Economic transformation and the gender earnings gap in urban China

Björn Gustafsson[1], Shi Li[2]

[1] Department of Social Work, University of Göteborg, P.O. Box 720, SE-405 30 Göteborg, Sweden (Fax: +46-31 773 18 88; e-mail: bjorn.gustafsson@socwork.gu.se)
[2] Institute of Economics, Chinese Academy of Social Sciences, 2 Yuetan Beixiaojie, Beijing, P.R. China (Fax: +86-1-068032473; e-mail: litiao@public.east.cn.net)

Abstract. The gender wage gap and its development in urban China is analysed utilising two large scale surveys covering 10 provinces for the years 1988 and 1995. The results indicate that from an international perspective, the gender wage gap in urban China appears to be relatively small. It is, however, increasing. Decompositions based on estimated regression-models show that somewhat less than half of the average gender wage gap can be attributed to differences in variables but much less of its increase. The earnings situation of young women and women with limited education has especially deteriorated if compared to men having the same characteristics.

1. Introduction

How are women faring in the transformation from planned economies to market economies beginning during the 80s? Specifically is the gender wage gap increasing or decreasing? A picture is now emerging and it shows great

diversity in findings from various countries. While available signs point to the gender wage gap in Russia and Ukraine to be increasing, they point in the direction of decreases for Central and Eastern European countries moving towards a market economy (Brainerd 1996A,B). This paper is an attempt to add another example, as we focus on the size and development of the gender earnings gap in urban China from the second part of the 80s to the middle of the 90s. Although we only study the urban population of China, this is a labour force larger than that found in any other single country moving away from central planning.

While economic transformation in Central and Eastern Europe as well as in the former Soviet Union was accompanied by large decreases in output the opposite has been the case in the People's Republic of China. Unlike many other countries in transition, economic reform in China up to now has not meant large-scale privatisation of state-owned enterprises. Instead reform has meant giving existing enterprises more freedom to manoeuvre which includes autonomy of how to remunerate workers and whom to hire. Economic reform has also meant removing obstacles to growth for the non-state sector in China. Much of the spectacular economic growth in China is due to the growth of this sector composed predominantly of collective enterprises, but also of private firms, joint-ventures and of the self-employed.

The first task of the paper is to describe the crude gender earnings gap and its changes. A second task is to analyse reasons for the crude earnings gap and its changes. For this purpose we run earnings-functions for females and males to attribute the crude gender wage gap to differences in variables and differences in coefficients. While the latter is an (imperfect) measure of unequal treatment of women in the earnings determining process, the former covers unequal treatment in education and hiring as well as other reasons before the earnings determining process. Using the Oaxaca-decomposition is nowadays a standard technique for analysing differences in earnings between women and men. Its use is limited, however as it compares the mean incomes of women and men. A fuller representation is provided when utilising the new approach of Jenkins (1994).

Obviously we are not the first to study gender aspects of earnings in China, though, the existing literature is rather limited. One reason for the lack of study on this topic in China may be due to a general feeling among researchers that the gender earnings difference in China has never been a serious problem since the Chinese constitution guarantees women's right to labour market earnings equal to those of men for the same kind of work. In addition there seem to have been serious efforts to implement this policy of equal pay for equal work. Another reason for the few studies on gender aspects of earnings in China stems from problems with data availability.

Some studies using data for the 80s report that keeping characteristics constant, women earn less than men in urban China (Quian 1996). However, these studies do not focus on gender wage differences. One study focusing on just gender wage differences is Meng and Miller (1995) who studied township village and privately owned enterprises in four counties in *rural* China. The only study focusing on gender earnings differences in *urban* China known to us is Quian (1996). While her investigation is based on the data of two provinces (Guandong and Beijing) in 1993 our study covers ten provinces which are surveyed for two periods. This is made possible by using two unique cross-section surveys performed by similar design and instruments. The first survey

refers to 1988 which is at an early phase of the reform process, while the second measures circumstances seven years later, that is in 1995.[1] There seems to be no previous study of changes in gender wage differential for urban China.

The paper is laid out as follows: In the next section we discuss recent changes in urban China and how they might have affected female and male workers. Methodological considerations are discussed in Section 3. Section 4 describes our data and research strategy. Using the two surveys we describe the changed labour market in Section 5. In Section 6 we report the results and discuss estimated earnings-functions which are then used for decomposition analysis in the following sections: The Oaxaca-decomposition results are reported in Section 7 and findings from the distribution approach in Section 8. A concluding section ends the paper.

2. Changes in China affecting urban workers

China patterned itself after the Soviet economic system for its urban areas during the 50s. State Owned Enterprises (SOEs) came to be the dominating form of production units. Workers were assigned to jobs by administrative measures and wages were centrally regulated in wage-scales. After leaving school almost all women entered the labour force and their number of working hours have been remarkably similar to men.

An important reason why women generally earn less than men is interruption of their working career for child birth. However, such interruptions have generally been rather short among mothers in urban parts of the Peoples Republic of China. In addition mothers in urban China typically do not have more than one child nowadays; thus only one interruption, a circumstance which sets them apart from mothers in many other countries.

While women in China are quite similar to men in performing market work they are also the main provider of housework. For example a time use study for 1990 shows urban males on weekdays spending half an hour longer on paid work than females. This is contrasted by women spending 2 h longer on housework.[2] Having on average larger household responsibilities than men one would expect the average Chinese women to devote less efforts on a career, which should show up in their earnings.

Looking at possibilities to be offered a well paid job it seems that many Chinese people believe women to be disadvantaged in this respect.[3] Furthermore, such disadvantages can have increased during the process of transformation due to changes in work legislation. China has turned to "productive" legislation which focuses on the biological differences between women and men. These laws make an effort to accommodate women's reproductive needs in the workplace (Woo 1994). At the same time this different treatment of women has made women less attractive as workers.

