Effect of Public Sector and SOEs on Wage Inequality of Urban China: 1988-2007

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Abstract: This paper examines the effect of public sector and SOEs on the wage inequality of urban China by using CHIPs data. It applies quantile regressions, Machado and Mata (2005) decomposition and the extension of it to single out respectively the factors representing the change of wage structure and employment shares of the public sector and SOEs that affect urban wage inequality. The econometric results show that after the radical SOEs reform aimed at solving over-manning and improving efficiency in the late 1990s, the wage premium to the public sector and SOEs (versus non-state sector) grows much larger, and the change of the wage structure of public sector and SOEs causes the enlargement of urban wage inequality.

Key words: China, Public sector, SOEs, urban wage inequality and wage gaps, quantile regression, counterfactual analysis.

1. Introduction

Since the late 1980s, there has been concern that China's spectacular economic growth has been partly at the expense of widening inequality. Although the Chinese economy had been transformed immensely, it is still dominated by the public sector and state-owned enterprises (SOEs hereafter) even only considering employment share and wage setting. In recent years, there have been widespread outcries that industrial wage gaps, in particular those between the state-owned monopolistic sector and the non-state sector, have been widening up. For example, the ratios of the average wage of the highest paid industry to that of the lowest paid had increased from 1.76 of 1990 to 4.88 of 2005 (SCDR, 2007; Gu & Feng, 2008). These previous findings are also confirmed by the results revealed in this paper (Tables 1-3). Apart from the rise of wage inequality measured by Gini coefficient, this paper also discloses that various percentile ratios of wage distribution have been increasing over time, in particular the percentile ratio of p90/10 roared from 2.82 in 1988 to 6.43 in 2007 (Table 1). Consequently, a question should be enquired is whether the rising wage inequality is a serious social-economic issue? Given the dominant role of the public sector and SOEs in the economy, what the role have these two sectors played in the rising urban wage gaps? However, up to now, there hasn't been any clear answer to the question.

By economic theory, there might be certain specific disequilibria existing in some parts of a perfect market economy in state of general equilibrium. For instance, there might be industrial wage differentials. The reason for it is that the wages are normally higher in high-tech sunrise industries than in low/conventional-tech sunset ones *ceteris paribus*. So under such circumstances, even if the wage gaps are substantially wide, there is no need to directly restrict the pay in the highly paid industries though the government could tax the high salary and set the minimum wage, etc. By contrast, the transitional Chinese economy is characterized by ill-functioned markets and large state-owned sectors, in particular the state-owned monopolistic industries, which play a dominant role in the whole economy. The state-owned oligopolistic enterprises are able to set the monopolistic prices, seize monopolistic profit and pay their employee wages that might be higher than marginal product of labour or market clearing prices.

The SOE sector *per se* is also in transition. Prior to the radical SOE reform that started in the mid-1990s, wages were institutionally determined according to a national system of grades

and scales and seniority was important to pay, whereas education and skill were little rewarded (Knight & Song, 1993, pp. 221 – 239). However, in the mid and late 1990s, the SOE sector laid off half of its workforce[1] to solve over-manning problem and improve efficiency. Roughly around the same period, the government began concentrating on a small number of large-scale and strategically important SOEs.[2] The reform and reconstructing of SOEs also led to the soaring of wages and bonus in the SOE sector. According to SCDR (2007), the annual growth rate of the average wage incomes of the state-owned, collective and other sectors are 15.3%, 13.5% and 12.9% respectively in the period of 1990 to 2005; besides, the annual growth rate of the average wage incomes of financial and insurance, postal and telecom, and gas and electricity sectors are 20.2%, 17.0% and 16.4% in that order, and hence much higher than that in other industrial sectors.

As for the public sector, the reform of pay rule for civil servants of 1993 allowed different regions to set up their own extra-pay scheme, which related the rise of salary of regional civil servants to their local economic growth. In other words, the reform sanctioned that provincial governments can arrange pay for their own civil servants according to their specific budget. Since then, the pay differentials for civil servants have gradually been getting larger between provinces or between different government agencies of the same region (Dai, et al, 2005; Liu, 2006). Besides, the pay for civil servants is higher than that of SOEs, collective enterprises and private firms (Dai, et al, 2005). For these above reasons, the most respected economist in China, Professor Jinglian Wu (2006) argued that the soaring of income inequality is mainly caused by corruption and the state-owned monopolistic industries.

Apart from the SOEs reform, other things have also changed dramatically after the mid-1990s. The reform of financial and banking sector aimed at solving bad loans resulted in sharp reduction of financial supports to rural industrial activities and hence large-scale closure of rural industrial enterprises, which in turn forced rural surplus labourers migrating to urban areas for employment (Huang, 2008). Consequently, the number of rural-urban migrants dramatically soared from 15 million in 1990 to 98 million in 2003 (News Office of the State Council, 2004), and further to 145 million in 2009 (Ministry of Human Resources and Social Security, 2010). More interestingly, the majority of the rural-urban migrants are either self-employed or bearing with very low wages of their employed work (Appleton, *et al*. 2004). Secondly, attracted by the huge market, cheap labour and high economic growth rate, tremendous amount of foreign direct investment flows to China so that China replaced America as the top recipient of FDI in 2003 (53 billion US dollars, OECD, 2004), the figure climbing to 90 billion US dollars in 2009 (Wen, 2010). The foreign-owned enterprises paid the much higher wages than domestic ones to recruit highly skilled and motivated workers (Appleton, *et al*. 2005; Xia et al, 2009). Third, in contrast to the shrinking of the SOE sector, non-state sectors are significantly expanding. For example, the share of employment in urban areas created by the non-state sectors rose from 26% in 1992 to 68% in 2001 and further to 78% in 2007 even without accounting for jobs being brought about by the rural-urban migrants (NSB, 1993, 2002 and 2008). Therefore, at the turn of the century, China's labour market became much competitive and transformed comparing to that in the late 1980s.

Upon the above discussion, we hypothesized that the high pay of the public sector and the monopolistic SOEs is one of the forces that drive up urban wage gap. To test this hypothesis,

[1] To the end of 2003, the number of the retrenched workers reaches 28.18 million (the News Office of the State Council, 2004). Roughly 50% of the SOE workforce was laid off (Naughton, 2007, pp. 313).

[2] Such as banks and financial corporation, telecom, railway transportation, national electricity grid and distribution, atomic energy, space exploring, water and gas supplies, etc.

we utilize the 1988, 1995, 2002 and 2007 CHIP urban household survey data, and Machado & Mata's (2005) parameterized counter-factual decomposition method based on multiple quantile regressions to single out the effect of the change of pay structure and employment shares of the public sector and SOEs respectively on urban wage inequality.

The rest of the paper is structured as follows. In section 2, we introduce the data and econometric methods. Sections 3 and 4 give the result of regression and decomposition of wage income inequality respectively. Section 5 presents the summary and conclusions.

2. Data and Method

2.1 Data

We use 1988, 1995, 2002 and 2007 urban household survey data conducted as part of the China Household Income Project (CHIP). The surveys were designed by a team of international scholars including the authors and researchers at the Institute of Economics of the Chinese Academy of Social Sciences. Sub-samples were drawn from the larger annual national household income survey of the National Bureau of Statistics (NBS). The sub-samples cover 10 out of 31 provinces in 1988, 11 in 1995, 12 in 2002 and 9 in 2007. The questionnaires designed for CHIP are more detailed than those in the official income surveys, particularly with respect to the measurement of income and labor issues. For the cross-sectional analysis, we construct a real wage variable that includes bonuses, price subsidies, which were important in 1988 before being largely withdrawn, regional allowances for working in Tibet or in mountainous areas, income in-kind, and income from secondary jobs.[3] With respect to adjustment of price level, we adjusted all wage income of different years to the constant price of 2002 according to the urban consumer price indices published by China's National Statistical Bureau (NSB hereafter). Results from these surveys are in Griffin & Zhao (1993), Riskin et al. (2001), Li & Sato (2006) and Gustafsson, *et al*. (2008) respectively.

