 35.0 which increased to 36.3 in 1991. Moreover, the years of working

experience was also the same for 1981 and 1991. This small difference (0.1) in working experience can be explained by the increase in the average educational level. On average, workers received 4.6 years of schooling in 1981 and this figure stood at 9.0 in 1991. The significant improvement in education level was due to the enforcement of free and compulsory elementary education since 1971. Starting from 1978, free and universal education is provided to children up to junior secondary level. Hence the marked jump in education attainment is the fruit of the well-intended education policy. Human capital theory suggests that the higher the educational level, the higher the employment income, *ceteris paribus*. From the table, we can see that the average main employment was HK$1,848 in 1981 of which increased more than three-fold to HK$7,460 in 1991. Even account for the changes in price level, real income rose by more than 100% in a decade. As the main focus of this paper is the gender gap, we also take a look of the composition of the labour force. In 1981, female workers accounted for 35% of the sample and it increased slightly to 36% in 1991.

Insert Table 2 here

In order to have a better understanding of the characteristics of male and female workers, we portrait profile of the two groups in Table 2. From the table, we can see that on average male workers were older and have more working experience than female workers. Men were more likely to be born in Mainland China and more likely to be employers or self-employed. One seemingly puzzling fact is related to the average educational attainment. In 1981, men received 1.18 more years of schooling than that of women. However, the education premium reversed in 1991. On average, women workers spent 0.25 more years at school than that of men. One highly possible explanation to this phenomenon is that (i) females benefited more than males when the government expand the provision of elementary education; and (ii) unskilled and/or uneducated women are more likely to quit the labour market than men. Most men, once join will not leave the labour market until they reach retirement age. This can be reflected by the high male labour

force participation rate in Hong Kong and throughout the world. On the contrary, female labour force participation rate varied considerably across different age group. Social division of labour also plays a part in explaining the relatively low female labour force participation rate.

IV. Empirical Evidence from Hong Kong

In the literature, there are a variety of ways to measure the gender gap. For example, simple female-male earnings ratio and difference in mean log income have been reported extensively. However, these methods take no account of the heterogeneity of workers. In order to control for variation in individual characteristics, we follow the widely used earnings regression to estimate the gender earnings gap. Mincer (1974) proposes the one's earnings is related to one's schooling and other socio-economic characteristics such that:

$$\ln Y = \alpha + \beta_1 S + \beta_2 S^2 + \beta_3 E + \beta_4 E^2 + \gamma D + \varepsilon$$

where Y is main employment income, S is years of schooling, E is years of work experience, D is a vector of other relevant socio-economic variables and ϵ is an error term. If we include a female dummy in vector D, the coefficient of the female dummy can be interpreted as the unexplained gender gap.

Insert Table 3 here

Table 3 shows the results of the multiple regression. The earnings regression for 1981 captured 30.4% (R^2=0.304) of the variance in log income. The explanatory power of the earnings equation raised to 41.7% for 1991. These results are comparable to most earnings regressions done elsewhere. From the table, the coefficient estimate for the female dummy for 1981 is –0.400 which means that women earn 33% (i.e. $1 - e^{-0.400}$) less than that of men, *ceteris paribus*. The earnings disadvantage reduced to 24% (i.e. $1 - e^{-0.279}$) in 1991. In short, the unexplained gender gap narrowed by 9 percentage points in a decade.

(A) Gender Gap by Sector

The model we discussed in Section II argues that the gender gap is larger in industries which require more physical inputs than those demand higher mental inputs. A straightforward test for this hypothesis is to divide the one percent random sub-samples into major industrial sectors and compare the female-male earnings ratio. If our model is correct, we should observe larger earnings gap in primary and manufacturing sectors than those in service industries. The first two columns of Table 4 show the difference in mean log income of male and female workers for 1981 and 1991 respectively. As expected, primary and manufacturing sectors recorded the highest income differentials in both years. In 1981, female workers employed in manufacturing industries received the lowest income relative to their male counterparts. The difference in mean log income stood at –0.528. The gender gap of those engaged in primary sector ranked second and the difference in mean log income was –0.514.[3] Although the gender gap was large and significant in all sectors, the female-male income ratios in service sectors were substantially below those of primary and manufacturing sectors. The difference in mean log income only varied within a relatively narrow range from –0.200 to –0.357. As for 1991, the pattern was broadly similar to that of 1981. The gender gap was much larger in primary and manufacturing sectors than those in service sectors. Hence, the empirical evidence supports the prediction of our model.