The Chinese transition strategy has been a gradual one. It has relied on the creation of market competition through the entry of new domestic producers while few state owned establishments were privatised up to 1995. During the 1980s, the crucial role in the creation of competition was played by Township and Village Enterprises (TVEs) which are collectively owned and located in rural China. However, in the 1990s, Foreign Invested Enterprises began to take the lead in domestic competition.[4]

Table 1 shows the breakdown of ownership composition of industrial out-

Table 1. Gross output value of industry by ownership in China (in billion yuan)

	1988	1991	1992	1993	1994	1995
Gross value (%)	1822.5	2662.5	3459.9	4840.2	7017.6	9189.4
	(100)	(100)	(100)	(100)	(100)	(100)
State-owned enterprises	1035.1	1495.5	1782.4	2272.5	2620.1	3122.0
	(56.8)	(56.2)	(51.5)	(47.0)	(37.3)	(34.0)
Collective enterprises	658.8	878.3	1213.5	1646.4	2747.2	3362.3
in which:	(36.2)	(33.0)	(35.1)	(34.0)	(37.7)	(36.6)
Township owned	184.7	240.1	353.4	537.4	810.2	1193.2
	(10.1)	(9.0)	(10.2)	(11.1)	(11.6)	(13.0)
Village owned	170.4	234.7	363.2	516.3	965.8	1184.7
	(9.4)	(8.8)	(10.5)	(10.7)	(13.8)	(12.9)
Joint-venture	43.9	56.9	87.0	132.2	261.1	213.4
	(2.4)	(2.1)	(2.5)	(2.7)	(3.7)	(2.3)
Individual-owned	79.1	128.7	200.6	386.1	708.2	1182.1
enterprises	(4.3)	(4.8)	(5.8)	(8.0)	(10.1)	(12.9)
Other ownership	49.5	163.1	268.8	517.4	901.8	1523.1
in which:	(2.7)	(6.1)	(7.8)	(10.7)	(12.9)	(16.6)
Share holding				146.1	318.3	
				(3.0)	(3.5)	
Foreign-owned				185.3	540.8	
				(3.8)	(5.9)	
Overseas Chinese from HK., Macao, Taiwan				176.1	556.4	
				(3.6)	(6.1)	

Source: SSB, China Statistical Yearbook 1994 and 1996, pp. 401 and pp. 406–407.
Notes: (1) Gross output values are in current prices; (2) Shares of components are calculated by the authors.

put in 1988 and for each year from 1991 to 1995. As can be seen the proportion coming from SOEs has decreased drastically being only one third of the total at the end of the period. Although at the end of the period the collective sector is of the same size, it is concentrated to rural China. Another expanding sector is that of individually owned enterprises. Foreign owned enterprises and enterprises owned by overseas Chinese are also of importance. As of 1995 both stand for somewhat more than 6% of the gross output value.

The Chinese reform process has had a clear regional dimension as changes first took place in the south-eastern regions which were first opened to foreign investments. Economic growth has been much faster there, while the interior regions have lagged behind. The development of the province of Guangdong has been particularly rapid and today its average household income is very high by Chinese standards. In the middle of the 90s more than one fourth of the foreign investments in China had Guangdong as their destination while the province had less than 6% of China's population.

Of course changes in ownership and geographical location can be supposed to have affected earnings of different workers differently. It is a general belief that earnings-inequality in China has increased during the period of transformation. Expanding sectors attract new workers by paying more. Thus there are visible signs of workers in SOEs and in other public employment lagging behind workers in Foreign Investment Enterprises. A visitor to China

quickly sees examples illustrating this such as secretaries in FIEs being much better paid than university professors and teachers being much better off if they set up small scale businesses.

In addition to earnings differences caused by sector changes there are also processes of widening earnings within each sector. One would expect differences in earnings by skill-levels to have widened as productivity-considerations have become more important in the wage-setting process. Across SOEs there is also a new cause for earnings-variation as they have been given more and more freedom in making decisions. At the same time several indicators point to the poor performance of industrial state enterprises relative to non state enterprises. The number of loss-making enterprises has grown steadily to be as high as 44% in 1995. (Naughton 1996, p 289) Loss-making enterprises should have more difficulties in paying high earnings than profit-making enterprises.

Although not at zero, rates of return to education in the People's Republic of China have been low (Byron and Manaloto 1990; Li and Travers 1993). One would expect great pressure for longer educated labour (in the case where education stands for a demanded skill) from the demand-side during the process of transformation. Countering this have been large increases in the supply of those with longer educations. What about rates of return to experience? After running earnings-equations for Russian samples collected at different points in time during the 90s, Brainerd (1996A) found a dramatic change indicating that human capital of older workers became obsolete during transformation while younger workers gained much ground. However, it is far from clear if this has happened in China as the Chinese process of transformation has been much more gradual.

What have all the changes discussed above meant for the development of the gender-wage gap during transformation? In the old system earnings were much linked to characteristics of the person without an explicit link to her or his productivity. A hypothesis is that during transformation productivity has become more important for the individual's earnings. In the case of women being on average less productive than men, the gender wage gap would increase, an increase which would not necessarily stand for increased wage discrimination.[5]

3. Methodological considerations

In this paper we analyse the gender earnings gap using the current standard decomposition attributed to Oaxcaca (1973). It helps to sign out unequal treatment of women before the earnings-determining process (differences in variables) from unequal treatment in the earnings determining process (differences in coefficients). In the literature the latter is most often referred to as "earnings-discrimination" to distinguish from a wider concept of gender discrimination including different treatment in education and occupational attainment. To the extent that women are over-represented among those of limited education, young adults (with short work experience), enterprises in low paying sectors, enterprises having low paying ownership, provinces with low earnings etc., this will show up as differences in variables.

