What Has Happened to the Gender Earnings Differential in Urban China During 1988-2004?[*]

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Abstract

This paper analyzes changes in the gender earnings gap in urban China during 1988-2004 using urban household survey data. The mean female/male earnings ratio declined by about 10.1 percentage points from 86.3% in 1988 to 76.2% in 2004. The main contributors to this diverging trend are the rapid increases in returns to both observed and unobserved skills that weigh the skill deficit of women more heavily. Women on the average also lose due to an enlarged gap in unobserved skills or increased discrimination. Although the gender gap in observed skills such as education narrows over the years, which works to reduce gender gap, the effect is not strong enough to offset the negative forces. We also examine changes in gender earnings gap in the bottom and top percentiles of the earnings distribution and changes in gender earnings inequality in four sub-periods, namely, 1988-1994, 1994-1998, 1998-2001, and 2001-2004.

JEL: J16, J24, J31

1. Introduction

Since its economic reform in 1979, China has been enjoying remarkable success in moving toward a market-oriented economy. The transition is particularly noteworthy in the labor market as is evident by rapidly rising income inequality and returns to education (Park *et al*. 2004, Zhang *et al*. 2005). Underlying these changes is the reform of labor market institutions that has transferred, to a large extent, the determination of employment and earnings from the hands of the government to the market. As the government loses its grip over the labor market, are women adversely affected? Because the government had promoted gender equality in work and pay through the administrative assignment of jobs and wage setting in the pre-reform era, such an effect is likely. On the other hand, in other formerly socialist countries that used to practice gender equality, divergent results have been observed: female relative wages in Eastern European countries increased whereas those in Russia and Ukraine declined (Brainerd 2000). In this paper, we use annual household surveys from 1988 to 2004 to document changes in relative earnings of Chinese women in urban areas and to analyze the factors behind the dynamics.

The rest of the paper is organized as follows. Section 2 gives a brief overview of China's economic reform and institutional features, while Section 3 reviews the related literature on China's gender earnings analysis. Section 4 is a description of the data, and Section 5 gives the analysis of the trend in gender earnings differences. Section 6 is the presentation of the methodology for decomposing changes in gender earnings gaps, while Section 7 is the discussion of empirical results. Section 8 is the examination of whether or not our results suffer from serious bias arising from the ignorance of working hours, and finally, Section 9 gives the conclusion of this paper.

2. China's Economic Reform and Institutional Features

After the beginning of economic reform in 1979, the Chinese government adopted a series of policy and institutional changes aimed at increasing efficiency in the economy. Breakthroughs were made in the rural sectors first, followed by product market reforms in the urban sector. Before the reform, state-owned firms, which operated under central planning, heavily dominated the urban sector. By the early 1990s, production decisions had been delegated to firms, and the planned allocation of most products had been terminated. However, the labor market reform had made little headway during that time. The firms had little autonomy in setting earnings and removing unwanted workers.

In October 1992, a new reform agenda was ratified by the 14th Party Congress, which proclaimed that China would adopt a "socialist market economy" (Naughton 1995). Much progress was made in 1992-93 in making the employment system more flexible for the 76 million state enterprise workers and the 35 million urban collective workers (Naughton 1995). Firms were given more autonomy and discretion in setting earnings and bonuses, and in deciding on recruitment, termination, layoffs, and promotions. Some firms even tried to eliminate the "iron rice bowl" (the permanent employment system) altogether, shifting workers onto a contract basis. Workers were also given much more freedom in resigning and changing jobs. Before the economic reform, it was extremely difficult for workers of the state and collective sectors to change jobs (this was one of the unique features of the planned economy). Jobs were often "assigned" by government agencies at various levels, and changing jobs was not simply a matter of free choice for individuals. Hence, economic reform in the 1990s not only gave firms more freedom in wage setting but also gave workers greater job mobility.

The "Labor Law of the PRC," which was passed in July 1994, formally enacted the regulations of the labor contract system. This Labor Law has been effective since January 1st, 1995, which makes labor contracts mandatory in all industrial enterprises (Démurger *et al*., 2006). The labor contract system allows firms to select and hire suitable individuals. The system also increases the flexibility of the labor allocation mechanism. Employees have the right to resign and to negotiate the duration, terms, and conditions of their employment. In the late 1980s, firms began to use examinations and interviews in the selection and recruitment process. Following the reform, managers of state-owned enterprises have been given much greater decision-making power in recruitment and selection, dismissal, promotion, rewards and punishments, and even in the arrangement of vocational training programs (Warner, Goodall and Ding, 1999).

Furthermore, the statutory law formally affirmed the protection of the rights of women, children and minorities. In particular, according to the 13th Ordinance in the second Chapter of the Labor Law, women have the same employment rights as men. Except for some positions specified by the State, women must not be rejected as workers, and the entry requirements for female workers must not be raised above those for men applying for the same position. Finally, relevant to our study, the 15th Ordinance in the same Chapter stresses that people under the age of 16 are prohibited from being workers.

To resolve the problem of inefficiency of state-owned enterprises, the Chinese government took a major reform in the urban labor market in 1997, known as *xia gang*, which was a move to lay off a quarter or more of its workers within four years (1997-2000) (Appleton *et al.* 2002). The labor reform was accelerated in the late 1990s as the government moved ahead with the program of downsizing the whole public sector. They carefully dealt with various issues arising from the reforms. In

1998, the government established the Ministry of Labor and Social Security to administer social insurance for individuals associated with different kinds of enterprises and institutions. In 1999, the State Council promulgated "Regulations on Unemployment Insurance" with the coverage of all enterprises and public services in urban areas.

Brainerd (2000) offers a general discussion of how changing labor market institutions might affect women. The essence of labor market reforms is more autonomy in wage setting and employment decisions for firms and managers, which could lead to a rise in wage inequality relative to the compressed wage structure in the pre-reform years. The rise in wage inequality may be disadvantageous to women as they disproportionately occupy the lower part of the earnings distribution. However, more autonomy and competition may have mixed effects on discrimination against women (Brainerd 2000, Liu *et al*. 2000).

3. Prior Literature

Women in the pre-reform transitional economies in Eastern Europe and the former Soviet Union fared relatively well in the labor market (Brainerd 2000). They had extremely high labor force participation rates, and the female/male wage differentials were similar to those in the West. The Russian Republic was one of the best achievers. In 1989, the female/male wage ratio was 0.69 in Russia, as compared to 0.70 in the United States in 1987.[1] The mean (or median) position of women in the male wage distribution was higher in Russia than in the United States. Urban Chinese women fared even better than Russian women. Gustafsson and Li (2000) show that

[1] The Russia figure was monthly wage and that for the United States was weekly wage.

the female/male wage ratio was 0.84 in urban China in 1988. We will present the position of Chinese women in the male distribution later in the paper.

Market reform does not have a uniform impact on gender wage gap in transitional economies. Brainerd (2000) shows that post-transition female/male wage ratio decreased in Ukraine and Russia but increased in Eastern European countries.[2] She attributes the deteriorating performance of women in the former countries to the widening of the wage distribution, and the improved performance in the latter countries to reduced discrimination, rising returns to education, and the fact that women are better educated in those countries. In a study on Russia, Glinskaya and Mroz (2000) examine changes in gender inequality at the lowest and the highest percentiles of the wage distribution. They find that gender inequality declined significantly in the lowest percentiles of the Russian distribution, grew in the upper percentiles, and stayed stable in the interquartile range. All these led to a relatively small change in gender inequality on the average during 1992 and 1995.