These surveys cover only households with urban registration (*hukou*). Consequently, we exclude rural–urban migrant households because they are denied urban *hukou* status. However, estimating wage functions of urban residents separately from those of migrants is appropriate because administrative controls make it extremely difficult for people of rural origin to acquire an urban *hukou* so that any sample selection bias is likely to be negligible. Confining the analysis to the sub-population having the urban *hukou* allows us to examine what causes the enlargement of wage inequality for a specific group of people so that we may draw inferences about corresponding changes in economic well-being. Nonetheless, we are omitting an important dimension of the urban labor market by not being able to include migrants. Moreover, the importance size of this omission has increased over time with the sharp increase in rural–urban migration during the period. Controls over rural–urban migration were loosened significantly in 1988 when the government allowed farmers to conduct business in cities, as Linge and Forbes (1990) discuss. The rise in rural–urban migration is likely to have affected particular groups of urban workers differentially. Specifically, rural–urban migration is likely to have had a moderating impact on the wages of urban residents having similar characteristics as, or working in similar sectors to, migrants. Hence, the effect is greater on urban workers with less education and those working in the

[3] Our wage variable, although fairly comprehensive, does exclude some non-monetary benefits such as pension accruals, health insurance and housing. The contributions of these variables may vary under differing forms of ownership and over time. Nominal wages were converted into real wages by deflating by regional urban CPIs.

service and commercial sectors.[4]

Table 1 reports the change of urban wage inequality for the period of 1988 - 2007. Gini index of urban wage income sharply rose from 0.237 in 1988 to 0.345 in 1995, and then remained unchanged in 2002, but further ascended to 0.439 in 2007. The Lorenz curves of these four years' wage income reflected the same trend (Figure 1). The ratio of wage on the 90^{th} and 10^{th} percentile points (p90/p10 hereafter) soared from 2.82 of 1988 to 6.43 of 2007. Wage gaps of the non-state sector are higher than that of the public sector and SOEs, but the difference between them is getting smaller (Table 2). Finally the wage gaps within each sector and each subsector has been widening up continuously during the period.

Figure 2 exhibits raw (unconditional) daily wage gap curves between the state sector (including public sector and SOEs) and the non-state sector on percentile points from low to high of all the four years' CHIP data. In general, the pay of state sector is higher than non-state sector. In 1988 on the 10^{th} percentile point the wage of state sector is 1.5 times of that of non-state sector, but this ratio gradually dropped to 1.1 on 90^{th} percentile point. In 1995 the pattern, which the wage gap between state and non-state sectors decrease as wage level goes up, was much strengthened, for instances, the ratio of wages of state and non-state sectors on 10^{th} and 90^{th} percentile points rose to 1.9 and 1.2 respectively. Although the state sector still paid more than the non-state sector in 2002, the gap is lower than that of 1995 below the 35^{th} percentile point of the wage distribution, with the wage gaps of these two years on the rest of the higher up distribution are roughly the same. In 2007, the wage gap between the state and non-state sector is close to that of 1988 in the lower part of the wage distribution and near to that of 2002 with the rest of the higher-up wage distribution.

2.2 Method

We utilize quantile regression method to estimate the extended Mincerian earning function (Mincer, 1973). Let $Q_\theta(w_{it}|X_{it})$ for $\theta \in (0,1)$ denote the θth quantile of the (log) wages w of an individual i in year t for given explanatory variables, X. For each year separately, we model these conditional quantiles by:

$$Q_\theta\left(\ln W_{it} \middle| X_{it}\right) = X_{it}^{'}\beta_t(\theta) \qquad (1)$$

where $\beta(\theta)$ is a vector quantile coefficients, and X is a vector of explanatory variables. The coefficients are estimated following Koenker and Bassett's (1978) quantile regression estimator. In practice, we run 19 quantile regressions (from the quantile point 0.05, 0.10, 0.15, …, 0.95) for each round of the four rounds of cross-sectional data.[5] Afterwards, we plot a curve for the 19 coefficients on the dummy variable (with 1 indicating the worker being employed by the state sector and 0 the non-state sector) against the 19 quantile points of wage distribution for each year (see Figures 5). From these curves we can observe the wage premium to state sector versus non-state sector across entire wage distribution over time.

[4] In the 1999 survey, the more settled migrants were surveyed and so we can compare their characteristics with those of workers with urban *hukou* (see Table 1 of Appleton *et al.*, 2004). Over half the migrants were self-employed and so may not be directly competing for jobs with urban residents (only around 1% of whom were self-employed). Migrants tended to be less educated (averaging three fewer years of education), as well as including more young and male workers. Migrants' distribution across jobs was very different from urban residents, with a large concentration being service or retail workers and relatively few working as highly skilled or industrial workers.

[5] The distance between any two quantile points is 0.05.

The quantile regression has a number of advantages over conventional ordinary least squares regressions. Most importantly, it provides a complete representation of the conditional distribution of wages whereas the conventional regression focuses only on the conditional mean [6]. This is particularly crucial for understanding inequality where the standard regression's focus only on the central tendency is very limited. Furthermore, the quantile approach allows one to test whether some determinants of wages have different effects on workers higher up the conditional wage distribution than on those lower down. For example, we can see whether the wage premium to state sector vary at different points of the conditional wage distribution. The quantile approach recognises the unobserved heterogeneity of workers and thus allows a richer picture of the determinants of wages to be obtained.

Quantile regressions are far from perfect. Outliers and skewed distribution (often observed in large scale cross-section household survey data) make quantile regression residuals deviate from the independent and identical distribution (I.I.D). If the I.I.D assumption of regression residuals was no longer to hold, the statistical inferences from regression results would be invalid (Hao & Naiman, 2007, pp.44-47). To circumvent this technical difficulty, the bootstrap method is applied in quantile regressions (Kocherginsky, *et al*. 2005). The bootstrap quantile regressions do not need the IID assumption of regression residuals, thus it is more robust and practical. For this reason, the bootstrap quantile regressions are employed in this paper.

Some care must be taken in interpreting the results of the quantile analysis, because they pertain to *conditional* quantiles, not unconditional ones. Thus a worker at a high wage quantile would be one who has high wages given their values of observed determinants of wages, X, rather than a simply a high wage worker per se. Another way of saying this is that a worker at high wage quantile will tend to have favourable unobserved determinants of wages, which show the difficulty in interpreting the results. Since unobserved determinants of wages are unobserved, it is not clear exactly what they are. They could include measurement error, for example, or random factors (a worker's good fortune in chancing upon a high paying position). However, there is some interest in these unobservables – for example, unobserved personal characteristics affecting earnings are often labelled "ability" in the theoretical literature (although they may also encompass determination, ambition and factors such as personal appearance). Unobserved characteristics of a job may also be interesting – for example, we do not observe firm size or profitability, but rent-sharing theories imply these may have significant effects on earnings. In our exposition, for brevity, when describing the patterns in our findings, we often refer to high quantiles unconditionally as representing high wage workers – as is common in the applied literature – but this is an over-simplification and the more nuanced interpretation focusing on unobservables is often invoked when trying to explain our results.

One of the main purposes of utilizing quantile regressions is to study the evolution of pay differentials between the state and non-state sectors for the period of 1988-2007. To this end, we control the variables that are comparable across the four years' CHIP urban household survey data in the earnings function (1). In detail, these variables are workers' schooling, experience and experience squared term, dummy variables for sex, communist party member, non-Han Chinese, job characteristics in terms of occupations and industrial sectors, and

[6] Other advantages of the quantile approach are that it is less sensitive to outliers; more robust to departures from normality (Koenker and Bassett, 1978); and has better properties in the presence of heteroscedasticity (Deaton, 1992)

finally provincial dummies. The variable of interest of this paper is a dummy variable identifying ownership of workers' employer with 1 indicating the state-sector and 0 the non-state sector.

The focus of this paper is to explore the effect of the state sector's wage structure and employment share on urban wage inequality for the period of 1988-2007. For this reason, we employ Machado and Mata's (2005) method (MM method hereafter) to decompose changes in wage inequality into changes attributable to two sources. One is the change in wage structure in terms of the coefficients on the various explanatory variables. The other is the change in the distribution of explanatory variables, i.e., the change in workers' personal and productive characteristics, and in job characteristics. In detail, following Machado and Mata (2005), if α(.) is some summary statistics for wages – such as the Gini coefficient – then we can decompose the changes in α as below:

$$\begin{aligned} &\alpha\left(f\left(w(1)\right)\right)-\alpha\left(f\left(w(0)\right)\right) \\ =&\underbrace{\left[\alpha\left(f^{*}\left(w(1);X(0)\right)\right)-\alpha\left(f^{*}\left(w(0)\right)\right)\right]}_{\text{coefficients}}+ \\ &\underbrace{\left[\alpha\left(f^{*}\left(w(1)\right)\right)-\alpha\left(f^{*}\left(w(1);X(0)\right)\right)\right]}_{\text{covariate}}+\textit{residual}. \end{aligned} \qquad (2)$$

where $f(w(t))$ denotes an estimator of the marginal density of w (the log wage) at t based on the observed sample $\{w_i(t)\}$, $f^*(w(t))$ an estimator of density of w at t based on the generated sample $\{w_i^*(t)\}$, and t=0, 1. The counterfactual densities will be denoted by $f^*(w(1); X(0))$, for the density that would result in t=1 if all covariates had their t=0 distributions, $f^*(w(1); X^i(0))$, for the wage density in t=1 if only X^i (part of the covariates) were distributed as in t=0.