It should be noted that when applying this framework one faces a "fractal problem". For a given sample one is likely to find that the more narrowly

occupation categories are defined, the smaller the part of the earnings gap which can be attributed to "earnings discrimination". Taken to its extreme one can vindicate that there never exist two identical occupations and as a consequence all of the crude gender earnings gap must be attributed to differences in variables. What this means is that it is not possible to measure earnings discrimination at one point in time without referring to how broadly occupations are defined. When making comparisons over time occupations, (as well as other variables) should be defined in the same way each year under observation.

Another well-known limitation when applying this decomposition-approach is the possibility of omitted variables bias. In the case of variables omitted from the wage-function being correlated with gender it is not appropriate to interpret differences in coefficients as an unbiased measure of discrimination. Take the example of increases in human capital by investment in on the job training, which typically is not observed by the analyst but indicated by a variable experience or a variable potential experience. One year of potential experience for the average female might indicate less on the job training and therefore less human capital than one year of potential experience for an average male. Therefore when estimating a regression model a lower coefficient for the variable experience among females must not necessarly mean (real) discrimination. Unfortunately in this study (as in most other studies of the gender wage gap) we are not able to measure human capital acquisition by on the job training but have to rely on a variable indicating potential experience.

4. Data and research strategy

The data comes from the Urban Household Income Surveys conducted in 1989 and 1996 by the Institute of Economics, Chinese Academy of Social Sciences for the reference periods of 1988 and 1995. The data-sets were derived from larger samples drawn by the State Statistic Bureau (SSB). Households were selected using the "symmetrical equidistant selection method" as further described for the survey 1989 by Eichen and Zhang (1993). Studies using the same study are found in Griffin and Zhao (1993). Another application is Gustafsson and Li (1997). Once a member of such a sample, a household is visited monthly by an enumerator for a period of 5 years after which the household is dropped from the sample. The method of SSB to select urban households is undocumented. Rural households living in an urban area without a *houko* (thus not officially registered) are most likely not in the sample. For natural reasons it is not possible to have a well-based estimate of this uncovered ("floating") population. With this exception all households should have the same probability of entering the sample.

The Urban Household Income Survey covers ten provinces. Respondents were chosen from the SSB sample in order to give information on conditions in various regions of China and of cities and towns of various size. The following ten provinces were surveyed: Anhui, Beijing, Gansu, Guangdong, Henan, Hubei, Jiangsu, Liaoning, Shanxi and Yunnan. (In the second survey also the province of Sichuan was added. However, for comparability reasons we have chosen to use not those observations in this study.) There was very little non-response.

The two surveys used very similar, although not identical instruments. Rather understandably the second survey includes some questions not asked earlier which permits a somewhat more detailed analysis for the most recent year. The two samples are large as there are 9 354 male and 8 533 female workers in the first sample and 5 603 male workers and 5 011 female workers and in the second survey.

Information on earnings is collected by questions and refers to the period of one normal month which is then converted to annual amounts by multiplying by the number 12. Earnings are defined as the individual income of active workers obtained from their work units or own private business. Earnings consist of four major components, i.e., basic wage (or net revenue), bonus, subsidies, and other income.

Our analysis proceeds along the following four steps: First we present descriptive statistics allowing for comparisons over time. These include gender earning gaps according to several breakdowns such as age, education, ownership, occupation and sector. This kind of information has to our knowledge not been published for China by the State Statistics Bureau. We also report on how earnings inequality has changed over time. Inspired by Blau and Kahn (1996) who analysed cross country differences in the gender wage gap, we investigate if the rank order of women in the distribution of males has changed or not.

The second step is to run earnings-equations using logarithmic earnings as left hand side variable. A rather large number of explanatory variables are included and estimation is made for males and females separately each year under observation.

The third step is to use the estimates from the regression-models together with means for females and males to analyse the average earnings-gap for the 2 years and its changes. The average unadjusted logarithmic differential in gender earnings, defined as G, may be decomposed respectively into an "explained" part and a part may be misleadingly called the "unexplained part" which stands for the same characteristics being rewarded differently.

$$\overline{\ln w^m} - \overline{\ln w^f} = (\overline{X^m} - \overline{X^f})B^m + (B^m - B^f)\overline{X^f} \quad \text{or}$$

$$\overline{\ln w^m} - \overline{\ln w^f} = (\overline{X^m} - \overline{X^f})B^f + (B^m - B^f)\overline{X^m},$$

where m = male and f = female worker, the bar indicates mean values, X the vectors of characteristics and the Bs are the vectors of estimated coefficients.

Oxacaca's "discrimination" index, D^h, is the unexplained log gap expressed as an earnings differential. Depending on the weights used, it is given by:

$$D^f = [\exp(\overline{X}^f(B^m - B^f))] - 1$$

$$D^m = [\exp(\overline{X}^m(B^m - B^f))] - 1.$$

The fourth step is to make a fuller representation of earnings-"discrimination" using the method of Jenkins (1994). This analysis also starts from estimated earnings-functions. However, instead of analysing "earnings discrimination" for a representative person we look at the entire distribution of women and men. Thus it allows us to investigate if "discrimination" experience is ho-

mogenous in the sample studied. This analysis starts with the earnings gap defined as the absolute value of the differences between the predicted earnings of an individual when paid according to the men's and women's earnings schedules respectively.