There is evidence that the gender earnings gap in urban China widened to some extent during labor market reforms. Gustafsson and Li (2000) report that the female/male earnings ratio decreased from 84.4% in 1988 to 82.5% in 1995. They use the Blinder-Oaxaca (Blinder 1973, Oaxaca 1973) decomposition and conclude that the most important source of the increase in the explained differential is education, but a substantial increasing average earnings-gap is attributable to differences in coefficients, which may be due to the increased earnings discrimination affecting women and/or lower unobserved productivity among women on the average than among men.

[2] See also Brainerd (1998) who finds that, relative to male wages, female wages have dropped in all percentiles of the wage distribution in Russia.

Most of the past studies on gender earnings differential in China investigate a gender earnings gap at one specific point in time. For example, Knight and Song (1993) apply the Blinder-Oaxaca decomposition to measure the effect of the 1988 sex differences in characteristics on the mean urban earnings difference. Not surprisingly, less than 50% of the difference in pay can be explained by the inferior female characteristics. Qian (1996) finds that market discrimination and productivity differentials co-exist in Beijing and Guangdong in 1993. Liu, Meng and Zhang (2000) use two data sets from Shanghai and Jinan in 1995 to demonstrate that gender earnings gaps widen in the move from state to collective or private sectors in absolute terms. Maurer-Fazio and Hughes (2002) analyze the effect of differences in labor market institutions and market liberalization on the size and composition of gender earnings gaps in China. Hughes and Maurer-Fazio (2002) study how the gender earnings gap in urban China is related to marital status, education and occupation. Both of the two studies use the 1992 CLMRP data, and compare gender gap across different groups. Therefore, we can not see the changes in the gender earnings gap through years. Bishop, Luo and Wang (2005) find a small increase in the earnings gap between 1988 and 1995 and document a modest increase in the proportion explained by productivity differences, using quantile regression in the decomposition. Millimet and Wang (2006) compare the income distributions between 1988 and 1995 using tests for stochastic dominance in order to decompose the gender earnings gap. They find that a large gender gap exists in the lower tail, and discrimination explains one-third to one-half of this lower-tail gap.

The prior literature on gender earnings differential in the Chinese labor market has two major features. First, they almost uniformly apply the traditional Blinder-Oaxaca method that decomposes the male-female earnings difference into a part due to gender difference in observed skills and the rest to difference in returns to observed

skills commonly attributed to discrimination.[3] This approach does not address the issue of how unobserved skills affect the gender earnings gap. As earnings inequality (or earnings dispersion) rises over time in China, it has been found that the portion of inequality unaccounted for by observed skills has risen (Park et al., 2004). If the residual earnings distribution for females is worsened compared with the male distribution, it will have an independent effect on the gender earnings gap. The second feature of the literature is that all existing studies examine one or two points in time, and thus are unable to decipher the trend in gender inequality. Because short-term fluctuations may occur, observed changes over two data points may not represent the trend.

In an attempt to fill this void in the literature on gender earnings differentials in China, the present paper examines gender earnings differentials in terms of observed and unobserved skill differentials and their premiums during 1988-2004, a period of a gradual economic transformation in China. Controlling for observable skill determinants, we apply the approach proposed by Juhn, Murphy and Pierce (1991) to analyze the changes in the residual earnings differentials that are considered to be the changes in unmeasured skill prices and quantities over time. We may expect that the general rise in returns to educational skills should, ceteris paribus, widen the gender earnings gap. On the other hand, we may expect male and female educational skills to converge as females have more opportunities to receive education. We have no basis to conjecture the trend in female/male difference in unobserved skills or their prices. Ultimately, how the gender earnings structure has changed between 1988 and 2004 is

[3] The only exception is Maurer-Fazio and Hughes (2002) who apply the Juhn *et al.* approach to analyze gender wage gaps *between* different ownership sectors. This is different from our application of the approach to analyze changes in gender wage gaps *over time*.

an empirical issue.

4. Data Description

The rich data used in this paper come from 17 consecutive annual urban household surveys, from 1988 to 2004. The survey provides detailed information on household size, employment status, income, consumption, savings, cash holdings, and demand for goods and housing. The respondents are chosen to be representative in over 220 cities and towns of various sizes and various regions in China.[4] The Urban Household Survey is carried out by the Urban Survey Organization of the National Bureau of Statistics; it covers 146 cities and 80 towns. The choice of cities and towns and also households is based on the principle of random and representative sampling. According to the 2002 Handbook of Chinese Urban Household Survey (the National Bureau of Statistics, 2001), the sampling method is consistent over all years under study. The National Bureau of Statistics (2001) provides further details on the survey and data. To assess the representativeness of the data, we compare several variables that are both available in our data and in the Statistical Yearbook of China. For 1988, our sample averages for household size, the number of workers in a household, and the per capita household income are 3.7, 2.2 and 1,352, respectively, while the corresponding national averages are 3.6, 2.0 and 1,192 (Statistical Yearbook of China, 1989, p.726). For 2001, our sample averages for the three variables are 3.2, 1.8 and 7,763, whereas the national averages of 3.1, 1.7 and 6,907 (Statistical Yearbook of China, 2002, p.321). Thus, the sample averages are reasonably close to those reported in the statistical yearbooks. To give a fair representation of the whole urban Chinese

[4] The survey does not cover the floating population, and thus we are not sure how this limitation of the survey undercoverage would have affected the results of our analysis.

labor market, we choose Beijing (a rapidly growing municipality in the north), Guangdong, Zhejiang (dynamic economic provinces in the southern coastal region), Liaoning (a province with a great number of heavy industries in the northeast), Shaanxi and Sichuan (less developed provinces in the northwest and the southwest) as the coverage areas of the study.

Moreover, as the Labor Law explicitly sets the minimum working-age at 16 years old or over, we have only selected workers aged 16 or above in our sample.[5] The sample is restricted to employees in the surveyed years. Employers, self-employed individuals, retirees, students, domestic workers, those who have lost the ability to work, and those waiting for jobs are therefore excluded in the estimation of earnings equations. Annual earnings consist of four major components, namely, basic wage, bonus, subsidies and other labor-related income.[6] The subsidies consist of the compensation for workers in some particular posts with difficulty (such as mining and quarrying workers), or with responsibility (such as high-technique workers or managerial staff). They are legitimately part of the labor earnings. Earnings are deflated using the city consumer price index for Beijing and the provincial CPIs for Guangdong, Liaoning, Zhejiang, Shaanxi and Sichuan. The CPI is set at 100 for each region in year 1988.[7]

[5] There is no upper age limit for the working sample because we have excluded the retirees. We had tried to exclude workers over the age of 60. The sample was reduced by less than 10 workers for each year, and a similar gender pay gap trend was yielded.

[6] In the survey, monthly earnings were asked. However, in the data provided to us, they are in the annual unit. One limitation of the data is that working hours are not available for most of the years in the data, nor are non-wage benefits such as housing, health care, and pensions.

[7] The data of the CPI are from the Statistical Yearbook of China.

5. Overview of the Gender Earnings Differences

Table 1A gives the mean and standard deviation of the male and female workers, the gender mean earnings gaps and the female to male earnings ratio. We observe that the female-male earnings ratio decreases from 84.2% in 1988 to 75.7% in 2004. Meanwhile, consistent with the findings in Park et al. (2004), the standard deviation of male and female log earnings distributions increases substantially over time. This increase in earnings disparity, we suspect, may contribute to an increase in the gender earnings differential.