Furthermore, the contribution of an individual covariate x_i to the total wage inequality could be measured by looking at indicators such as

$$\alpha\left(f^{*}\left(w(1)\right)\right)-\alpha\left(f^{*}\left(w(1);x_i(0)\right)\right). \qquad (3)$$

Along the line of Machado and Mata, we are able to counterfactually measure the contribution of an individual coefficient β_i to the change of wage inequality by observing

$$\alpha\left(f^{*}\left(w(0);\beta_i(1)\right)\right)-\alpha\left(f^{*}\left(w(0)\right)\right) \qquad (4)$$

where $f^{*}\left(w(0);\beta_i(1)\right)$ denotes an estimator of density of w with all covariates at period 0 and all coefficients but $\beta_i(1)$ based at period 0, $\beta_i(1)$ denotes the coefficient of x_i is taken from period 1. With Formula (4), we then counterfactually analyze the change of wage inequality and wage gap caused by the specific changes in the pay structure, such as by changes in the returns to education, etc.

In essence, Machado and Mata's counterfactual decomposition is an extension of Oaxaca's (1973) in the environment of quantile regressions.[7] The key exercise of MM method is to obtain the generated sample $\{w_i^*(t)\}$. To get $\{w_i^*(t)\}$, one first needs to get number n of

[7] As is well known, there is a potential index number problem with such exercises.

quantile regression coefficients $\hat{\beta}^t(\theta_i)$ (where θ_i denotes the quantile point), and then generate a random sample of size *n* with replacement from the rows of $X(t)$ denoted by $\{x_i^*\}_{t=1}^n$, and finally get $\{w_i^*(t) = x_i^*(t)'\hat{\beta}^t(\theta_i)\}_{t=1}^n$.[8] For details, the reader is referred to Machado and Mata (2005).

Finally, due to that China's economic transition is carried out step by step, the counterfactual decomposition is also implemented period by period. In detail, these periods are the phases of 1988-1995, 1995-2002, and 2002-2007 according to the availability of the CHIP data. The explanatory variables were perfectly comparable for each of the three periods.

3. Results from Quantile Regressions

In this paper, the state sector consists of two sub-sectors. One is the public sector, which covers civil servants, various state-owned institutions such as schools, universities, hospitals, etc. The other is the state-owned enterprises. Therefore, before examining the wage gap between the state sector and non-state sector, it is necessary to investigate the pay differential between the public sector and SOEs. According to CHIP urban household surveys, the share of public sector in the total urban employment rose from 30% of 1995 to 32% of 2007, whereas the share of SOEs is falling sharply from 51% of 1995 to 34% of 2002 and further to 18% of 2007 (Table 4), which is the result of the mass retrenchment of SOE workers of the late 1990s. At this stage, one might question whether there is any pay differential between public sector and SOEs. To this end, we employ CHIP 1995, 2002 and 2007 urban household survey data in which the public sector and SOEs can be identified to explore the pay gap between these two sub-sectors.[9] From OLS regression results, the pay of public sector is 8% higher than that of SOEs in 1995, this pay gap drops to 5% in 2002, and further falls to -2% in 2007 but statistically insignificant.[10] The multiple quantile regression results (Figure 3) demonstrate that in both 1995 and 2002 the pay gap between the public sector and SOEs steadily decreases as wage level goes up and the curves of the two years are roughly undistinguishable apart from the top quartile of the wage distribution. On the top quartile, the pay gap is insignificant for the year of 1995 but for the year of 2002 it continuously descend to -11% as the wage level move higher up. At 2007, the pay of the public sector is no longer higher than that of SOEs except for the top quintile, it is that SOE workers are better paid than in public sector on the quintiles other than the top one.

Apart from the pay differential between the public sector and SOEs, there is another obstacle to overcome, which is that CHIP 2007 urban household survey data do not contain the information of whether a person is a communist party member. Therefore, it becomes unclear whether the extended Mincerian earning function of 2007 is comparable with that of other years. Considering that the year of 2002 is nearer to the year of 2007, we compared the earning function of 2002 containing the communist party membership variable and the one of the same year without this variable. Figure 4 presents the wage premium curves of state sector versus non-state sector from the earning functions of 2002 with and without communist party membership variable based on the multiple quantile regressions. The wage premium curve

[8] According to Machado and Mata (2005), one needs to randomly draw θ_i of sample size n from $\theta[0, 1]$. However, in practice, we only take 999 quantile points with equal distance from the uniform distribution on [0, 1] by following Albrecht et al. (2003) and Rica et al. (2008). In other words, we did 999 quantile regressions for the quantile points 0.001, 0.002, 0.003, …, 0.999 on [0, 1] for each of the four years' earnings function.

[9] The ownership variables include public sector, collective enterprise, foreign-owned and joint-venture enterprises, private sector and others with SOEs as the reference variable. Other variables such workers' sex, communist party membership, ethnicity, occupation, industrial sectors, provincial dummies are the control variables.

[10] Due to space limit, the OLS regression is not reported in this paper, but it can be requested by the reader.

without the communist party membership variable is a bit higher than that with the party membership variable almost at all quantile point of wage distribution. This fact demonstrates that the wage premium curve of state sector without party membership variable absorbs part of the effect of the wage premium of party member. However, from the point of CHIP 2002 urban household survey data, whether the party membership variable is included do not have much effect on the wage premium of state sector versus non-state sector. Upon this finding, it could be concluded that the earnings function of 2007 is comparable to that of 1988, 1995 and 2002.

3.1 Evolution of the wage premium of state sector versus non-state sector

Figure 5 presents the evolution of the wage premium curves of state sector versus non-state sector. For the year of 1988, the wage premium of state sector versus non-state sector decreases as wage level goes up, with top premium (24%) at the 5^{th} percentile point of wage distribution and middle (14%) at median and bottom (8%) at 95^{th} percentile point. In 1995, the characteristics of the wage premium of state sector versus non-state sector was further reinforced with the premium at the 5^{th}, median and the 95^{th} percentile points of wage distribution being 34%, 24% and 17% respectively. Upon these facts, one might enquire: what cause the pay of state sector much higher than that of non-state sector in 1988 and 1995? Why was this wage premium further raised in 1995 comparing to 1988? And finally why did the wage premium fall as wage level goes up?

To answer these queries, we have to examine the history of SOE reform. Since 1981 in particular after 1986, the Chinese government allows SOEs implementing flexible pay scheme according to their profitability. Although the floating pay or bonus was not allowed to be more than 5% of the total wage expenditure of a SOE at beginning, this limit was gradually abolished (Meng, 2000, pp. 83). Due to the soft budget constraints and no requirement of taking business risk, the objective of SOE managers was not the profit-maximization but the welfare-maximization of SOE workers in terms of wage and bonus. Sometimes large amount of bonuses was paid out from bank loan at the occurrence of loss (Walder, 1987 & 1989). Based on the 1985-1992 firm data, Meng (2000, pp.107) finds that the retained profit was the main determinant of wages in SOEs, whereas in private firms it was productivity of workers that determined the pay. Therefore, except for that the bonus and subsidies of all sorts were regularly increased, the wage setting mechanism was roughly unchanged in SOEs until the late 1990s when the radical SOE reform was implemented. This defect resulted from institutional design led to that the pay of SOEs was continuously higher than that of private firms and the magnitude of this pay differential multiplied in the period of 1988-1995.

Although the SOE reform of 1986 allowed that there can be larger pay differential within each SOE, it is very hard to monitor workers' productivity so that the floating wage or bonus was downgraded to equal distribution among workers (Meng, 2000, pp. 83). As we just discussed that wage was determined by marginal product of a worker in private firms. Therefore, we inferred that the wage gap should be much bigger in private firms than that in SOEs, which is confirmed by this study (Table 2 & 3). Taken together, the pay of SOEs is roughly equal distribution whereas the wage gap in private firms is considerably large, thus it definitely made the wage premium of state-sector versus non-state sector being larger for the lower part of the wage distribution and smaller in the upper part. Chamberlin (1994) finds that the wage premium of trade union members is higher for the lower part of wage distribution. It might be inferred that the SOEs in China largely played the role of trade union in the US in term of wage payment, i.e., it is more effective on protecting lower wage workers.