In a given sample Jenkins' indices can be written as

$$J_\alpha = \sum_{i \in F} \omega_i (1 - d_i^{-\alpha}) = 1 - \sum_{i \in F} \omega_i d_i^{-\alpha}, \quad \alpha > 0$$

where

$$d_i = 1 + |\hat{r}_i - \hat{y}_i| / \bar{r}^f,$$

$$\omega_i = (\hat{y}_i / n_f \bar{y}^f),$$

$\hat{y}_i$ is predicted income of individual female workers with the rates of return to female attributes in the female wage equation, i.e., $\hat{y}_i = \exp(X_i \hat{\beta}^f)$. $\hat{r}_i$ is predicted income of individual female workers with the rates of return to male attributes in the male wage equation, i.e., $\hat{r}_i = \exp(X_i \hat{\beta}^m)$. $\bar{y}_i$ and $\bar{r}_i$ are mean values of $\hat{y}_i$ and $\hat{r}_i$ respectively. ω_i is wage share of a woman i. The index $J_\alpha = 0$, when there is no discrimination against female workers, i.e. $\hat{r}_i = \hat{y}_i$.

The parameter α reflects different assumptions about how earnings gaps should be aggregated. It can be interpreted as the degree of "discrimination" aversion, with higher value for α corresponding to greater aversion (Jenkins 1994).

Jenkins' index is suitable for decomposition analysis, when the sample is partitioned into G mutually exclusive subgroups. Total earnings "discrimination" is the sum of the group's specific "discrimination" weighted by the size of the group. Decomposition along various breakdowns of the population allows us to paint a full picture of how differently women and men are remunerated. The decomposition formula is written as

$$J = \sum_{g=1}^{G} \theta_g J_g$$

where

$$\sum_{g=1}^{G} \theta_g = 1, \quad \theta_g > 0 \quad \text{for each } g = 1, \ldots\ldots, G.$$

5. A statistical picture of the changed urban labour force

Urban China underwent a number of important demographic changes between our two points of measurement. The size of the population increased rapidly mainly because of migration, although this has not been fully reflected in the official statistics. The average household size diminished and the population aged.

In Table 2 we use the two surveys to portray the urban labour-force in 1988 and 1995 by gender and here we comment on differences across gender and over time. Starting with the participation rates we see slight decreases over time for both genders. This change is fairly general for all age and gender groups. The only exception is in the low rate for women over their general retirement age of 55. The higher participation rates among males is largely attributed to their higher age at retirement as it is at 60 years of age. On the other hand participation-rates among the youngest adults is somewhat higher among females, which is consistent with females on average having a shorter education.

The aging of the labour force is clearly seen in Table 2. While slightly more than two out of five males in the labour force were below 35 years of age in 1988 this was the case for one out of three in 1995. Instead the proportion of persons aged 36–45 increased, as among females from 33% to 42%. Because of earlier school-leaving age and earlier retirement the female labour force is younger than the male labour force.

In the People's Republic of China ethnic minorities are concentrated to rural areas. Only about four percent of the labour-force in urban China belongs to a minority. While one out of three male workers is a member of the Communist party the proportion is much smaller among females. Turning to education large increases between the two years studied are visible. While in 1988 17% of the male labour-force had an education of at least 2 years of college in 1995 the proportion had increased to 28%. At the later point in time 18% of the female labour-force had an education of at least 2 years of college illustrating a clear gender difference which is also reflected in the occupation distribution. Females are less frequent in the categories "professionals or manager" and "responsible officers or manager" but more frequent in the category "manual workers".

Males are over-represented in the state-owned sector, and females in the collective sector. There are some gender differences in the sector composition of the labour force which can be commented on. Females are over-represented in the sector "Commerce and trade, restaurants etc." and under-represented in "Government and party organisations and social organisations".

Table 3 shows that between 1988 and 1995 average male annual earnings increased by as much as 47% (in real terms) and inequality measured by the Gini-coefficient increased from 23.3% to 28.9%. Turning to components of total earnings we see that the average for two increased faster than total earnings: the basic wage and subsides. The latter which actually more than doubled includes, housing subsides, one-child allowance, price subsides, regional subsidies, medical subsidies and some other subsidies. In the early 1990s reforms meant that more of the compensation to workers were given as subsidies and less as services and goods provided in kind. At the other end bonuses actually decreased. Further it can be seen that at each point in time the basic wage is the main component of total earnings and it is more equally distributed than total earnings. The other extreme is bonuses with a high concentration coefficient.

Finally turning to changes in earnings inequality over time, Table 3 shows that the increase can be traced to two sources: the basic wage and subsidies. The increase in the concentration coefficient is particularly large for subsidies. Thus during transformation, benefits from various subsidies have turned out to be much more concentrated to high-earners.

Table 2. Descriptive statistics of main variables by gender (%)