The employment rate, defined as the employment-participation ratio,[8] is reported in the last two columns of Table 1A and is depicted in Figure 1. We find that both men and women have experienced a dramatic decline in the employment rate (from 97% for both genders in 1988 to 89% for men and 81% for women in 2004), in particular since the late 1990s. The declining rate for women is much higher than that for men. It is most likely that more low-skilled women have exited from employment than low-skilled men over time. The changing participation rates for men and women may pose a sample selection problem, which may bias the estimation results for the gender earnings gap.

In order to deal with the potential problem of sample selection, we follow Hunt (2002) and trim the data for those years with a higher employment rate in accordance with the lowest employment rate in our sample, that is, 88.8% for men and 80.2% for women in 2003 as shown in Table 1A. In practice, we run a probit regression for men

[8] It is calculated as the employed number divided by the participation number. The employed consists of employees, employers, self-employed, and so on. The participation number includes all those employed and unemployed or those seeking jobs.

and women respectively for each year,[9] and then we drop those with lowest employment probability to get the consistent employment rate for men (88.8%) and women (80.2%) for every year. Therefore, the sample becomes comparably selected with respect to employment propensities throughout our sample period. Table 1B reports the results for the trimmed data.

If we compare the results between Table 1A and Table 1B, we find that the gender earnings gap is somewhat smaller after controlling for the selection problem. When the employment rate is particularly high for both men and women in the late 1980s and the early 1990s, the difference in the gender earning gap between the two tables is small. Because a higher proportion of lower-skilled women has been excluded from our sample than that of men, the average earnings for women have been enhanced to a larger extent. Therefore, the gender earning gap is smaller than that based on the raw sample. However, the gender gap seems to be similar in the two tables in recent years, when the employment rate is close to that of 2003. We will use the trimmed data in the rest of this paper.[10]

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[9] The dependent variable is employment (=1 if employed, =0 otherwise). The independent variable set consists of education, age, household size, number of employed people in this household, household income, and so on.

[10] In fact, there is also sample selection with respect to labor force participation because men and women have different changes in the labor force participation rates over time. We find that the participation rate fell from 85.4% in 1988 to 78.9% in 2004 for men, and from 77.9% to 66.5% for women in the same period. The possible selection bias due to changing participation rates moves in the same direction as the bias we have corrected for. If we take both selection problems into consideration in the analysis, we should trim the data according to the employment-population ratio. The employment-population ratio (calculated as the product of the employment-participation rate and participation rate) declines from 82.7% to 70.4% for men, and from 75.3% to 53.1% for women. If we trim the data according to the lowest employment-population ratio, we would get a lower gender wage

To have a better understanding of gender earnings gaps, it is also important to examine earnings deciles other than the mean. Table 2 shows the gender earnings gaps by each decile of the respective male and female earnings distribution in each year. It is clear that the distribution of the gender earnings gap is uneven across deciles. Smaller decile numbers tend to have larger gender earnings gaps. In other words, a lower earnings group is associated with a larger divergence of the gender earnings gap, while a higher earning group is associated with a smaller divergence of the gender earnings gap. We also see that the first and the ninth deciles have very different trends compared with that of the mean or the median. The mean gender gap in log real earnings shows a mild divergence from 0.147 log points in 1988 to 0.272 log points in 2004 in Table 1B while the first decile gender pay gap widens enormously from 0.182 to 0.341 log point and the ninth decile gender gap increases from 0.156 to 0.230 log points in Table 2. In other words, the earnings of an average woman decline slightly relative to an average man, but for the lower earnings group women see a much larger deterioration of relative earnings while for the higher earnings group women suffer much less loss. This is a stark contrast with the findings of Glinskaya and Mroz (2000), which show a dramatic increase in gender inequality at the ninth decile and a much more equal gender inequality at the first decile in Russia from 1992 to 1995. These patterns prompt us to investigate in this paper not only the sources of a rising earnings gap at the mean earnings but also the sources of earnings gap changes for the poor and rich groups.

Calculated from Table 1B, we can find the change in the average gender earning

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gap in the earlier years, and a similar gap in recent years. The gender wage gap would increase at a higher rate than in the present analysis because a higher proportion of low-skilled women would have been excluded in the earlier years. As a result, the present analysis underestimates the change of the gender wage gap from 1988 to 2004.

gap between two consecutive years. The change in the gender earning gap varies from one year to another. We identify four distinct periods of 1988-1994, 1994-1998, 1998-2001, and 2001-2004. These four periods correspond to a rise in the mean earning gap from 1988 to 1994, a fall from 1994 to 1998, a rise again from 1998 to 2001, and a sharp rise from 2001 to 2004. In the analysis to follow, we will pay special attention to these four periods. With a rich data set available to us, it is interesting to study why the gender earnings gap varies differently in different time periods.

Figure 2 presents gender earnings gaps by earnings deciles for the periods 1988 to 1994, 1994 to 1998, 1998 to 2001, 2001 to 2004, and the overall period 1988 to 2004. There is a mild increase in the gender earnings gap for most earnings groups during 1988 and 1994 when the mean gender earnings ratio declines from 86.3% to 81.3%. However, there is a slight reduction in the gender earnings gap for most earnings groups during 1994 and 1998 when the mean gender earnings ratio rises from 81.3% to 87.3%. For the period 1998-2001 during which the mean gender earnings ratio falls to 82.5%, there is a significant increase at the bottom, but mild reduction at the top.[11] However, in the last period 2001-2004, the trend is significantly different with that of the other periods: the gender gap widens greatly in the top decile, while there is a mild increase in the lower deciles and even a decline in the bottom.

Finally, we examine another important measure of gender inequality, the positions of the mean female in the male earnings distribution. In the last column of Table 1B, we observe that the mean female worker climbs from 40.1th percentile in 1988 to 45.7th percentile in 1999, and falls to 40.3th percentile in 2004.[12] The mild

[11] The mean gender earnings ratio declines by 5% between 1988 and 1994, rises by 6.2% from 1994 to 1998, falls by 4.%7 from 1998 to 2001, and 6.7% from 2001 to 2004.

[12] This trend is a bit different from that of the median Russian woman, who climbed from 31.5th percentile in 1992 to 35.5th percentile in the 1995 Russian male wage distribution (Glinskaya and

rising position of the mean woman in the male earnings distribution does not contradict our earlier finding that the gender earnings gap measured in the earnings ratio deteriorates over the period. The two may coexist when earnings inequality rises over time (see, e.g., Blau & Kahn, 1996, pp.32-33). In this paper, one of our main tasks is to account for the general rise in earnings inequality between male and female workers.

6. Methodology for Decomposing Changes in Gender Earnings Gaps

In an influential paper, Juhn, Murphy and Pierce (hereafter referred to as JMP, 1991) introduce a decomposition method that allows for a residual represented by the percentile rankings of each worker in the residual wage distribution and the "price" of the residual represented by the dispersion of the residual.[13] Changes in the residual differential between two groups are then decomposed into changes in the difference in their mean percentile ranks and changes in the dispersion of the residual wage distribution. The former can be interpreted as changes in the level of unmeasured skill, while the latter can be interpreted as changing returns to unmeasured skill.[14] JMP's method has been applied in analyzing gender wage inequality (Blau and Kahn 1994,

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Mroz, 2000).

[13] That there is no residual in the first approach, while in the second there is, is a result of different specifications of wage (earnings) equations. The Blinder-Oaxaca framework is essentially a two-equation model in the sense that men and women have their own wage equations (Lam and Liu, 2002). Residuals in both equations disappear when evaluated at mean. In JMP's framework, there is only one male wage equation. Females' relative position is evaluated in terms of the male wage equation, thus leading to the appearance of a residual even in the mean wage equation for women.