After Deng Xiaoping's southern tour in 1992, China's reform and marketization accelerated. Of them the most radical reform are the mass retrenchment of superfluous workers and "retaining the big SOEs while letting off the small ones", which were put on trial in 1994 and finally implemented in 1997. The consequence of it was that the employment of SOEs was reduced by 50% and the number of SOEs was decreased by 74% (Naughton, 2007, pp. 313). The remained SOEs are those profitable and monopolistic ones with strategic importance for the country's economy. Apart from SOE reform, other reform measures also have big impact on SOEs, such abolishing the double-track system that made SOEs pay market prices for key resources, unification of tax regime that caused SOEs paying the same value-added taxes with other non-state firms, and tightening of credit so that SOEs could not pay out bonuses and other subsidies to their workers out of bank loans. What's effect of these thorough reform measures on the wage setting mechanism of SOEs? Figure 5 shows that the wage premium of state-sector versus non-state sector falls back to the level of 1988 (on the first quintile and the fourth quartile the premium was even less than that of 1988), and hence much lower than that of 1995. What factors drove the wage premium of 2002 down to the level much less than that in 1995? After the late 1990's Asian financial crisis, the Chinese economy was in deflation around 2002. Additionally, the urban labour market was heavily flooded by the roughly 30-million retrenched SOE workers and the almost 100-million strong rural-urban migrants (State Council News Office, 2004). Therefore, it could be inferred that there was no pay-rising pressure in private sector then. If there were any pay rise in private sector, it would be the consequence of change of productivity. Conclusively, the fall of the wage premium of state sector versus non-state sector in 2002 relative to 1995 could only be the result that the there was no much pay-rise in SOEs during this period.

In 2007, the wage premium of state-sector was still less than that of 1988 over the first quintile of wage distribution. However, on the 2-5 quintiles, the wage premium of state sector was higher than that of both 1988 and 2002, but still lower than that of 1995. Besides, the wage premium of state sector is almost level for the middle 50. But on the quartile, the wage premium of state sector decreases as wage level goes up. In general, the wage premium of state sector was much increased during the period of 2002-2007. What factors could drive up the wage premium of state sector in this period? Things changed dramatically after 2002 when the above-mentioned radical SOE reform was roughly completed. The remaining SOEs are those profitable and huge monopolistic ones with the strategic importance to the country, such as banks, financial firms, telecom, aviation, railway, energy, etc. According to NSB, the growth rate of pay rise of SOE sector and non-state sector are 14.12% and 12.76% respectively during the period of 2002-2009, and the magnitude of SOEs' pay higher than that of non-state firms increased from 0.30% of 2002 to 10.36% of 2009.[11] Therefore, Wu (2006) speculates that the expanding wage inequality was caused by the monopolistic SOEs and corruption; Gu & Feng (2008), Yue et al (2010) and Jia (2011) among others also find that the pay gap between monopolistic SOEs and other enterprises is unacceptable.

3.2 Reasonable and unreasonable part of the wage premium of state sector versus non-state sector

Following Yue et al (2010), we also explore to what extent that the wage premium of state sector versus non-state sector is reasonable. We carried out Oaxaca-Blinder decomposition on the dummy variable of being employed in state sector or not in the extended Mincerian

[11] The pay gap between the average wages of SOEs and non-state sector calculated from NSB report is somewhat different from that of CHIP urban household surveys. The later was based on randomly sampled urban household survey data. Therefore it is more close to the reality.

earning function of this paper for the four rounds of CHIP urban household surveys. The purpose of it is to measure reasonable and unreasonable part of the wage premium of state sector versus non-state sector. Moreover, we also conduct Oaxaca-Blinder decomposition of the same variable based the same earning function estimated by the multiple quantile regressions (0.05, 0.10, 0.15, …, 0.95) for the four rounds of CHIP urban data,[12] and plot the percentage of unreasonable part of the wage premium of state sector versus non-state sector against the percentile points of wage distribution (Figure 6). The aim of it is to measure the change of the wage premium of state sector across the entire wage distribution over time.

The Oaxaca-Blinder decomposition based on OLS regressions exhibits the unreasonable part of the wage premium of state sector versus non-state sector was in the range of 43-44% for the years of 1988, 1995 and 2002, however it climbed to 81% in 2007 (Table 5). The same decomposition based on multiple quantile regressions (Figure 6) shows the same trend over time. In addition, the unreasonable part of the wage premium of state sector first rose somewhat on the first quartile and then fell slightly as wage level goes up for the years of 1988 and 2002, while for the year of 1995 it was roughly level on the 1-4 quintiles and climbed sharply on the top quintile. For the year of 2007, the unreasonable part of the wage premium is roughly in the form of inverse U shape. Nevertheless, at 2007 the unreasonable part of the wage premium of state sector was much fortified, with the workers of the middle 50 of the wage distribution being more positively discriminated. Yue at al (2010) find that the unreasonable part of the wage premium of the monopolistic SOEs versus non-monopolistic firms is as high as 60%.[13] Recall that the wage premium of the public sector versus SOEs decreases as wage level goes up in 1995 and 2002, but in 2007 it becomes the opposite. As we said that after the reform the remaining SOEs were all those profitable and monopolistic ones. These monopolistic SOEs could get favourable treatments from various government agencies and banks (such as easy credit, tax reduction, rights of controlling scarce resources), set monopolistic prices, harvest monopolistic profit and hence pay their workers wages high above market prices. This could be the main factor driving up the unreasonable part of the wage premium of state sector versus non-state sector.

4. Counterfactual analysis: effect of the wage structure and employment share state sector on urban wage inequality

After examining the wage gap between state sector and non-state sector and the evolution of it for the period of 1988-2007, it is a high time to unveil the mystery of how the urban wage inequality was affected by the change of the wage structure and employment share of the state sector (including public sector and SOEs), and hence to test our hypothesis that the high pay of the public sector and SOEs causes the enlargement of urban wage inequality. As stated in Section 2, the change of wage income inequality can be counterfactually decomposed by

[12] In this paper, the Oaxaca-Blinder decomposition based on OLS regression and the multiple quantile regression is conducted by using the downloadable STATA procedure "decomp". The STATA procedure "decomp" is written by Ian Watson who closely follows Blinder's exposition and uses both his method and his terminology. The reason that we adopt "decomp" procedure is that it fits into our purpose very well. In the Oaxaca-Blinder decomposition of the pay gap between state sector and non-state sector of this study, the wage structure of non-state sector is decided by market competition, whereas the non-market factors would play significant roles in the pay setting of state sector. For example, in the state sector the workers' political affiliation would be an important earning determinant. In the monopolistic SOEs, the monopolistic profit might push up the pay of the workers. Therefore, the wage premium of state sector versus non-state sector is the result of positive discrimination. Thus, in the process of Oaxaca-Blinder decomposition, the regression coefficients of the earning function for the non-state sector should be set as the reference, and the characteristics of the state sector workers should be the weights in calculating the unexplained (or unreasonable) part of the wage premium of state sector versus non-state sector. The reverse decomposition of the decomp procedure is just what this study needs.

[13] Due to that rural-urban migrants are covered in the CHIP urban household survey, we pick Yue et al's (2010) Oaxaca-Blinder decomposition of the pay gap of monopolistic SOEs and others when rural-urban sample are excluded.

the change of wage structure (the change of regression coefficients of earnings function) and the change of workers' characteristics (the explanatory variables of the earnings function). By this counterfactual decomposition, we can observe how the wage inequality was influenced by the change of any part of the wage structure (any coefficient or any group of coefficients of the earnings function) or any explanatory variables. In this paper, we focus how the urban wage inequality was modified by the change of the conditional pay (regression coefficient of the dummy variable "state sector") and employment share of state sector.

In practice, we employ the change of Gini coefficient and various percentile ratios of the wage distribution to describe how urban wage inequality was affected by change of the conditional pay or regression coefficient of the state sector (all other regression coefficients and all explanatory variables remain unchanged) and by change of employment share of state sector (all other explanatory variables and all regression coefficients are kept unchanged) (Tables 6 and 7). Percentile ratios of the wage distribution include p90/p10, p75/p25, p90/p50 and p50/p10. We carried out 10 rounds of counterfactual simulation for the effect of change of regression coefficient of state sector and the effect of change of employment share of state sector on urban wage inequality respectively, and then average those wage inequality and gap indicators of the 10 rounds of counterfactual simulation. The purpose of it is to avoid the bias from any single simulation result. In each round of counterfactual simulation, we always randomly pick the 999 observations of the explanatory variables from the data of any particular year.