Insert Table 4 here

One may argue, however, the previous method is too crude as it does not account for variation in individual characteristics. So, we make use of the earnings regression discussed earlier in this section. Firstly, we divide the data set into different industrial sectors. We then "Mincer" the data and compare the coefficient of the female dummy. Columns 3 and 4 of Table 4 summarise the earnings regressions' results. In order not to over-burden readers with coefficient estimates,

[3] In Hong Kong, there were no female worked in mining and quarrying industries in both census years.

Table 4 only presents the coefficient estimates of the female dummy.[4] Although not shown in the table, all independent variables are statistically significant and have the predicted signs. The coefficient estimate of the female dummy can be regarded as the unexplained gender gap after controlling for individual differences. As expected, the coefficient estimate and the difference in mean log income for all sectors are in the same order of magnitude. Results of the multiple regressions tell essentially the same story — the gender gap is larger in primary and manufacturing sectors than those in other service sectors. Among all services, women workers in financing, insurance, real estate and business service (sector 8) enjoyed the highest female-male earnings ratio. In fact, sector 8 is the one which demands the least physical inputs. On the contrary, male workers in agriculture, forestry and fishing (sector 1) received the highest income relatively to females. Most people, if not all, would agree that sector 1 requires the highest physical input among all industrial sectors and it recorded the highest earnings differential. Moreover, the manufacturing sector recorded the second largest gender gap for both years.[5] In short, evidence from Hong Kong is consistent with our hypothesis.

(B) Gender Gap by Occupation

Economists may argue that within manufacturing sector (or any other sectors), there is a wide variety of industries. While some manufacturing industries are labour intensive which requires more physical labour inputs, other industries are skewed towards mental labour inputs. An alternative approach to test our hypothesis is to analyse the gender gap by occupation. If our model is correct, we should observe that the female-male earnings ratio should be rather low for professionals and managerial personnel. These occupations are usually restricted to those with

[4] Full regression results can be obtained from the authors.

[5] The proportion of women workers in manufacturing dropped from 46.5% in 1981 to 42.1% in 1991. When the manufacturing base move north, labour intensive jobs were the first to be cut. Those remained in the manufacturing sectors provided support to their production plants in Mainland China. As a result, women workers in manufacturing were less likely to be production workers in 1991 than that in 1981. Our model predict, *ceteria peribus*, the gender gap should be improved.

high education or skill level. Professionals and managers & administrators whether endow with high physical strength is immaterial in determining their labour productivity. However, those engaged in elementary occupations, such as plant and machine operators, should possess higher physical strength than professionals. Our model predicts a wider gender gap for unskilled and physical labour.

Table 5 presents the gender gap by occupation. Before studying the statistical information in the table, it should be noted that the figures for 1981 are NOT strictly comparable with those for 1991. The two one percent random sub-samples adopted two different classification systems. In 1991, the classification follows the major groups, with local adaption, of the International Standard Classification of Occupation (1988) promulgated by the International Labour Organisation in 1988. As for 1981, the classification system was based on the international standards set in 1968. The 1988 system puts more emphasis on the differentiation of skill level and skill specialisation of jobs than the earlier method (Census & Statistics Department 1993). With this caveat in mind, we should compare the two sets of results with care.

Insert Table 5 here

From the first column of Table 5A, we can see that the differences in mean log earnings for professionals and clerks were the lowest which stood at –0.167 and –0.177 respectively in 1981. In other words, women in these two occupations received an average income of around 80% that of male counterparts. As predicted by our model, the gender gap was highest for physical input intensive occupations, such as production and related workers. From the table, we can see that the gender gap for these workers was well below –0.5. However, analysing the difference in mean log income cannot account for differences in individual characteristics. To control for variation in socio-economic characteristics, a better way to study the gender gap is to employ

regression analysis. Column 2 of Table 5A shows the coefficient estimate of the female dummy of Mincer type of earnings regression.[6] After controlling for individual characteristics, the earnings disadvantage for women who worked as clerks or professionals reduced to less than 10 percentage points in 1981. Nevertheless, production and related female workers still earned less than half of that of male workers.

If we look at Table 5B, the statistical information tells exactly the same story. While occupations which require more mental labour inputs recorded lower gender gaps, jobs which demand substantial physical labour inputs experienced higher earnings differentials. This conclusion is consistent with our model. Moreover, it should be pointed out that researchers, for example Brown et al (1980) also try to relate occupational segregation with gender gap. Sung et al (1999) argue that the overall occupational segregation favours females in Hong Kong.