[14] JMP (1991) and especially Suen (1997) discuss some subtle issues regarding the interpretations of the decomposed items.

1997; Brainerd 2000). The main advantage of this approach lies in its ability to identify the role of the changing wage structure (inequality) in explaining changes in gender inequality.

JMP specify a wage equation for males. Blau and Kahn (2006) argue that the coefficients for male earning equations probably reflect the more accurate estimation of return to potential experience than a female or pooled equation would. The male equation is written in the following form

$$\ln w_{mt} = X_t \beta_t + \sigma_t \theta_t \quad (1)$$

where θ_t is the standardized residual of the male wage regression, with mean 0 and variance 1, and σ_t is the standard deviation of the residual of the male wage equation. Assuming that the male wage structure is a non-discriminatory wage structure, females' wages are imputed using males' estimated wage coefficients. Thus, the male-female log wage gap for year t is

$$D_t = \ln w_{mt} - \ln w_{ft} = \Delta X_t \beta_t + \sigma_t \Delta\theta_t \quad (2)$$

Equation (2) states that the pay gap can be decomposed into a portion due to gender differences in measured skills, ΔX_t, weighted by male returns at year t, β_t, and a portion due to gender differences in the standardized residual from the male equation, $\Delta\theta_t$, multiplied by the money value per unit difference in the standardized residual, σ_t.

The difference in the male (m)/female (f) wage gap between 2 years, 0 and 1, can then be decomposed using Equation (2):

$$D_1 - D_0 = (\Delta X_1 - \Delta X_0)\beta_1 + \Delta X_0(\beta_1 - \beta_0) + (\Delta\theta_1 - \Delta\theta_0)\sigma_1 + \Delta\theta_0(\sigma_1 - \sigma_0)$$

$$= [(X_{1m} - X_{1f}) - (X_{0m} - X_{0f})]\beta_{1m} + (X_{0m} - X_{0f})(\beta_{1m} - \beta_{0m}) +$$

$$[(\theta_{1m} - \theta_{1f}) - (\theta_{0m} - \theta_{0f})]\,\sigma_{1m} + (\theta_{0m} - \theta_{0f})(\sigma_{1m} - \sigma_{0m}) \qquad (3)$$

The first term in equation (3), the "observed X effect," reflects the contribution of changing male-female differences in observed labor market skills, X. The second term, the "observed price effect," reflects the effect of changing prices of observed labor market skills for males. The third term, called the "gap effect" by Blau and Kahn, measures the effect resulting from a change in the relative position of women in the male residual wage distribution. Women's relative position will change if their relative quantity of unobserved skills changes, or if there is a change in labor market discrimination against women.[15] The fourth term, the "unobserved price effect," measures the contribution of widening male residual wage inequality on gender wage gap. This is the general price effect for unobserved skills. For example, given that women have lower relative unobserved skills levels, a rising male return to the unobserved skill would weight the female unobserved skill deficit more heavily, and hence a larger pay gap would arise.

While the JMP decomposition is often applied at the mean (see Blau and Kahn, 1994, 1997), it can also be carried out at any percentile of the wage distribution. Each percentile group can be defined to include all individuals within 10 percentile rankings. Therefore, the 10th percentile includes individuals with a percentile ranking ranging from 0 to 20, while the 90th percentile includes individuals with percentile ranking ranging from 80 to 100. The details of the computation of the 4 components can be found in JMP, and Blau and Kahn.

The sum of the first and third terms in Equation (3) reflects the full effect of

[15] Brainerd (2000) points out that this term may also reflect demand and supply shifts that have affected men and women differentially.

gender-specific factors—the total effect of gender differences in observed skills and of gender differences in wage rankings for the given level of observed characteristics. On the other hand, the sum of the second and fourth terms reflects the wage structures—the total effect of changing returns to observed and unobserved characteristics.

In the rest of the paper, we apply the JMP (1991) method to explain the change in gender earnings differential at the mean level and top and bottom earnings deciles for the whole data period of 1988-2004 and four sub-periods (1988-1994, 1994-1998, 1998-2001, and 2001-2004). We will analyze why the gender earnings differential diverges at the beginning (1988-1994), converges in the middle (1994-1998) and then diverges at the end (1998-2001 and more sharply in 2001-2004), and address why there is a different behavior for the rich (the 90th percentile of the earning distribution) and the poor (the 10th percentile of the earning distribution). We use the coefficients from the mean regressions in the decompositions of the 10th and the 90th percentile gender earnings gaps; we assume that all workers in the sample face the same skill prices. Furthermore, to decompose the earnings gap at the mean, the mean values of X's and ΔX's are used in Equation (3). To decompose the earnings gap at the 10th or 90th percentile, the mean values of X's and ΔX's of the specific percentile group will be used.

7. Results and Discussion

To prepare for the decomposition of gender earnings gap, we first report the observed characteristics of men and women in selected years in Table 3. Chinese women received less education than men did in the past. However, over the data period, the gender gap in education has been closing. In particular, we observe that

women have achieved higher schooling years than men in the 21st century. The higher increase in education for women is expected to help reduce gender earnings gap over the years.

Over time, men and women both gain more potential experience on the average (see Table 3).[16] The potential experience for men rises from 21.4 to 24.2 years and that for women rises from 19.8 to 20.1 years. The average age of female workers rises from 36 to 39 and that of male workers rises from 39 to 43. A plausible reason why female workers on the average are younger than male workers is that the general retirement age in China is 60 for males while it is 55 for females.

Earnings regressions on the male sample provide us with returns to observed characteristics and the change over the years. The regression results for 1988, 1994, 1998, 2001, and 2004 are shown in Table 4. The dependent variable is log earnings, and the independent variables include years of education, potential experience and its square term, provincial dummy variables, and industry and occupation dummy variables. The most noticeable of the regression results is that the coefficient of schooling increased from 2% in 1988 to 6.9% in 2004.[17] Given that men have more years of education than women do, this is expected to cause a divergence in the gender earnings gap.

Before further analysis, we first examine whether the decomposition results are sensitive to the inclusion of industry, occupation, and ownership variables in the regression. Column 1 of Table 5 decomposes the gender earning gap without controlling for these variables, while Column 2 conducts the same while taking these variables into consideration. We find that all decomposition results are very similar

[16] Potential experience is imputed by age minus years of schooling minus six.

[17] See Zhang et al. (2005) for a detailed documentation and analysis of the rising returns to education.

regardless of these variables being included or not. Some of the contributions of unobserved prices have become the contributions of observed prices after we include these variables. We will only report results that include all these variables in the rest of the paper.