4.1 Effect of the conditional pay or regression coefficient of state sector on urban wage inequality and gap

Effect of the conditional pay or regression coefficient of state sector on urban wage inequality and gap is different in each transitional period of the Chinese economy. Comparing to 1988, the sharp rise of the wage premium of state sector versus non-state sector over the entire wage distribution (Figure 5) in 1995 resulted in the enlargement of urban wage inequality (Tables 6 & 7). For example, the gini coefficient increased (by 0.007 if the MM decomposition was based on the 1988 wage structure and explanatory variables, or by 0.003 if the decomposition was based on the 1995 wage structure and explanatory variables). The wage gap indictors such as p90/p10, p75/p25 and p50/p10 showed significant sign of rising. However, the enlargement of the wage gap is unbalanced for that the p50/p10 indictor increased while the p90/p50 indicator almost remains unchanged. This implies that the wage gap for the workers with wages below median level widened up whereas the gap for workers above median wage level is roughly unaffected.

By 1995 the mass retrenchment of SOE workers was just put on trial, whereas by 2002 the mass retrenchment was largely accomplished. Comparing to 1995, the clear fall of the wage premium of state sector versus non-state sector in 2002 led to the shrink of urban wage inequality. For instance, the gini coefficient was reduced by about 0.013 (by 0.012 if the MM decomposition was based on the 1995 wage structure and explanatory variables, or by 0.014 if the decomposition was based on the 2002 wage structure and explanatory variables). The wage gap (in terms of p90/p10, p75/25 and p90/p50) also contracted. Nevertheless, the contraction of wage gap for workers on the upper half interval of wage distribution is bigger than that for workers on the lower half.

During the period of 2002-2007, the remained huge monopolistic SOEs seized their opportunity and hence achieved fast growth, huge amount of monopolistic profit, and steady

pay rise for their employees in particular for their managerial staff. Consequently, the clear rise of wage premium of state sector versus non-state sector for the upper half interval of wage distribution in this period caused the deterioration of urban wage inequality. The gini coefficient increased by 0.003 (if the MM decomposition was based on the 2002 wage structure and explanatory variables), or by 0.002 (if the decomposition was based on the 2007 wage structure and explanatory variables). The wage gap indicators of p90/p10, p75/p25, p90/p50 and p50/p10 displayed clear upsurge, although the high wage earners got more pay rise than those low wage earners.

4.2 Effect of the employment share of state sector on urban wage inequality and gap

There isn't any contradictory between the results of MM counterfactual decomposition of the wage structure (or regression coefficient) of state sector versus no-state sector based on the base and current years' wage structure and explanatory variables. By contrast, there is clear inconsistency between the outcomes of decomposition of the change of employment share of state sector versus non-state sector computed on the base and current year's wage structure and explanatory variables in particular for the last two of the three periods (Tables 6 & 7). For the period of 1988-1995, the employment share of state sector remained largely unchanged so that the contradictory is not apparent. However, the employment share of state sector dropped from 79% in 1995 to 65% in 2002 and further to 49% in 2007. If the counterfactual decomposition is against the base year of the two periods of 1995-2002 and 2002-2007, it is found that the reduction of employment share of state sector brought about the cut of urban wage inequality in the form of gini coefficient and urban wage gap in terms of p90/p10 and p50/p10, whereas if it is based on the current year of the two periods, we observed that the fall of employment share of state sector gave rise to the deterioration of urban wage inequality.

To investigate what on earth caused this contradictory, we extend the MM counterfactual decomposition of the effect of change of state sector's employment share on urban wage inequality to all decile points of employment share. This full scale counterfactual decomposition method can exemplified with the 1995's wage structure and explanatory variables acting as the base. During the period of 1995-2002, the employment share of state sector fell from 79% to 65%. However, when keeping the employment share of state sector in 1995 as it was, we supposed that the state sector's employment share can counterfactually be changed to 10%, 20%, …, 90%. The same kind of counterfactual decomposition was implemented for the years of 1988, 2002 and 2007.

Table 8 reports the full scale simulation results of counterfactual decomposition of effect of variation of the state sector's employment share on urban wage inequalities, which are based on the wage structure and explanatory variables of 1988, 1995, 2002 and 2007 respectively. From Table 8, it can be found that when employment share of state sector is counterfactually changed to 10%, 20%, …, 90% respectively, in each year the difference between the counterfactual and factual urban wage inequality (the former minus the later) changes from large to small and also from positive to negative. However, due to that the state sector has different employment share in each year of the four years, the transition of the difference between the counterfactual and factual urban wage inequalities from positive to negative in each year occurred in different interval of counterfactual employment shares of state sector. It can be observed from Table 8 that the interval of counterfactual employment share of state sector, in which the change of the difference between the counterfactual and factual urban wage inequalities from positive to negative, descends together with the fall of the factual

employment share of state sector.

Additionally, in the simulation of counterfactual decomposition of each year, when the counterfactual employment share of state sector is higher than the factual one in any particular year, the difference between counterfactual and factual urban wage inequality is in negative. When carrying out the simulation of Table 8, we suppose that transition of the state sector's employment share is from the factual to the counterfactual, which is in the same order with the decomposition result in Table 6. If we multiply every simulated number of Table 8 by "-1", then we get simulation result in reverse order - the transition of state sector's employment share from counterfactual to factual, which is what had been done in Table 7. In this reverse order, we notice that when the state sector's counterfactual employment share is greater than the factual, the effect of it would be the enlargement of urban wage inequality. Recall that the state sector's employment share has been decreasing since 1994. As a result, it is inevitable that contradicting results occur between the simulation results computed on the base year and those based on the current year for each of the two periods of 1995-2002 and 2002-2007. This is a typical example of the index problem from which the Oaxaca decomposition suffered.

Conclusively, whether the fall of the state sector's employment share leads to the enlargement or contraction of the urban wage inequality depends on the order of the counterfactual decomposition. The above simulation results could also be extended to the effect of proportional change of other variables in earning functions such as education, sex, occupation, and so on.

5. Summary

This paper examines the effect of change of the state sector's wage structure and employment share on urban wage inequality by utilizing the 1988, 1995, 2002 and 2007 CHIP urban household survey data. As far as the method is concerned, we employed multiple quantile regressions and MM counterfactual decomposition. Besides, we also extend the MM counterfactual decompositions to all decile points in order to investigate the effect of change of the state sector's employment share on urban wage inequality. The results of multiple quantile regressions and MM counterfactual decomposition revealed that after the radical SOE reform, the wage premium to SOE workers and its unreasonable part increased significantly, which led to enlargement of urban wage inequality.

The state sector consists of public sector and SOEs. Of the total urban employment, the SOE's share fell from 50% of 1995 to 18% of 2007, while the public sector's share remained at about 30%. The result of multiple quantile regressions discloses that the public sector's pay was higher than that of SOEs in both 1995 and 2002, but the gap decreased as the wage levels goes up in each of the two years. At 2007 there wasn't significant pay differential between the public sector and SOEs, except that the latter's pay is higher than that for the former on the top quintile. This implies that after 2002 there has been large pay rises in SOEs comparing to the public sector.

Prior to SOE reform, there weren't much credit constraints and business risk for SOE managers, and the aim of SOEs were not for the maximization of SOEs' profit and total wealth but for the maximization of pay and welfare of SOE workers. Therefore, rather than productivity of workers, the retained profit was the main determinant of wage in SOEs. The consequence of the old regime was that the wage premium to state sector versus non-state

sector increased considerably in the period of 1988-1995, which caused the enlargement of urban wage inequality.

After the SOE reform, the wage premium to state sector was temporarily reduced, and hence it resulted in the fall of urban wage inequality for the period of 1995-2002. However, the SOEs survived the reform are those large scale and monopolistic ones. The nature of those monopolistic SOEs gradually revealed in terms of swooping monopolistic profit and paying their employ high salaries. Therefore, not only has the speed of pay rise of SOE workers been faster than that of public sector but also swifter than that of private sector since 2002, which led to the enlargement of urban wage inequality. Oaxaca-Blinder decomposition displays that the unreasonable part of the wage premium of state sector versus non-state sector had largely been kept at about 44% by 2002, however it sharply rose to 81% in 2007. Those monopolistic SOEs are able to set monopolistic prices, grasp monopolistic profit and pay their employee wage higher than their marginal product of labour. These might be the chief reason that the pay of SOEs grew faster than that of public sector and private sector.