	1988		1995	
	Male	Female	Male	Female
Participation rate				
Total	81.1	72.7	78.8	69.5
Aged 16–25	51.5	55.2	46.5	49.0
Aged 26–35	99.0	97.2	97.3	93.9
Aged 36–45	99.5	96.0	98.5	95.1
Aged 46–55	94.6	62.1	92.1	58.7
Aged 56–65	47.9	8.1	38.2	10.9
Composition of workers				
Age group				
Aged 16–25	15.3	17.8	10.4	12.2
Aged 26–35	25.8	32.6	23.3	27.9
Aged 36–45	28.9	32.5	36.4	42.4
Aged 46–55	23.4	16.2	22.6	15.5
Aged 56–65	6.6	1.0	7.3	2.0
	100.0	100.0	100.0	100.0
Minority				
National minority	3.8	3.7	4.2	4.3
Non-national minority	96.2	96.3	95.8	95.7
	100.0	100.0	100.0	100.0
Party membership				
Party member	34.2	11.7	33.3	15.0
Non-party member	65.8	88.3	66.7	85.0
	100.0	100.0	100.0	100.0
Education				
4-year college	8.7	3.2	10.3	5.2
2-year college	8.2	4.9	18.1	12.6
Professional school	10.8	11.2	16.2	17.2
Upper-middle-school	24.1	25.4	22.7	26.1
Lower-middle-school	37.1	40.0	28.1	32.3
Primary-school	9.0	11.8	4.3	6.0
Less than primary-school	2.0	3.4	0.3	0.7
	100.0	100.0	100.0	100.0
Ownership				
State-owned sector	43.4	33.8	30.1	22.5
Other public sector	40.3	36.9	53.7	52.0
Collective sector	14.3	26.6	11.1	19.3
Private or self-employed	1.1	1.4	1.7	1.9
Joint-venture or foreign firm	0.03	0.07	1.2	1.1
Other ownership	0.8	1.3	2.3	3.4
	100.0	100.0	100.0	100.0

Table 2. Descriptive statistics of main variables by gender (continued)

	1988		1995	
Variable	Male	Female	Male	Female
Occupation				
Owner of private firm	1.3	1.3	1.7	1.6
Professional or technician	15.6	15.8	21.2	22.2
Responsible officer or manager	7.5	1.5	5.5	1.5
Ordinary officer or manager	3.0	0.5	10.9	4.1
Office worker	25.5	20.9	18.7	21.7
Manual worker	46.6	59.3	42.0	49.1
	100.0	100.0	100.0	100.0
Sector				
Agriculture	1.1	0.8	1.9	1.2
Manufacturing	40.9	44.4	40.8	38.5
Mining	5.0	3.0	1.2	0.9
Construction	4.0	2.8	3.2	2.4
Transportation and communication	8.3	5.0	5.7	3.9
Commerce and trade	11.5	17.7	12.1	16.7
Public utilities	2.2	2.8	3.3	4.4
Health and social welfare	3.4	5.8	3.4	5.4
Education and culture	6.7	7.8	6.2	8.2
Scientific research and technology	2.5	1.6	2.5	2.0
Finance and insurance	1.5	1.5	1.8	2.1
Government and social organisations	11.5	5.0	13.3	9.4
Others	1.5	1.9	4.7	4.8
	100.0	100.0	100.0	100.0
Status of job				
Permanent worker	98.6	98.0	94.0	91.3
Temporary or short-term contract worker	0.9	1.1	1.9	3.4
Others	0.5	0.9	4.1	5.0
	100.0	100.0	100.0	100.0
Province				
Beijing	5.1	4.5	8.3	8.0
Shanxi	11.2	10.4	10.9	10.6
Liaoning	10.0	10.7	12.0	11.8
Jiangsu	12.9	12.5	12.6	12.7
Anhui	9.9	9.9	7.7	8.2
Henan	11.7	11.9	9.6	9.3
Hubei	10.7	11.0	12.2	12.1
Guangdong	11.9	12.0	9.7	9.6
Yunnan	9.8	10.6	10.6	11.3
Gansu	6.9	6.6	6.4	6.4
	100.0	100.0	100.0	100.0

Source: Urban household income surveys 1989 and 1996.

Table 3. Descriptive statistics of mean earnings and inequality by gender

	1988		1995	
	Male	Female	Male	Female
Mean(yuan)				
Total earnings	2064	1727	3030	2507
	(1129)	(995)	(1783)	(1536)
Basic wages	1088	904	1775	1440
	(710)	(472)	(1117)	(880)
Bonus	445	371	444	374
	(640)	(626)	(832)	(684)
Subsidies	315	277	687	607
	(218)	(295)	(751)	(703)
Other	216	175	124	86
	(380)	(242)	(470)	(278)
Gini coefficient or concentration coefficient (%)				
Total earnings	23.3	23.7	28.9	31.1
Basic wages	15.8	15.5	21.9	22.5
Bonus	39.9	42.0	51.0	54.4
Subsidies	19.0	21.7	32.7	39.0
Other	33.2	30.8	28.8	16.3
Share of earning components (%)				
Total earnings	100	100	100	100
Basic wages	52.7	52.4	58.6	57.4
Bonus	21.6	21.5	14.7	14.9
Subsidies	15.3	16.0	22.6	24.3
Other	10.4	10.1	4.1	3.4
Contribution to total inequality (%)				
Total earnings	100	100	100	100
Basic wages	35.7	34.2	44.4	41.6
Bonus	37.0	38.1	25.9	26.1
Subsidies	12.5	14.7	25.6	30.5
Other	14.8	13.2	4.1	1.8

Source: Urban household income surveys 1989 and 1996.
Notes: (1) 1995 earnings and earning components are in 1988 prices. (2) Standard errors in parentheses.

Table 4 reports mean earnings for men 1988 and 1995 and the average gender earnings gap for different breakdowns of the population. We report a modest increase in the gender earnings gap as female earnings as a percent of the male earnings changed from 84.4 to 82.5%. Although those numbers indicate a deteriorating relative position of urban Chinese women, by international standards the gender wage gap appears to be rather small. One point of reference is Sweden where the female earnings ratio is known to be higher than in most other industrialised countries. For example Gustafsson and Johansson (1998) report for full time, full year workers an average earnings ratio of females to males of 81.4% for 1983, but declining to 77.8 in 1991.[6]

Next we look at earnings and the gender earnings gap for various breakdowns of the population starting with age. While the gender earnings gap in urban China according to Table 4 is small among the youngest adults it very clearly increases with age in both cross-sections. For example in 1988 women

Table 4. Mean of earnings of men and women by population group (yuan)