Table 5 shows the decomposition results for the changes in the mean, bottom and top gender earnings gaps from year 1988 to year 2004. The second column of Table 5 shows the decomposition results of the change in mean gender earnings difference from 1988 to 2004. It is clear that the changes in observed characteristics contribute to a large reduction in the gender earnings gap. A major driving force behind this effect is the narrowing of the gender gap in education over years. The changes in prices of observed characteristics over the years, especially rising returns to education, increase the gender earnings gap. Although as indicated earlier, the position of the mean woman in the male earnings distribution improves slightly over the years, her position in the residual earnings distribution worsens, causing an increase in the gender earnings gap. This can be due to a larger gender gap in the quantity of unobserved skills, or an increase on discrimination. The rise in the unobserved skills may be due to our using potential experience rather than actual experience, whereby higher rates of female intermittency could have caused a growing gender gap in human capital investment. The dramatically rising detachment of Chinese women (Han, 2006) also supports this argument. In addition, the retirement age of women during the restructuring of the state-owned enterprises was shifted to an earlier age. Therefore, a higher proportion of women were laid off or forced to retire earlier than that of men. Even if some women transferred to another job after this, such changes still had higher harmful impacts on the industry-, occupation- and firm-specific human capital for women, which is also unobservable in our analysis. The increase in discrimination may be due to the institutional changes in the labor market decentralization. The

rising autonomy of enterprises may have induced managers to practise discrimination against women in the wage setting. Maurer-Fazio and Hughes (2002) find that the male–female wage differential and the unexplained portion (discrimination) are largest in the most liberalized sector, which also has the largest autonomy in their hiring and dismissals. The fourth component, the widening of the conditional (or residual) earnings distribution, also makes a large contribution to the increase in the gender earnings gap. Adding contributions of quantities of observed and unobserved skill effects, we find that gender-specific factors help to reduce the gender gap by 6.4%. Adding contributions of prices of observed and unobserved skill effects, the change in earnings structure increases the gender earnings gap by 106.4%. Therefore, we reach the conclusion that rising returns to skills, especially observed skills as reflected in the rising returns to education, are responsible for the increase in the gender earnings gap in the 1990s.

The rest of Table 5 decomposes the gender earnings gap at the bottom and top deciles. The bottom gender earnings gap increased by 0.296 log points, but the top gender earnings gap rose slightly by 0.079 log points from year 1988 to 2004. The contributions of observed quantities have opposite signs in the bottom gender earning gap and top gender gap in Table 5. High-earning women have been closing their gap with high-earning men in observed skills, while low-earning women have been lagging behind low-earning men in observed skills. The contribution of observed skills is positive for the poor, while it is negative for the rich, leading to a rise in the gender earnings gap for the former (0.053 log points) and a decline for the latter (-0.046 log points). The gender gap in observed skills such as educational qualification and occupational profiles is larger for the lower earnings group than for the higher earnings group. Thus rising returns to these skills contribute to a much larger divergence in the gender earnings gap for the poor group (0.143 log points) than for

the rich group (0.054 log points). The gap effect is higher in the poor group (0.05) than in the rich group (0.027). Both are positive, implying that both high and low earnings women have fallen behind in unobserved skills relative to men. Turning to the unobserved price effect, the widening of the male residual earnings distribution for the poor group was also larger than that for the rich group. Overall, the improvements in observed skills of high-earning women tend to reduce the gender gap, but the effects of unobserved skills and rising returns to observed and unobserved skills have dominated. Therefore, the gender gap still increases, but with a low rise. However, for low-earning women, the deterioration of all skills (both observed and unobserved) or discrimination reinforces the negative effect of the earnings structure, and all factors have caused the gender gap to get widened.

Table 6 reports the decomposition results of the change of the average gender earnings gaps during four sub-periods, namely, 1988-1994, 1994-1998, 1998-2001, and 2001-2004. From 1988 to 1994, the average gender earnings gap increases by 0.060 log points; from 1994 to 1998, it reduces by 0.071 log points; from 1998 to 2001, it increases by 0.056 log points; and from 2001 to 2004, it widens more sharply by 0.08 log points.

The observed X effect reduces gender earnings gap for the first three periods, but enlarges the gender gap for the last period. This indicates that an average female's measured skill level rises relatively faster than men's throughout the period 1988-2001. However, for the last period from 2001 to 2004, we have observed the rising male skill relative to females on the average.

It is not the same case for unobserved skill effect. The effect of unobserved skill (or the gap effect) is converging during 1994-1998, but diverging for all the other three periods. It accounts for -0.049 log points from 1994 to 1998, but 0.032 log points from 1988 to 1994, 0.091 log points from 1998 to 2001, and 0.031 log points

from 2001 to 2004. This implies that women move up in the residual male earnings distribution between 1994 and 1998, but the trend is reversed for other periods. This may be due to a gain in unobserved skills or less discrimination between 1994 and 1998 but a decline in unobserved skills or more discrimination for other periods. The enactment of the Labor Law in 1994 may account for the reduced discrimination between 1994 and 1998, but the increased discrimination between 1998 and 2004 may be due to the greater autonomy given to firms with accelerated labor market reform in China.

Table 6 indicates that both the observed and unobserved price effects in most periods are largely diverging because the rising returns to various skills, which have taken place throughout the four periods, would have weighted the skill deficits more heavily given female workers' lower skill levels. As reported earlier, the return to education in 1994 more than doubles that in 1988, and rises further to 6.9% in 2004.

Table 6 shows very particular patterns of the gender earnings gap during the Chinese economic transition: different factors have very different impacts on the changing gender gap during different periods because of the different dominant power in observable and unobservable skills and institutional effects. In the first period from 1988 to 1994, there has been a dramatic rise in the earning dispersion (Han, 2006), and therefore, the widening gender gap is mainly caused by changes in wage structure. Although the education gap was reduced during this period, the gap in unobservables and rising returns to both observable and unobservable skills offset the shrinking effect of gender specific observable quantities. In the second period from 1994 to 1998, the institutional factor dominates through the enactment of the Labor Law in 1994, and the demand for women was very high during the rapid growth period. The changing wage structure has a much less effect on enlarging gender gap as compared to the first period, and the sharply increasing women's skills and/or reduced

discrimination have helped to reduce the gender earning gap. In the third period from 1998 to 2001, the institutional factor dominates: the restructuring of state-owned enterprises has affected women more than men, in particular the low-skilled women. During this period, a large proportion of workers lost their iron bowl (*tie fan wan*) and became unemployed (*xia gang*). Low-skilled women were harmed the most. Indeed, we observe a dramatically declining participation and employment rate for women (Han, 2006). As women reduced their commitment to the labor force, it is possible that discrimination against them increased, or unobservable skills such as gender-specific human capital investment widened the gender earning gap. Therefore, we find that the gap effect strictly dominates. The more sharp increase in the gender earning gap from 2001 to 2004 is largely the consequence of observable quantity effect and the gap effect. The observed quantity effect is caused by a higher proportion of women being laid off in the state-owned enterprises, which have a positive pay premium. The increasing gap effect, as discussed earlier, mainly arises from the increasing unobservable skills and/or increasing discrimination.

Finally, we move to the discussion of the contributions of schooling and public sector in the gender earnings gap (due to space constraint, the detailed results are not reported). Because China has experienced a dramatic increase in both education quantity and price, we are interested in how this change has contributed to the gender earning gap. The contributions of schooling quantity and price to the gender gap over the sample period are -0.075 and 0.049, which are the major factors in the contributions of observed quantity (-0.099) and price (0.094) corresponding to Column 2 of Table 5. It follows that the sharply rising relative education of women has contributed mostly to the observed quantity effect which tends to reduce the gender gap, and the rising price has constituted an important reason for the observed price effect which increases the gender gap. To measure the effect of downsizing

public sector on the gender earning gap, we use the proportion of state-owned enterprises (SOE) as the proxy for the size of the public sector. The contributions of SOE quantity and price to the gender gap are -0.005 and -0.007, respectively. Although the effect is only negligible in the overall observed quantity and price effects, it reflects that the downsizing public sector has served to close the gender earning gap to some extent. If we look at the employment share in SOE for male and female workers, respectively, we find that, from 1988 to 2004, men have a much higher declining rate (from 83.5% to 68.8%) than women (from 67% to 60.6%). Therefore, the downsizing public sector which can offer higher earning premium has a negative impact on the widening gender earning gap.