More than 30 years has passed since China's economic reform started in 1978. Of these years the most spectacular and most influential reforms are the abolishing collective agricultural regime in the early 1980s and the radical SOE reform characterised by retrenching half of the SOE employees and privatizing the majority of SOEs in the late 1990s. The rural reform, which returned the collectivized land to rural households, resulted in gigantic rise of agricultural output and huge fall of rural poverty. Therefore, it was a pure Pareto improvement. In other words, there wasn't any loser during the reform. However, the radical SOE reform led to the retrenchment of half of the SOE workforce and the massive reduction of number of SOEs. The SOE reform fundamentally transformed the situation that the majority of state fiscal income had to be spent on subsidizing those loss-making SOEs, and hence laid a solid financial foundation for the Hu-Wen new deal that focuses on improving the human development conditions.[14]

China's transitional market economy is still imperfect. Therefore, those large monopolistic SOEs play a dominant role and pay their employee very high salary and welfare arrangement, which have brought about the rise of urban wage inequality. For this reason, the decision makers should put more effort on monitoring and regulating those monopolistic SOEs.

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[14] The Hu-Wen new deal is referred to as the Hu Jingtao and Wen Jiabao's policy since they came into power in 2002.

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Table 1: Indicators of wage inequality and gap of urban China

	1988	1995	2002	2007
Gini coefficients	0.23720	0.34449	0.34781	0.43937
General entropy				
GE(-1)	0.23790	0.57580	0.28577	0.40476
GE(0)	0.10786	0.23536	0.21241	0.33339
GE(1)	0.10766	0.22646	0.21514	0.44610
GE(2)	0.14837	0.37869	0.29688	1.97441
Atkinson index				
A(0.5)	0.05124	0.10560	0.10053	0.16938
A(1)	0.10224	0.20971	0.19137	0.28351
A(2)	0.32240	0.53523	0.36368	0.44737
Mean	17.60	28.20	49.73	98.54
Median	16.53	23.99	41.83	69.24
Standard deviation	9.41	24.61	38.32	198.31
Ratios of wages of percentile points				
p90/p10	2.82	5.04	4.96	6.43
p75/p25	1.65	2.17	2.29	2.80
p90/p50	1.57	1.99	2.08	2.57
P50/p10	1.80	2.54	2.38	2.50
Skewness	7.16	11.09	4.32	32.64

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

When only relative values are involved, wages are in nominal price; whereas when absolute values are needed, wages of other years are all adjusted to the 2002 constant prices according to the urban consumer price index of China Statistical Yearbooks of various years.

Table 2: Indicators of wage inequality and gap of urban China by ownership sector

	1988		1995		2002		2007	
	state	Non-state	state	Non-state	state	Non-state	state	Non-state
Gini coefficients	***0.221***	0.278	***0.326***	0.396	***0.314***	0.392	***0.392***	0.481
General entropy								
GE(-1)	***0.135***	0.515	***0.452***	0.870	***0.228***	0.343	***0.321***	0.471
GE(0)	***0.092***	0.149	***0.206***	0.314	***0.174***	0.264	***0.265***	0.397
GE(1)	***0.095***	0.144	***0.206***	0.295	***0.174***	0.290	***0.326***	0.577
GE(2)	***0.136***	0.188	***0.351***	0.486	***0.224***	0.476	***1.013***	3.181
Atkinson index								
A(0.5)	***0.045***	0.069	***0.095***	0.137	***0.083***	0.128	***0.133***	0.205
A(1)	***0.088***	0.139	***0.186***	0.270	***0.160***	0.232	***0.233***	0.328
A(2)	***0.213***	0.508	***0.475***	0.635	***0.313***	0.407	***0.391***	0.485
Mean	***18.36***	14.98	***29.828***	22.05	***53.83***	42.19	***104.55***	92.57
Median	***17.35***	13.68	***25.44***	17.95	***47.66***	31.82	***79.99***	59.59
Standard deviation	***9.45***	8.78	***25.088***	21.65	***36.01***	41.19	***151.41***	235.70
Ratios of wages of percentile points								
p90/p10	***2.59***	3.43	***4.35***	6.71	***4.30***	5.45	***5.64***	6.90
p75/p25	***1.57***	1.79	***2.03***	2.46	***2.02***	2.36	***2.50***	2.83
p90/p50	***1.52***	1.71	***1.92***	2.25	***1.91***	2.46	***2.28***	2.80
P50/p100	***1.70***	2.01	***2.26***	2.99	***2.25***	2.22	***2.47***	2.46
Skewness	***8.20***	3.79	***11.90***	7.63	***3.59***	5.60	***26.886***	31.719

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

When only relative values are involved, wages are in nominal price; whereas when absolute values are needed, wages of other years are all adjusted to the 2002 constant prices according to the urban consumer price index of China Statistical Yearbooks of various years.

Table 3: Indicators of wage inequality and gap of urban China by sub-sectors

	1988						1995						2002						2007					
	Public sector	SOEs	Collective firms	Private firms	Foreign firms	Others	**Public sector**	SOEs	Collective firms	Private firms	Foreign firms	Others	**Public sector**	SOEs	Collective firms	Private firms	Foreign firms	Others	**Public sector**	SOEs	Collective firms	Private firms	Foreign firms	Others
Mean	***18.36***		14.82	18.08	24.67	12.03	***32.87***	28.03	21.10	18.05	34.38	19.50	***59.22***	48.91	34.71	42.51	67.03	40.47	***106.48***	101.13	89.97	88.89	125.13	65.06
Median	***17.35***		13.77	11.59	22.98	10.55	***28.19***	23.53	17.63	12.82	28.23	16.66	***53.23***	41.12	28.00	31.87	54.97	30.03	***82.85***	71.99	58.49	55.87	86.30	46.14
Standard deviation	***9.45***		7.78	19.22	15.75	8.90	***23.75***	25.86	20.20	17.50	28.75	17.69	***34.64***	36.53	24.63	42.73	50.46	43.86	***101.19***	212.97	266.03	252.95	157.73	72.36
Gini index	***0.221***		0.255	0.474	0.369	0.402	***0.302***	0.338	0.372	0.452	0.362	0.448	***0.287***	0.331	0.336	0.386	0.351	0.399	***0.379***	0.414	0.463	0.489	0.436	0.405
Ratios of wages on various percentile points																								
p90/p10	***2.59***		3.09	11.89	7.79	13.78	***3.61***	4.73	5.68	9.34	5.40	19.95	***3.79***	4.37	4.37	5.36	5.03	5.36	***5.88***	5.00	5.25	7.00	7.00	6.00
p75/p25	***1.57***		1.73	3.17	2.65	2.91	***1.81***	2.15	2.25	2.88	2.21	4.22	***1.83***	2.14	2.17	2.30	2.52	2.50	***2.46***	2.45	2.39	2.67	2.80	2.25
p90/p50	***1.52***		1.64	3.23	2.19	2.39	***1.89***	2.00	2.17	2.94	2.12	2.39	***1.80***	2.03	2.23	2.41	2.22	2.39	***2.40***	2.29	2.50	3.00	2.92	2.68
P50/p10	***1.70***		1.89	3.68	3.56	5.75	***1.92***	2.36	2.62	3.17	2.54	8.33	***2.10***	2.15	1.96	2.22	2.27	2.24	***2.45***	2.19	2.10	2.33	2.40	2.24
Skewness	***8.20***		3.46	3.41	0.68	1.03	***5.90***	14.61	9.26	2.54	3.65	2.57	***2.47***	4.69	2.68	5.69	3.75	6.41	***6.99***	25.47	17.83	33.70	9.05	5.54

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

When only relative values are involved, wages are in nominal price; whereas when absolute values are needed, wages of other years are all adjusted to the 2002 constant prices according to the urban consumer price index of China Statistical Yearbooks of various years.

Table 4: Ownership structure of the employed urban workers

	1988	1995	2002	2007
No. of observations	17,733	12,245	10,133	6,938
Ownership structure of the employed urban workers (%)				
State sector	77.67	79.04	64.76	49.83
Public sector		29.66	30.90	31.82
SOEs		50.95	33.86	18.00
Urban collective firms	20.28	15.06	6.86	5.36
Private firms	0.77	1.65	20.72	34.48
Foreign-owned & joint-venture firms	0.36	1.27	2.17	7.08
Other ownerships	0.92	2.98	5.49	3.26

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

Table 5: Oaxaca-Blinder Decomposition of pay differential between the state and non-state sectors

	1988	1995	2002	2007
Amount attributable:	1.0	5.6	33.9	24.8
- due to endowments (E):	14.5	23.1	18.5	4.9
- due to coefficients (C):	-13.4	-17.5	15.4	19.9
Shift coefficient (U):	24.5	34.9	-0.6	0.6
Raw differential (R) {E+C+U}:	25.5	40.5	33.3	25.4
Adjusted differential (D) {C+U}:	11.1	17.4	14.8	20.6
Endowments as % total (E/R):	56.7	57.0	55.6	19.2
Discrimination as % total (D/R):	43.3	43.0	44.4	80.8

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

Wages of other years are all adjusted to the 2002 constant prices according to the urban consumer price index of China Statistical Yearbooks of various years.