V. Sectoral Shift and the Narrowing Gender Gap

In the literature, economists use Blinder (1973) or Oaxaca (1974) methods to decompose the gender gap. Basically, their methods separate the gender gap into two components, namely the coefficient effects and the endowment effects as follow:

$$\bar{X}_m(b_f - b_m) + b_f(\bar{X}_f - \bar{X}_m)$$

or

$$\bar{X}_f(b_f - b_m) + b_m(\bar{X}_f - \bar{X}_m)$$

The main difference between the two equations is the choice of base for decomposition. However, the choice of base for decomposition will clearly affect the resulting estimates of the coefficient and endowment effects. A modified method is to decompose the two effects by taking

[6] Although not shown in the table, all estimates of the female dummy are statistically significant with t-ratio less than –2. Full regression results can be obtained from the authors.

average of the two equations, i.e.

$$(\frac{\bar{X}_m+\bar{X}_f}{2})(b_f-b_m)+(\frac{b_f+b_m}{2})(\bar{X}_f-\bar{X}_m)$$

However, the above method cannot be employed to disentangle the relationship between sectoral shift and earnings differential. Although we cannot quantify the magnitude of the change in the gender gap owing to sectoral shifts, we can shed some lights of the direction of change. Firstly, we can study the distribution of the labour force by industrial sector. Secondly, we can use the above decomposition method to compute the endowment effects of the distribution of the labour force. Then we compare the change in endowment effects. If our model is correct, we should expect to observe an increase in the relevant endowment effects.

Table 6 presents the distribution of the labour force by industrial sector. From the table, we can see that the importance of the manufacturing sector diminished substantially from 41.48% to 29.08% between 1981 to 1991. On the contrary, all service sectors experienced an increase in percentage share during the same period. The changing distribution of the labour force was a clear sign of sectoral shifts. From Table 4, we understand stand that the gender gap for primary and manufacturing sectors were higher than other sectors. As the labour force shifted away from manufacturing sector to service sectors, we should observe a narrowing gender gap. In other words, sectoral shifts is one of the factor in explaining the narrowing gender gap experienced in Hong Kong.

We ran three earnings regressions on each of the one percent random sub-samples of the 1981 and 1991 Hong Kong Population Census. The raw earnings gap are -0.377 and -0.303 in 1981 and in 1991 respectively. By using the modified Blinder/Oaxaca decomposition method, the endowment effects of industrial composition account for -0.054 of the gender earning gap in

1981. Ten years later, the estimated endowment effects only account for 0.006 of the earnings gap. In other words, within a ten year period, the endowment effects due to changing sectoral composition reduced the earnings by 0.060 log points. This result is consistent with the prediction of our model.

VI. Concluding Remarks

This paper offers a theoretical and empirical analysis on the sources of the narrowing gender gap in wages, based on two census data sets in Hong Kong. The current model is based on a recent important contribution by Galor and Weil (1996), who assumes that a man and a woman are equally endowed with mental labor, but a man is endowed with more physical labor than a woman. Meanwhile, they assume that capital is complementary to mental labor, but substitutable to physical. Thus, capital deepening, which leads to economic growth, also reduces the gender gap in wages.

This model will extend Galor and Weil by considering that structural change as another source of the narrowing gender gap. By similar logic as Galor and Weil, when an economy transforms from a manufacturing-oriented economy to service-oriented economy, a woman's productivity relative to a man's will generally increase. The model predicts that the gender gap is larger in industries which require more physical inputs than those demand higher mental inputs.

The data we used in this paper are the one percent random sub-samples of 1981 and 1991 population censuses. Hong Kong provides a unique natural setting to test our model in the absence of explicit policy intervention. In general, the empirical results are supportive of the predictions of our model. We find that the gender gap was much larger in primary and

manufacturing sectors than those in service sectors. Moreover, we observed larger gender gap for unskilled an physical labour. Although we could not provide substantive evidence, the indicators we collected suggest that sectoral shifts is one of the factor in explaining the narrowing gender gap experienced in Hong Kong. To conclude, this paper provides a solid theoretical framework to study the structure and changes of the gender gap.