Name of variables	Notations	1988		1995	
		Male	Female as percentage of male	Male	Female as percentage of male
Total		2064(1129)	84.4(995)	3030(1783)	82.5(1536)
Age group					
Aged 16–25	AG1	1282(1084)	93(635)	2231(1703)	91(1553)
Aged 26–35	AG2	1918(1041)	90(1119)	3002(1812)	88(1605)
Aged 36–45	AG3	2221(1075)	85(991)	3582(2053)	86(1775)
Aged 46–55	AG4	2439(1065)	80(834)	3920(2019)	79(1772)
Aged 56–65	AG5	2439(985)	72(1046)	3902(2022)	42(1672)
Minority					
National minority	MIN1	2062(1068)	81(668)	3134(1715)	82(1293)
Non-national minority	MIN2	2065(1131)	84(1005)	3422(2033)	82(1762)
Party membership					
Party member	PA1	2348(1179)	93(1520)	3902(2041)	91(2110)
Non-party member	PA2	1916(1072)	87(886)	3160(1965)	85(1637)
Education					
4-year college	ED1	2510(1236)	86(822)	4156(2053)	89(1939)
2-year college	ED2	2112(933)	91(759)	3668(2166)	93(1957)
Professional school	ED3	2134(994)	91(1170)	3439(2109)	92(1826)
Upper-middle-school	ED4	1911(1160)	87(1053)	3192(1947)	84(1577)
Lower-middle-school	ED5	1990(1129)	85(966)	3188(1879)	78(1600)
Primary-school	ED6	2230(1149)	76(887)	3054(1714)	72(1497)
Less than primary-school	ED7	1978(940)	74(797)	2359(1621)	79(1526)
Ownership					
State-owned sector	OW1	2161(1054)	87(1285)	3709(1879)	88(1740)
Other public sector	OW2	2028(969)	87(738)	3349(2034)	85(1655)
Collective sector	OW3	1813(1065)	83(734)	2793(1824)	80(1610)
Private or self-employed	OW4	3091(3466)	60(1928)	3350(2775)	75(2560)
Joint-venture or foreign firm	OW5	2355(980)	80(1421)	4087(2888)	90(2321)
Other ownership	OW6	1806(3596)	65(950)	3578(2477)	77(2224)
Occupation					
Owner of private firm	OC1	2829(3995)	66(1841)	3582(2762)	73(2328)
Professional or technician	OC2	2306(981)	86(760)	3763(1998)	90(1692)
Responsible offices or manager	OC3	2366(854)	88(567)	4132(2455)	97(3384)
Ordinary offices or manager	OC4	2710(1408)	81(1077)	3991(2042)	94(1943)
Office worker	OC5	2118(1084)	88(1059)	3334(2104)	88(1876)
Manual worker	OC6	1851(976)	87(987)	2976(1790)	81(1401)
Other	OC7	1324(959)	94(889)	2975(1754)	80(1578)

Notes: (1) Earnings in 1995 were deflated with 1988 provincial prices. (2) Standard errors of male earnings and female earnings in parentheses.

16–25 earned only 4% less than men of the same age, but the gap was 20% among those aged 46–54. The small fraction of women working after their general retirement age of 55 have earnings remarkably low in comparison to men of the same age.

There is also an interesting pattern in the education-breakdown. The overall relation between level of education and earnings is weak for 1988 but clearer for 1995. The change is probably at least partly due to the urban

Table 4. Mean of earnings of men and women by population group (continued)

Name of variables	Notation	1988		1995	
		Male	Female as percentage of male	Male	Female as percentage of male
Sector					
Agriculture	SE1	2069(1059)	81(535)	3633(2285)	77(1614)
Manufacturing	SE2	1968(997)	85(904)	3184(1822)	82(1504)
Mining	SE3	2026(743)	72(693)	3456(1499)	83(1102)
Construction	SE4	2021(877)	87(821)	3579(2730)	75(1613)
Transportation and communication	SE5	2264(1198)	79(829)	3786(2570)	77(2009)
Commerce and trade	SE6	2262(1584)	78(1251)	3184(2034)	79(1511)
Public utilities	SE7	2006(1035)	77(846)	3752(2276)	73(2492)
Health and social welfare	SE8	2170(1042)	87(704)	3750(1940)	91(1835)
Education and culture	SE9	2193(889)	88(824)	3828(1709)	85(1593)
Scientific research and technology	SE10	2294(1086)	86(806)	3948(1738)	83(1340)
Finance and insurance	SE11	1999(705)	83(676)	3879(2667)	92(2045)
Government and social organizations	SE12	2079(1083)	91(1624)	3528(1979)	92(2247)
Others	SE13	1913(2590)	67(906)	3429(2228)	80(1899)
Status of job					
Permanent worker	JO1	2059(1037)	84(978)	3429(1996)	84(1711)
Temporary worker	JO2	3121(4880)	56(1989)	2807(2125)	71(1544)
Others	JO3	1418(972)	81(1005)	3229(2488)	75(2307)
Province					
Beijing	P11	2156(763)	87(702)	4066(1930)	86(1514)
Shanxi	P14	1764(726)	84(1584)	2797(1348)	74(1070)
Liaoning	P21	1954(672)	88(552)	3145(1496)	80(1278)
Jiangsu	P32	2047(1050)	85(558)	3601(1713)	83(1529)
Anhui	P34	1921(1087)	79(986)	2776(1290)	77(1064)
Henan	P41	1674(765)	83(594)	2889(1366)	79(1235)
Hubei	P42	1845(814)	90(619)	3095(1426)	88(1226)
Guangdong	P44	2957(1687)	84(1517)	6175(3714)	85(3235)
Yunnan	P53	2182(936)	82(654)	3119(1238)	87(1247)
Gansu	P62	2184(1650)	73(804)	2637(1101)	79(998)

Source: Urban household income surveys 1989 and 1996.
Notes: (1) Earnings in 1995 were deflated with 1988 provincial prices. (2) Standard errors of male earnings and female earnings in parentheses.

workers being rewarded more according to their productivity, one of its determinants being human capital, and partly because the rapid growth of high-tech industries has resulted in great demand for well-educated workers. The gender earnings gap is smallest among those with a longer education and there is even a very small decrease in the gap between the 2 years of observation. On the other hand the gender earnings gap is larger for those with short educations. In addition with the exception of the very lowest level of education the gender earnings gap has increased among those with shorter education.