U = unexplained portion of differential (difference between model constants).

D = portion due to discrimination (C+U).

Table 6：MM counterfactual decomposition of the effect of wage structure and employment share of state sector versus non-state sector on urban wage inequality

	Change of coefficients			Change of covariates		
	1988-1995	1995-2002	2002-2007	1988-1995	1995-2002	2002-2007
Gini	0.007 (.005, .009) (+10)	-0.012 (-.014, -.007) (+0)	0.003 (.003, .004) (+10)	-0.001 (-.005, .002) (+1)	-0.001 (-.006, .002) (+5)	0.000 (-.003, .002) (+7)
Mean	1.44 (1.36, 1.52) (+10)	-2.60 (-2.75, -2.48) (+0)	0.96 (0.92, 1.02) (+10)	-0.01 (-0.05, 0.02) (+4)	-0.95 (-1.16, -0.79) (+0)	-0.95 (-1.13, -0.79) (+0)
Median	1.30 (1.07, 1.48) (+10)	-1.78 (-2.10, -1.47) (+0)	0.55 (0.10, 0.95) (+10)	0.00 (-0.20, 0.10) (+6)	-0.85 (-1.08, -0.47) (+0)	-1.14 (-1.87, -0.44) (+0)
Standard deviation	1.18 (0.69, 2.60) (+10)	-4.07 (-8.11, -2.14) (+0)	0.53 (-0.48, 1.10) (+8)	-0.04 (-0.18, 0.05) (+3)	-0.97 (-2.43, -0.23) (+0)	-0.29 (-1.61, 0.41) (+3)
Skewness	0.74 (-0.54, 4.43) (+7)	-1.94 (-7.34, 0.30) (+1)	-0.32 (-1.06, 0.12) (+2)	0.03 (-0.15, 0.30) (+6)	-0.33 (-1.88, 0.43) (+4)	0.20 (-0.68, 0.71) (+9)
P90/P10	0.13 (0.06, 0.18) (+10)	-0.11 (-0.34, 0.09) (+1)	0.11 (0.04, 0.18) (+10)	-0.02 (-0.06, 0.02) (+3)	-0.09 (-0.31, 0.09) (+1)	-0.09 (-0.21, 0.22) (+1)
P75/P25	0.04 (0.01, 0.05) (+10)	-0.06 (-0.08, 0.00) (+0)	0.05 (0.02, 0.09) (+10)	-0.01 (-0.04, 0.01) (+1)	0.01 (-0.06, 0.07) (+5)	-0.03 (-0.09, 0.02) (+3)
P90/P50	0.02 (-0.01, 0.05) (+9)	-0.05 (-0.08, 0.01) (+1)	0.04 (0.00, 0.06) (+10)	-0.01 (-0.03, 0.00) (+1)	-0.01 (-0.06, 0.03) (+4)	0.02 (-0.04, 0.05) (+8)
P50/P10	0.06 (0.01, 0.09) (+10)	0.01 (-0.09, 0.13) (+6)	0.01 (-0.04, 0.04) (+6)	0.00 (-0.03, 0.03) (+5)	-0.04 (-0.15, 0.04) (+3)	-0.06 (-0.13, 0.08) (+1)

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.
The decompositions are based on the base year's wage structure and explanatory variables.

Table 7：MM counterfactual decomposition of the effect of wage structure and employment share of state sector versus non-state sector on urban wage inequality

	Change of coefficients			Change of covariates		
	1988-1995	1995-2002	2002-2007	1988-1995	1995-2002	2002-2007
Gini	0.003 (0.001, 0.005) (+10)	-0.014 (-0.015, -0.009) (+0)	0.002 (0.001, 0.003) (+10)	-0.001 (-0.003, 0.002) (+4)	0.007 (0.005, 0.01) (+10)	0.008 (-0.001, 0.023) (+9)
Mean	2.14 (2.07, 2.28) (+10)	-4.55 (-4.96, -4.14) (+0)	1.37 (1.22, 1.51) (+10)	-0.15 (-0.26, -0.05) (+0)	-0.55 (-0.73, -0.31) (+0)	-0.85 (-2.05, 1.85) (+2)
Median	1.84 (1.59, 2.09) (+10)	-2.88 (-3.38, -2.07) (+0)	0.73 (-0.25, 1.80) (+9)	-0.24 (-0.86, 0.09) (+2)	-0.77 (-1.50, -0.21) (+0)	-1.19 (-2.31, -0.06) (+0)
Standard deviation	2.13 (1.27, 3.54) (+10)	-8.48 (-18.70, -3.90) (+0)	0.54 (-0.33, 2.30) (+8)	0.10 (-0.23, 0.68) (+4)	0.54 (-0.29, 1.64) (+7)	15.45 (-12.36, 109.29) (+7)
Skewness	0.44 (-0.15, 2.79) (+8)	-1.23 (-4.59, 0.41) (+3)	-0.16 (-0.45, 0.35) (+2)	0.10 (-0.29, 0.28) (+9)	0.08 (-0.31, 0.75) (+4)	0.52 (-1.86, 3.99) (+5)
P90/P10	0.14 (-0.02, 0.29) (+9)	-0.26 (-0.36, -0.13) (+0)	0.13 (-0.07, 0.25) (+8)	0.08 (-0.20, 0.23) (+7)	0.27 (0.11 0.48) (+10)	0.11 (-0.21, 0.36) (+7)
P75/P25	0.05 (0.00, 0.08) (+10)	-0.06 (-0.10, -0.02) (+0)	0.05 (0.01, 0.08) (+10)	0.02 (-0.04, 0.07) (+8)	0.08 (0.04, 0.17) (+10)	0.03 (-0.02, 0.08) (+8)
P90/P50	0.00 (-0.04, 0.03) (+8)	-0.07 (-0.13, -0.02) (+0)	0.03 (-0.02, 0.09) (+7)	0.00 (-0.05, 0.06) (+6)	0.04 (0.00, 0.08) (+10)	0.01 (-0.06, 0.07) (+5)
P50/P10	0.06 (-0.01, 0.11) (+9)	-0.04 (-0.10, 0.01) (+0)	0.02 (-0.06, 0.06) (+8)	0.04 (-0.08, 0.13) (+8)	0.08 (0.03, 0.17) (+10)	0.03 (-0.06, 0.11) (+7)

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.
The decompositions are based on the current year's wage structure and explanatory variables.

Table 8: MM counterfactual decomposition of the effect of state sector' employment share on urban wage inequality

Table 8a: based on 1988's wage structure and other explanatory variables

	Gini	$90^{th}/10^{th}$	$75^{th}/25^{th}$	$90^{th}/50^{th}$	$50^{th}/10^{th}$
77% to 10%	0.008	0.11	0.03	0.05	0.01
77% to 20%	0.008	0.08	0.02	0.04	0.01
77% to 30%	0.006	0.06	0.02	0.02	0.01
77% to 40%	0.004	0.03	0.03	0.02	0.00
77% to 50%	0.003	0.02	0.01	0.01	0.00
77% to 60%	0.001	0.00	-0.01	0.01	-0.01
77% to 65%	-0.001	-0.04	-0.01	-0.01	-0.02
77% to 70%	0.001	0.01	-0.01	0.01	0.00
77% to 75%	-0.001	-0.03	-0.01	0.00	-0.01
77% to 80%	-0.003	-0.06	-0.02	-0.01	-0.03
77% to 85%	-0.003	-0.05	-0.02	-0.01	-0.02
77% to 90%	-0.004	-0.08	-0.03	-0.01	-0.04

Table 8b: based on 1995's wage structure and other explanatory variables

	Gini	$90^{th}/10^{th}$	$75^{th}/25^{th}$	$90^{th}/50^{th}$	$50^{th}/10^{th}$
79% to 10%	0.005	0.12	0.00	0.03	0.02
79% to 20%	0.009	0.10	0.03	0.04	0.00
79% to 30%	0.004	0.09	0.02	0.04	-0.01
79% to 40%	0.006	0.04	0.00	0.01	0.00
79% to 50%	0.004	0.19	0.02	0.03	0.06
79% to 60%	0.004	0.09	0.03	0.04	0.00
79% to 65%	-0.001	-0.09	0.01	-0.01	-0.04
79% to 70%	0.001	-0.05	0.01	0.02	-0.05
79% to 75%	-0.003	-0.12	0.00	0.00	-0.06
79% to 85%	-0.006	-0.09	-0.03	-0.02	-0.02
79% to 90%	-0.004	-0.18	-0.05	-0.01	-0.07