8. The Role of Working Hours

The previous analysis has used annual earnings for the dependent variable. Therefore, there may be a concern whether or not working hours have varied considerably across the wage distribution and over time. Because the data we use provide limited information on working hours, which are only available for the recent three years (from 2002 to 2004), we can only deal with the issue partially.[18]

If workers respond to lower wages with fewer working hours, then the lower annual earnings that we have observed for these workers may be partly caused by the declining labor supply rather than a lower wage. Because men and women could have different labor supply patterns, the gender gap in annual earnings might not reflect the true price effect. We first take a look at the difference between the gender gap in

[18] The UHS dataset provides information on months of work in a year, and the working hours in the last month, but it does not contain further information on weeks or days of work in a month, or whether the working hours are constant or changing over months.

hourly earnings and that in annual earnings, as shown in Table 7A. We find that the monthly average working hours of men exceed those of women by 3 hours, and the gender gap in hourly earnings falls short of that in annual earnings by about 0.02 log points. Thus, using annual earnings results in a small overestimation, but the overestimation remains largely constant for the three years. In addition, we calculate the average female residual from male equation for hourly earnings, and compare it with that from male equation for annual earnings, as reported in Table 7A. By comparison, we can examine whether the missing labor supply effect would change the contributions of unobserved skills greatly. The average female residual is slightly lower if we use the hourly earning equation, which is in accordance with the previous finding that annual earning overestimate the gender earning gap to some extent. However, the difference between the two estimations remains almost stable over time.

One particular concern is whether the widening gender gap at the bottom of the earning distribution is the consequence of the working hours effect. In Table 7B, we present the average working hours according to the earning percentile: below 33.3%, between 33.3% and 66.7%, and above 66.7%. We find that individuals with lower annual earnings work longer hours, and it is the case for both men and women. The gender gap in working hours is similar for high-earning workers as for low-earning workers. Table 7B also indicates that there is not a trend that working hours decline at the bottom of the earning distribution; instead, the working hours at the bottom of earning distribution have increased at a similar rate for men and women. In other words, it does not seem to be likely that part-time work increases more at the lower-earning group of women. In short, the widening gender gap at the bottom of the earning distribution does not seem to arise from the working hours effect.

We have only the information of working hours for the recent three years, and the results appear robust to the consideration of working hours. Is it possible that

working hours have changed a great deal between men and women for the previous years before 2001? As we know, the working hours almost remain constant in state-owned enterprises, which have employed the majority of workers in earlier years. There cannot be a larger difference in working hours between men and women in earlier years than that in recent years, since working hours have been more divergent with the decentralization of the labor market in recent years. Therefore, we believe that our results do not suffer from a significant labor supply bias in the earlier period, given that this bias seems to be only minor in recent years.

9. Conclusions

As revealed in the data from the Urban Household Surveys in China, the mean female/male earnings ratio declined by about 10.1 percentage points from 86.3% in 1988 to 76.2% in 2004. The main contributors to this diverging trend are rapid increases in returns to both observed and unobserved skills that weigh the skill deficit of women more heavily. Women on the average also lose due to an enlarged gap in unobserved skills or increased discrimination. Although the gender gap in observed skills such as education narrows over the years, which work to reduce gender gap, the effect is not strong enough to offset the negative forces.

We also examine the gender earnings gaps by each decile of the respective male and female earnings distribution in each year. The lower earnings group is associated with a larger divergence of the gender earnings gap, while the higher earnings group is associated with a smaller divergence of the gender earnings gap. Examining more carefully for most of the sample period, we find that low-earning women lose sharply relative to low-earning men. Because low-earning women are vastly disadvantaged relative to men in both observed and unobserved skills, they are penalized heavily by

rising returns to these skills. In addition, they move down in the male conditional earnings distribution, suggesting that they lose in unobserved skills or face more discrimination. There is also a trend for high-earning women to lose relative to high-earning men, in that the gender gap increases dramatically in the top decile in the 21st century. However, the gender gap in the higher tail of earning distribution is still much smaller than that in the lower tail.

Looking at the four sub-periods, the gender gap increases by 0.060 log points from 1988 to 1994, decreases by 0.071 from 1994 to 1998, increases again by 0.056 from 1998 to 2001, and then increases more sharply by 0.080 from 2001 to 2004. The mild divergence during 1988-1994 is due to a dramatic rise in the earning dispersion, and therefore the widening gender gap is mainly caused by changes in the wage structure. The decline in the gender earning gap from 1994 to 1998 is caused by institutional changes, such as the enactment of the Labor Law in 1994, which protected the rights of women. Meanwhile, the rise in gender earning gap from 1988 to 2001 is mainly due to the restructuring of state-owned enterprises. Lastly, the sharp increase in the gender earning gap from 2001 to 2004 is the consequence of observable quantity effect and increasing discrimination. Urban China has thus provided a unique experiment in which different dominant factors have contributed to the changes in gender earnings gaps during economic transition.

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Table 1A: Mean gender earnings, earnings gaps and ratios

Year	Male mean	(S.d. of male)	Female mean	(S.d. of female)	Mean difference	Gender ratio	Position of mean female in the male distribution	Male employment rate	Female employment rate
1988	7.585	0.517	7.412	0.527	0.172	84.2%	39.1%	96.9%	96.6%
1989	7.564	0.558	7.397	0.562	0.167	84.6%	39.7%	96.9%	96.8%
1990	7.637	0.508	7.472	0.513	0.165	84.8%	39.7%	97.0%	96.4%
1991	7.694	0.496	7.532	0.512	0.162	85.0%	39.9%	97.2%	95.6%
1992	7.741	0.533	7.564	0.567	0.176	83.8%	40.7%	97.7%	97.2%
1993	7.732	0.562	7.528	0.603	0.204	81.6%	40.3%	97.3%	96.9%
1994	7.829	0.662	7.599	0.710	0.230	79.4%	41.0%	97.3%	96.3%
1995	7.885	0.656	7.663	0.695	0.223	80.0%	40.8%	97.2%	96.6%
1996	7.894	0.700	7.681	0.732	0.213	80.8%	41.6%	97.0%	96.7%
1997	7.997	0.715	7.764	0.808	0.233	79.2%	41.6%	97.2%	95.9%
1998	8.052	0.744	7.849	0.807	0.203	81.6%	42.9%	96.1%	94.7%
1999	8.114	0.736	7.911	0.848	0.203	81.6%	43.3%	95.6%	93.8%
2000	8.233	0.777	8.013	0.870	0.219	80.3%	43.1%	93.8%	91.4%
2001	8.320	0.778	8.088	0.877	0.231	79.4%	42.3%	92.3%	89.0%
2002	8.413	0.702	8.176	0.774	0.237	78.9%	41.2%	89.5%	82.3%
2003	8.497	0.723	8.234	0.784	0.262	76.9%	40.4%	88.8%	80.2%
2004	8.617	0.738	8.339	0.779	0.278	75.7%	40.1%	89.2%	81.0%

Notes: The mean and standard deviation of the male and female workers, and the gender mean earnings gaps are measured in log points. The gender ratio is the female to male earnings ratio.