Table 4 also contains information on male earnings as well as female earnings as proportion of male earnings for breakdowns according to ownership, occupation, sector, status of job and province. We choose to comment on only a few of these findings. It is interesting to see that there is no example of female earnings being higher or equal to male earnings. Differences in

earning levels across provinces are rather large compared to differences in earnings along other dimensions.

What have changes in earnings inequality in urban China meant for the average gender earnings gap? Our calculations show that in 1988 the female median is located at the 38.3 percentile of the male earnings distribution. Seven years later the location is actually slightly higher, at the 39.7 percentile (in a now more unequal distribution). This indicates that the increase in the gender earnings gap in urban China is driven by increased earnings inequality, not by a deteriorating relative position of women in the earnings distribution.

6. Earnings functions

Estimated earnings-functions for males and females are reported in Table 5 for 1988 and in Table 6 for 1995. There are many results worth commenting on.

Earnings in urban China are very clearly related to age. In 1988 age effects increased in the male equation up to the ageclass 46–55 after which it levelled out. However, in 1995 the age effect for those over 55 was much smaller which might reflect productivity-considerations being more important than previously when determining earnings for older workers. Pay also attention to the large negative effect of being over 55 among female workers in 1995. Females working after the general retirement-age are very low paid.

All estimated effects of minority-status are small and have a low degree of statistical significance. On the other hand being a party member has a positive effect estimated with a high *t*-value. However, this effect which might stand for a party member having more social capital than a non-party member is not particularly large as the point estimates ranges from 5 to 10%.

Effects of education in our specification which also includes variables measuring occupation were small in 1988. However over time they have increased dramatically. Thus while the earnings differential among men with 4 years of college implied earnings 9% higher than for men with upper-middle school the difference had increased to 15% in 1995. Effects of education are somewhat larger for female workers than for male workers.

Table 5 and Table 6 clearly show that ownership of the work unit affects earnings in urban China. It comes as no surprise that the highest paying ownerships are joint-venture or foreign owned enterprises followed by state owned enterprises and thereafter other public, but not collectively owned enterprises. Other effects of ownership are not as straightforward to interpret. Most effects of the economic sector are small. The main exception is finance and insurance which show considerably higher earnings in 1995 while the corresponding size of the effect could not be established for 1988. This result is in line with what has been reported in the official statistics. (SSB, 1995B, pp. 114–15) Finally we note large effects of province which are not generally smaller for the last year under study. (The issue of earnings-convergence across provinces in urban China is investigated using the same samples by Knight, et al. (1997).)

Overall the results illustrate that what matters for how much a person earns in urban China is where he or she works as indicated by location and by the ownership of the enterprise. Whether or not one has long work experience

Table 5. Coefficients of earnings functions of male and female workers, 1988

	Male workers		Female workers	
	Coefficient	Standard error	Coefficient	Standard error
Intercept	7.466	0.054	7.252	0.025
Age group				
Aged 16–25	−0.408	0.012	−0.351	0.012
Aged 26–35	–	–	–	–
Aged 36–45	0.140	0.010	0.103	0.010
Aged 46–55	0.213	0.011	0.150	0.013
Aged 56–65	0.217	0.016	0.106	0.043
Minority				
National minority	0.018	0.018	0.004	0.022
Non-national minority	–	–	–	–
Party membership				
Party member	0.056	0.009	0.102	0.014
Non-party member	–	–	–	–
Education				
4-year college	0.089	0.016	0.102	0.026
2-year college	0.027	0.015	0.043	0.021
Professional school	0.016	0.013	0.030	0.016
Upper-middle-school	–	–	–	–
Lower-middle-school	0.014	0.009	−0.016	0.011
Primary-school	−0.012	0.015	−0.090	0.016
Less than primary-school	−0.082	0.031	−0.194	0.027
Ownership				
State-owned sector	0.154	0.012	0.188	0.011
Other public sector	0.073	0.011	0.119	0.011
Collective sector	–	–	–	–
Private or self-employed	0.246	0.084	−0.112	0.077
Joint-venture or foreign firm	0.386	0.066	0.310	0.070
Other ownership	−0.228	0.066	0.019	0.056
Occupation				
Owner of private firm	0.163	0.038	0.092	0.049
Professional or technician	0.078	0.014	0.061	0.016
Responsible officer or manager	0.079	0.017	0.091	0.036
Ordinary officer or manager	0.151	0.022	0.076	0.060
Office worker	0.037	0.010	0.045	0.012
Manual worker	–	–	–	–
Others	−0.311	0.054	−0.397	0.048

as indicated by age is also of importnce to earnings, as well as the person's education for 1995.