Table 8c: based on 2002's wage structure and other explanatory variables

	Gini	$90^{th}/10^{th}$	$75^{th}/25^{th}$	$90^{th}/50^{th}$	$50^{th}/10^{th}$
65% to 10%	0.010	0.10	0.02	0.07	-0.03
65% to 20%	0.008	-0.02	-0.02	0.06	-0.07
65% to 30%	0.004	-0.02	-0.01	0.02	-0.03
65% to 40%	0.004	0.02	-0.02	0.06	-0.05
65% to 45%	0.001	-0.11	-0.01	0.01	-0.06
65% to 50%	-0.002	-0.11	-0.02	0.02	-0.07
65% to 55%	-0.001	-0.08	-0.04	0.04	-0.08
65% to 60%	-0.002	-0.10	-0.04	0.01	-0.06
65% to 70%	-0.004	-0.13	-0.05	-0.02	-0.04
65% to 75%	-0.003	-0.15	-0.07	-0.04	-0.03
65% to 80%	-0.005	-0.21	-0.05	-0.01	-0.09
65% to 85%	-0.008	-0.21	-0.07	-0.04	-0.06
65% to 90%	-0.011	-0.25	-0.08	-0.04	-0.08

Table 8c: based on 2007's wage structure and other explanatory variables

	Gini	$90^{th}/10^{th}$	$75^{th}/25^{th}$	$90^{th}/50^{th}$	$50^{th}/10^{th}$
10% to 50%	-0.011	0.01	0.03	-0.03	0.03
20% to 50%	-0.008	0.08	0.01	-0.01	0.04
30% to 50%	-0.002	0.15	0.04	0.01	0.05
35% to 50%	0.002	0.10	0.02	0.00	0.04
40% to 50%	0.003	0.02	0.03	-0.02	0.03
45% to 50%	-0.003	0.04	0.04	0.01	0.01
55% to 50%	0.007	0.09	0.05	0.03	0.01
60% to 50%	0.004	0.24	0.07	0.04	0.05
65% to 50%	0.008	0.11	0.03	0.01	0.03
70% to 50%	0.007	0.21	0.06	0.04	0.04
75% to 50%	0.012	0.06	0.02	0.04	0.02
80% to 50%	0.009	0.20	0.05	0.06	0.02
85% to 50%	0.013	0.24	0.07	0.07	0.03
90% to 50%	0.019	0.30	0.09	0.08	0.04

Source: CHIP 1988, 1995, 2002 and 2007 urban household survey.

Figure 1. Lorenz Curve of Wages in Urban China: 1988-2007

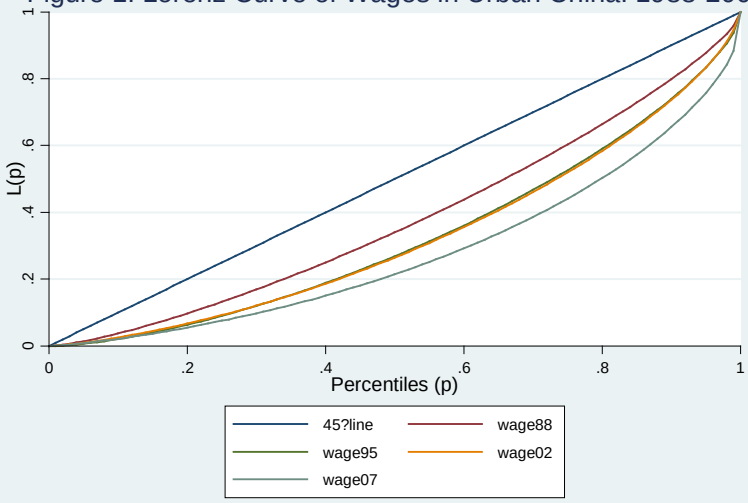

Figure 2. Public-Private Daily-Wage Gap

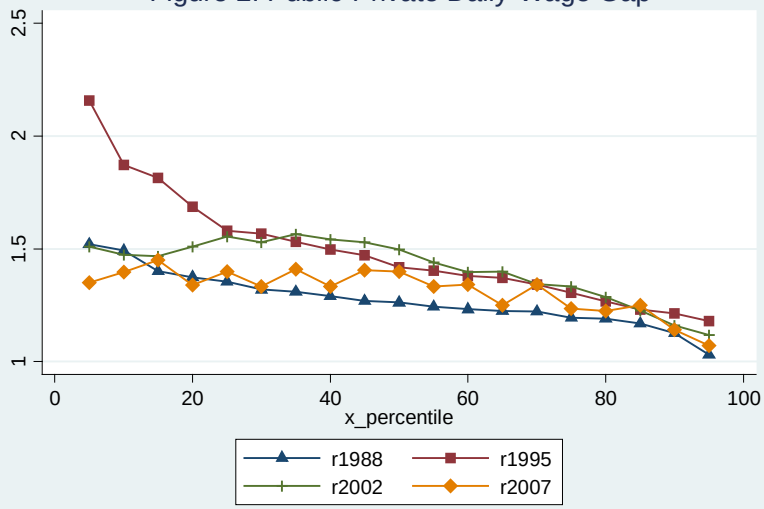

Figure 3. Civil Servants-SOEs wage gap

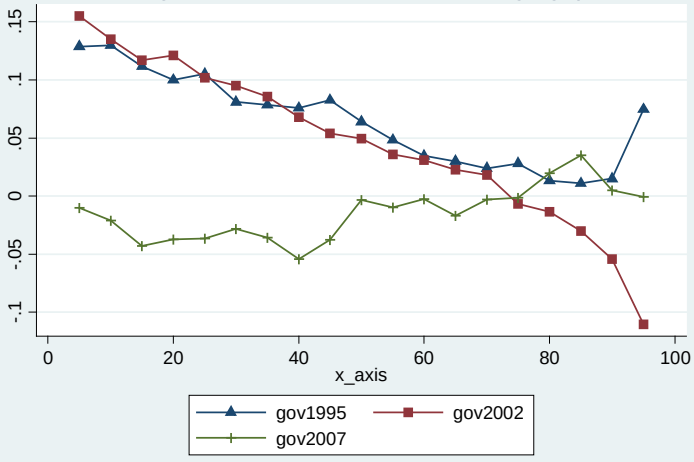

Figure 4. Two 2002 comparison

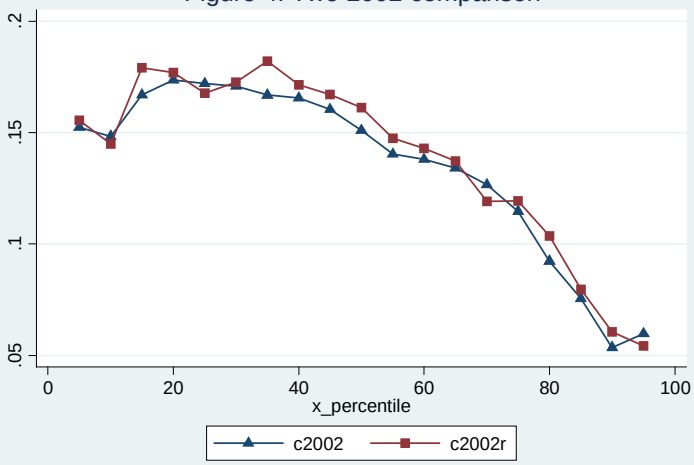

Figure 5. Public Sector Wage Premium-Private Sector 88-07

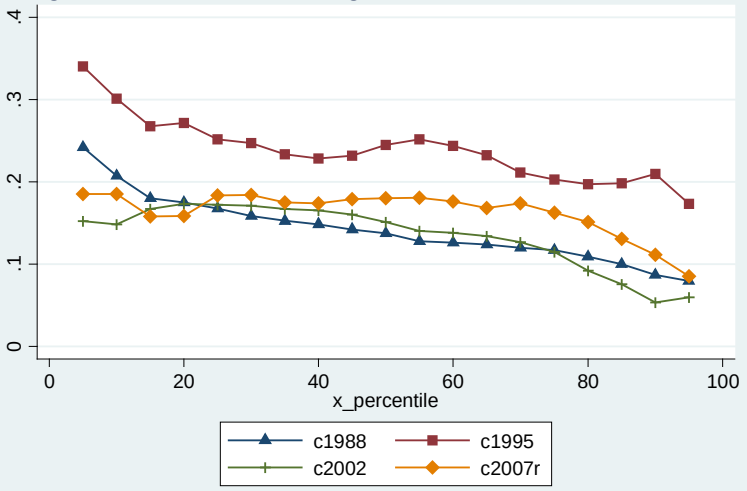

Figure 6. Oaxaca-Blinder Decompostion