Table 1B: Mean gender earnings, earnings gaps and ratios after trimming the data

Year	Male mean	(S.d. of male)	Female mean	(S.d. of female)	Mean difference	Gender ratio	Position of mean female in the male distribution
1988	7.588	0.514	7.441	0.517	0.147	86.3%	40.1%
1989	7.565	0.552	7.410	0.555	0.155	85.6%	40.2%
1990	7.648	0.482	7.498	0.492	0.150	86.1%	40.3%
1991	7.699	0.485	7.559	0.497	0.140	86.9%	40.9%
1992	7.736	0.527	7.563	0.550	0.172	84.2%	40.3%
1993	7.727	0.554	7.525	0.578	0.202	81.7%	40.0%
1994	7.824	0.656	7.616	0.690	0.207	81.3%	41.7%
1995	7.885	0.644	7.659	0.672	0.226	79.8%	40.5%
1996	7.888	0.697	7.706	0.717	0.182	83.4%	42.6%
1997	7.981	0.717	7.780	0.803	0.201	81.8%	42.7%
1998	8.034	0.742	7.898	0.791	0.136	87.3%	45.4%
1999	8.116	0.729	7.975	0.829	0.141	86.9%	45.7%
2000	8.231	0.780	8.073	0.844	0.157	85.4%	45.2%
2001	8.323	0.783	8.131	0.870	0.192	82.5%	43.8%
2002	8.414	0.702	8.190	0.768	0.224	79.9%	41.7%
2003	8.497	0.723	8.234	0.784	0.262	76.9%	40.4%
2004	8.617	0.737	8.345	0.776	0.272	76.2%	40.3%

Notes: The mean and standard deviation of the male and female workers, and the gender mean earnings gaps are measured in log points. The gender ratio is the female to male earnings ratio.

Table 2: The gender earnings gap by distribution percentile

Year/Percentile	10	20	30	40	50	60	70	80	90
1988	0.182	0.146	0.140	0.136	0.138	0.134	0.122	0.125	0.156
1989	0.195	0.175	0.162	0.154	0.133	0.127	0.129	0.147	0.201
1990	0.200	0.162	0.154	0.141	0.138	0.121	0.121	0.137	0.161
1991	0.153	0.155	0.135	0.135	0.131	0.128	0.127	0.127	0.117
1992	0.194	0.173	0.162	0.162	0.153	0.151	0.130	0.135	0.175
1993	0.245	0.197	0.187	0.180	0.160	0.167	0.184	0.184	0.209
1994	0.306	0.237	0.196	0.205	0.188	0.176	0.168	0.139	0.189
1995	0.308	0.218	0.203	0.200	0.190	0.199	0.186	0.196	0.211
1996	0.296	0.221	0.203	0.170	0.162	0.162	0.163	0.144	0.143
1997	0.339	0.229	0.209	0.191	0.166	0.166	0.171	0.128	0.120
1998	0.262	0.185	0.151	0.128	0.103	0.088	0.107	0.095	0.074
1999	0.250	0.213	0.132	0.138	0.107	0.086	0.082	0.039	0.064
2000	0.289	0.261	0.154	0.147	0.113	0.114	0.070	0.071	0.065
2001	0.391	0.305	0.238	0.212	0.172	0.124	0.105	0.069	0.053
2002	0.297	0.279	0.265	0.237	0.210	0.186	0.176	0.168	0.163
2003	0.354	0.326	0.310	0.271	0.240	0.226	0.209	0.201	0.192
2004	0.341	0.339	0.300	0.259	0.245	0.242	0.251	0.245	0.230

Note: The gender earnings gap by distribution percentile is taken as the male log earnings at a specific decile minus the female log earnings at that decile.

Table 3: Mean values of the selected male and female subsamples

Panel A: Mean values of the male subsample					
Year	**1988**	**1994**	**1998**	**2001**	**2004**
Obs	2870	3290	3226	2940	9767
Age	38.626	39.712	40.652	41.758	42.644
Earnings	2192.51	3054.86	3960.92	5370.11	7200.09
Years of schooling	11.227	11.998	12.117	12.167	12.467
Potential experience	21.402	21.716	22.538	23.592	24.177
Experience squared	562.354	571.388	604.409	656.764	695.632
Beijing	5.7%	13.1%	11.2%	13.9%	16.1%
Lliaoning	23.0%	28.0%	27.4%	28.0%	27.9%
Zhejiang	13.5%	13.7%	13.2%	13.5%	16.6%
Guangdong	18.5%	14.8%	16.0%	16.8%	13.3%
Sichuan	25.9%	18.1%	19.2%	14.9%	14.2%
Stateowned	83.3%	83.9%	82.4%	75.2%	68.8%
Professional & technician	18.4%	23.0%	19.7%	17.4%	19.7%
Cadre	13.7%	13.6%	11.3%	12.3%	6.5%
Administrative worker	22.4%	21.2%	24.4%	23.1%	29.9%
Commerce staff	3.9%	3.8%	4.0%	4.7%	4.0%

Panel B: Mean values of the female subsample					
Year	**1988**	**1994**	**1998**	**2001**	**2004**
Obs	2490	2725	2607	2273	7156
Age	36.020	36.809	37.687	38.143	38.636
Earnings	1892.76	2519.34	3589.61	4747.09	5623.30
Years of schooling	10.243	11.623	12.071	12.429	12.568
Potential experience	19.778	19.189	19.620	19.717	20.068
Experience squared	465.047	444.128	463.093	468.672	491.820
Beijing	5.7%	13.4%	11.8%	14.2%	14.9%
Lliaoning	23.3%	27.7%	24.9%	27.3%	23.9%
Zhejiang	13.3%	14.0%	14.3%	13.0%	18.3%
Guangdong	18.5%	14.7%	17.1%	19.5%	15.1%
Sichuan	26.9%	18.5%	20.1%	13.9%	15.6%
Stateowned	66.9%	74.5%	75.7%	68.7%	60.6%
Professional & technician	18.7%	28.6%	24.9%	22.0%	21.2%
Cadre	2.9%	3.7%	4.4%	4.4%	2.0%
Administrative worker	19.3%	20.6%	25.0%	27.9%	31.1%
Commerce staff	10.7%	8.8%	7.8%	9.9%	9.3%

Table 3: Mean values of the selected sample, male subsample and female subsample

Panel C: Mean values of the male subsample				
Year	**1988**	**2004**	**1988**	**2004**
	10th percentile		**90th percentile**	
Obs	580	1950	580	1950
Age	30.028	40.935	42.579	43.609
Earnings	1118.39	2137.14	3641.27	16418.80
Years of schooling	10.627	11.171	11.638	13.883
Potential experience	13.413	23.765	24.941	23.726
Experience squared	276.671	701.001	697.886	660.341
Beijing	3.1%	3.7%	4.8%	31.3%
Lliaoning	27.0%	41.1%	9.8%	6.7%
Zhejiang	6.8%	8.4%	17.8%	27.9%
Guangdong	6.6%	4.8%	50.0%	29.0%
Sichuan	34.7%	23.7%	12.4%	3.2%
Stateowned	66.2%	50.1%	86.4%	76.1%
Professional & technician	9.2%	8.4%	25.0%	31.2%
Cadre	1.6%	1.6%	19.7%	12.2%
Administrative worker	19.2%	17.5%	18.6%	37.0%
Commerce staff	7.8%	8.4%	3.3%	1.9%

Panel D: Mean values of the female subsample				
Year	**1988**	**2004**	**1998**	**2004**
	10th percentile		**90th percentile**	
Obs	502	1452	502	1452
Age	31.491	38.102	38.888	39.387
Earnings	944.72	1521.66	3089.33	13081.78
Years of schooling	9.398	11.245	10.934	13.910
Potential experience	16.101	20.858	21.954	19.477
Experience squared	368.688	536.761	535.564	460.174
Beijing	2.8%	3.4%	5.2%	30.5%
Lliaoning	27.2%	42.5%	10.0%	8.2%
Zhejiang	5.6%	8.8%	16.3%	25.3%
Guangdong	6.4%	5.3%	50.8%	28.2%
Sichuan	41.0%	21.2%	13.7%	4.8%
Stateowned	40.6%	41.7%	80.5%	74.9%
Professional & technician	6.6%	6.1%	28.5%	36.6%
Cadre	0.2%	0.4%	4.6%	4.3%
Administrative worker	10.5%	19.1%	23.7%	40.4%
Commerce staff	14.5%	16.8%	7.8%	2.2%