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Table 1
Characteristics of the Workforce

Variable	**1981**	**1991**
Age	35	36.3
Years of work experience	19.6	19.7
Born in Mainland China (%)	52	38
Years of schooling	4.64	9.04
Main employment income (HK$)	1848	7460
Females (%)	35	36
Employers (%)	3.69	5.88
Self-employed (%)	6.74	4.83

Table 2
Characteristics of the Workforce by Gender

Variable	Male		Female	
	1981	**1991**	**1981**	**1991**
Age	36.1	37.7	32.9	34
Years of work experience	20.7	21.2	17.6	17.2
Born in Mainland China (%)	56.7	41.8	43.2	31.1
Years of schooling	5.05	8.95	3.87	9.2
Main employment income (HK$)	2108	8278	1367	6013
Employers (%)	5.2	7.7	0.9	2.7
Self-employed (%)	8.4	6.2	3.7	2.4

Table 3
Earnings Regression

Independent Variable	**1981**	**1991**
Years of work experience	0.032 (26.325)	0.036 (33.593)
Years of work experience square	–0.0007 (–31.941)	–0.0007 (–34.468)
Years of Schooling	–0.066 (–29.653)	–0.014 (–4.661)
Years of Schooling square	0.007 (44.835)	0.006 (34.965)
Born in Mainland China	–0.154 (–17.283)	–0.207 (–25.413)
Female	–0.400 (–48.667)	–0.279 (–38.987)
Employer	0.594 (29.162)	0.442 (30.467)
Self-employed	0.024 (1.53)	0.040 (2.545)
Married	0.109 (10.026)	0.139 (14.882)
Widowed/divorced	–0.011 (–0.461)	0.081 (3.631)
R^2	*0.304*	*0.417*

T-statistics are shown in parentheses.

Table 4
Gender Gap by Industrial Sector

Industrial Sector	Difference in Mean Log Income		Coefficient of the Female Dummy	
	1981	**1991**	**1981**	**1991**
1. Agriculture, forestry & fishing	–0.514	–0.646	–0.478	–0.533
2. Mining & quarrying	*No female workers*			
3. Manufacturing	–0.528	–0.469	–0.470	–0.372
4. Electricity, gas & water	–0.216	–0.390	–0.273	–0.282
5. Construction	–0.218	–0.014	–0.238	–0.174
6. Wholesale & retail trade & restaurants & hotels	–0.357	–0.298	–0.314	–0.267
7. Transport, storage & communication	–0.200	–0.143	–0.136	–0.169
8. Financing, insurance, real estate, & business service	–0.224	–0.224	–0.116	–0.136
9. Services	–0.207	–0.204	–0.197	–0.258
0. Industrial activity not classified	–0.470	–0.203	–0.483	–0.109

Table 5
Gender Gap by Occupation

(A) 1981		
Classification of Occupation (at 2-Digit Level)	Difference in Mean Log Income	Coefficient of the Female Dummy
11–19 Professional, technical & related workers	–0.167	–0.082
21–29 Administrative & managerial workers	–0.274	–0.209
31–39 Clerical & related workers	–0.177	–0.078
41–49 Sales workers	–0.445	–0.349
51–59 Service workers	–0.403	–0.357
61–69 Agricultural, animal husbandry & forestry workers & fishermen	–0.537	–0.454
71–79 Production & related workers, transport equipment operators & labourers	–0.555	–0.539
81–89 Production & related workers, transport equipment operators & labourers	–0.603	–0.557
91–99 Production & related workers, transport equipment operators & labourers	–0.633	–0.552
01–09 Others	–0.457	–0.441

(B) 1991		
Classification of Occupation (at 2-Digit Level)	**Difference in Mean Log Income**	**Coefficient of the Female Dummy**
11–19 Managers & administrators	–0.162	–0.170
21–29 Professionals	–0.211	–0.094
31–39 Associate professionals	–0.130	–0.102
41–49 Clerks	–0.107	–0.078
51–59 Service workers & shop sales workers	–0.355	–0.345
71–79 Craft & related workers	–0.434	–0.414
81–89 Plant & machine operators & assemblers	–0.586	–0.567
91–99 Elementary occupations	–0.341	–0.316
01–09 Others	–0.673	–0.567

Table 6
Distribution of Workforce by Industrial Sector

Industrial Sector	1981	1991
1. Agriculture, forestry & fishing	1.74	0.78
2. Mining & quarrying	0.05	0.04
3. Manufacturing	41.48	29.08
4. Electricity, gas & water	0.64	0.69
5. Construction	8.49	7.18
6. Wholesale & retail trade & restaurants & hotels	19	22.38
7. Transport, storage & communication	7.75	10.24
8. Financing, insurance, real estate, & business service	4.9	11.24
9. Services	14.75	18.08
0. Industrial activity not classified	1.19	0.31

All figures are expressed in percentage.