Table 4: Regression Results for Men in 1988, 1994, 1998, 2001 and 2004

	1988	1994	1998	2001	2004
Years of schooling	0.020	0.044	0.044	0.047	0.069
	(5.56)***	(9.71)***	(8.14)***	(7.56)***	(23.53)***
Potential experience	0.059	0.045	0.045	0.052	0.037
	(22.22)***	(14.32)***	(11.23)***	(11.55)***	(16.09)***
Experience squared/100	-0.090	-0.069	-0.069	-0.096	-0.059
	(15.34)***	(9.55)***	(7.54)***	(9.54)***	(12.03)***
Beijing	0.251	0.601	0.802	0.830	0.834
	(6.70)***	(17.49)***	(19.39)***	(18.90)***	(38.30)***
Liaoning	0.135	0.286	0.293	0.252	0.216
	(5.23)***	(9.57)***	(8.52)***	(6.55)***	(11.00)***
Zhejiang	0.343	0.684	0.676	0.713	0.796
	(11.81)***	(20.17)***	(17.09)***	(15.97)***	(36.43)***
Guangdong	0.543	1.151	1.221	1.153	0.928
	(20.06)***	(34.48)***	(32.16)***	(27.13)***	(40.97)***
Sichuan	0.092	0.223	0.211	0.181	0.113
	(3.64)***	(6.99)***	(5.82)***	(4.19)***	(5.10)***
Stateowned	0.166	0.094	0.073	0.084	0.184
	(7.72)***	(3.76)***	(2.64)***	(2.90)***	(13.31)***
Constant	5.863	6.171	6.404	5.914	6.484
	(14.21)***	(34.09)***	(37.81)***	(29.81)***	(85.94)***
Observations	2861	3280	3205	2918	9750
R-squared	0.40	0.45	0.42	0.41	0.44

Note: The regression specification used years of schooling, experience, experience squared, province dummies, occupational dummies, state-ownership dummy, and industry dummies. Absolute value of t statistics in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Decomposition of the changes of the average, bottom and top gender earnings gaps, 1988-2004

	Mean	*Mean*	*10th percentile*	*90th percentile*
Change in differential	0.12	0.125	0.296	0.079
Observed X's:	-0.092	-0.099	0.053	-0.046
	(-74%)	(-79.1%)	(17.9%)	(-58.7%)
Observed Price:	0.074	0.094	0.143	0.054
	(60.1%)	(75.5%)	(48.4%)	(69.3%)
Gap (residual quantities)	0.08	0.091	0.050	0.027
	(64.3%)	(72.7%)	(16.7%)	(34.1%)
Unobserved prices	0.062	0.039	0.050	0.044
	(49.6%)	(30.9%)	(17.0%)	(55.4%)
Sum gender specific	-9.7%	-6.4%	34.6%	-24.6%
Sum earnings structure	109.7%	106.4%	65.4%	124.6%
Industry, occupation and ownership controlled for	**No**	**Yes**	**Yes**	**Yes**

Notes: The numbers in parentheses show the percentage of each component's contribution to the change in the overall differential over the two years.

Table 6: Decomposition of the change of the average gender earnings gaps, 1988-1994, 1994-1998, 1998-2001, and 2001-2004

	88-94	**94-98**	**98-01**	**01-04**
Change in differential	0.060	-0.071	0.056	0.080
Observed X's:	-0.036	-0.038	-0.016	0.041
	(-61.1%)	(54.1%)	(-28.1%)	(51.4%)
Observed Price:	0.044	-0.004	-0.021	0.026
	(73.8%)	(6.1%)	(-36.7%)	(32.4%)
Gap (residual quantities)	0.032	-0.049	0.091	0.031
	(54.2%)	(69.0%)	(162.7%)	(38.9%)
Unobserved prices	0.020	0.021	0.001	-0.018
	(33.0%)	(-29.3%)	(2.0%)	(-22.8%)
Sum gender specific	-6.8%	123.1%	134.6%	90.3%
Sum earnings structure	106.8%	-23.1%	-34.6%	9.7%

Notes: The numbers in parentheses show the percentage of each component's contribution to the change in the overall differential over the two years.

Table 7A: Working hours and gender earnings gap

Year	Working hours of men per month	Working hours of women per month	Gender gap in hourly earning	Gender gap in annual earning	Difference in the two gender gaps	Average female residual in male equation of annual earning	Average female residual in male equation of hourly earning
2002	178.18	174.66	0.20	0.22	0.02	-0.18	-0.14
2003	180.18	176.77	0.24	0.26	0.02	-0.19	-0.16
2004	180.73	177.49	0.25	0.27	0.02	-0.21	-0.18

Table 7B: Working hours for men and women across wage distribution

Year	Male working hours			Female working hours		
	Earning percentile below 33.3%	Earning percentile 33.3%-66.7%	Earning percentile above 66.7%	Earning percentile below 33.3%	Earning percentile 33.3%-66.7%	Earning percentile above 66.7%
2002	181.52	178.22	174.81	177.95	174.54	171.51
2003	182.86	180.40	177.28	179.25	177.68	173.40
2004	183.10	180.66	178.42	180.64	177.58	174.25

Figure 1. The employment rate for men and women

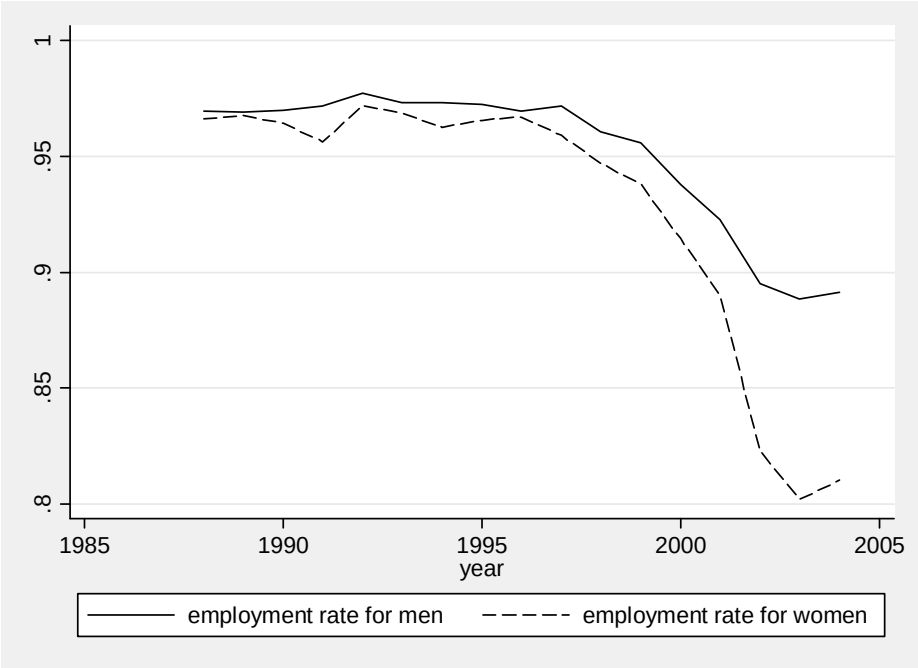

Figure 2. Changes of the gender earnings gap over time, by earnings deciles