7. Decomposition of average gender gaps

Using the estimated earnings-functions reported in Tables 5 and 6 the average gender earnings gap in 1988 and 1995 is decomposed in Table 7. About half of the crude difference in average log-earnings can be explained by differences

Table 5. Coefficients of earnings functions of male and female workers, 1988 (continued)

	Male workers		Female workers	
	Coefficient	Standard error	Coefficient	Standard error
Sector				
Agriculture	−0.055	0.036	0.074	0.050
Manufacturing	−	−	−	−
Mining	−0.053	0.016	0.100	0.021
Construction	−0.031	0.023	0.131	0.031
Transportation and communication	−0.024	0.019	0.104	0.027
Commerce and trade	−0.069	0.018	0.092	0.022
Public utilities	−0.107	0.032	0.025	0.040
Health and social welfare	−0.039	0.044	−0.015	0.039
Education and culture	−0.088	0.025	0.078	0.027
Scientific research and technology	−0.090	0.021	0.080	0.026
Finance and insurance	−0.066	0.027	0.098	0.038
Government and social organisations	−0.088	0.032	0.046	0.039
Others	−0.124	0.019	0.029	0.028
Status of job				
Permanent worker	−	−	−	−
Temporary worker	−0.239	0.037	−0.476	0.028
Others	−0.256	0.076	−0.174	0.065
Province				
Beijing	−0.017	0.019	−0.047	0.022
Shanxi	−0.243	0.015	−0.291	0.018
Liaoning	−0.084	0.015	−0.064	0.017
Jiangsu	−	−	−	−
Anhui	−0.128	0.015	−0.164	0.017
Henan	−0.262	0.015	−0.308	0.017
Hubei	−0.171	0.015	−0.136	0.017
Guangdong	0.265	0.015	0.246	0.017
Yunnan	−0.024	0.015	−0.041	0.017
Gansu	−0.082	0.017	−0.194	0.020
Adjusted R^2	0.436		0.386	
F-value	158.1		117.4	
Mean value of dependent variable	7.533		7.349	
Number of observations	9354		8533	

Source: Urban household income surveys 1989 and 1996.

in average values for variables cross gender. Evaluating the difference by parameters estimated for males we find that the single most important variable for partly explaining the crude gap in 1988 is age to which 19% of the gap can be attributed. For the same year the second variable in importance is ownership to which 10% of the observed earnings-gap can be attributed. Other contributions come from party membership and occupation both closing 7% of the crude earnings-gap while differences in education closes an even smaller proportion.

We now turn to changes between 1988 and 1995 as reported in Table 7. While the raw gender earnings gap is larger in 1995 than in 1988 almost no part of the increase can be attributed to differences in variables cross gender.[7]

Table 6. Coefficients of earnings functions of male and female workers, 1995

	Male workers		Female workers	
Variable	Coefficient	Standard error	Coefficient	Standard error
Intercept	7.763	0.044	7.717	0.042
Age group				
Aged 16–25	−0.348	0.028	−0.386	0.029
Aged 26–35	–	–	–	–
Aged 36–45	0.190	0.020	0.162	0.021
Aged 46–55	0.230	0.023	0.025	0.029
Aged 56–65	0.095	0.032	−0.771	0.063
Minority				
National minority	−0.039	0.036	−0.068	0.041
Non-national minority	–	–	–	–
Party membership				
Party member	0.077	0.018	0.101	0.026
Non-party member	–	–	–	–
Education				
4-year college	0.155	0.030	0.208	0.043
2-year college	0.068	0.024	0.122	0.031
Professional school	0.033	0.024	0.063	0.028
Upper-middle-school	–	–	–	–
Lower-middle-school	−0.038	0.021	−0.062	0.023
Primary-school	−0.161	0.041	−0.294	0.041
Less than primary-school	−0.302	0.136	−0.184	0.101
Ownership				
State-owned sector	0.259	0.026	0.300	0.027
Other public sector	0.113	0.023	0.121	0.023
Collective sector	–	–	–	–
Private or self-employed	0.008	0.097	0.109	0.093
Joint-venture or foreign firm	0.353	0.071	0.460	0.084
Other ownership	0.264	0.108	0.262	0.091
Occupation				
Owner of private firm	0.039	0.067	0.097	0.085
Professional or technician	0.067	0.031	0.203	0.036
Responsible officer or manager	0.113	0.039	0.145	0.074
Ordinary officer or manager	0.104	0.030	0.119	0.051
Office worker	0.008	0.028	0.100	0.033
Manual worker	–	–	–	–
Others	−0.006	0.034	0.034	0.031

The bottom part of Table 7 shows that using the estimates of males the explained proportion amounts to as little as about one tenth of the increase in the earnings gap. The explained part can in turn be decomposed into two terms: a. "The variable-effect" measuring how the difference in variables between men and women has hanged (evaluated by coefficients of 1995) b. "The coefficient effects" showing how given characteristics are differently rewarded in 1995 compared to 1988 (evaluated by the difference in variables 1988). Looking further in Table 7 one sees that the single most important source of

Table 6. Coefficients of earnings functions of male and female workers, 1995

	Male workers		Female workers	
Sector				
Agriculture	0.002	0.052	−0.074	0.076
Manufacturing	–	–	–	–
Mining	−0.027	0.074	−0.059	0.105
Construction	0.063	0.043	0.005	0.059
Transportation and communication	0.097	0.032	0.076	0.044
Commerce and trade	−0.007	0.024	−0.019	0.025
Public utilities	0.041	0.041	−0.063	0.042
Health and social welfare	0.054	0.041	0.076	0.039
Education and culture	0.077	0.032	0.083	0.034
Scientific research and technology	0.060	0.047	0.014	0.062
Finance and insurance	0.216	0.055	0.258	0.060
Government and social organizations	0.036	0.025	0.049	0.032
Others	−0.215	0.077	−0.410	0.089
Status of job				
Permanent worker	–	–	–	–
Temporary worker	−0.135	0.059	−0.226	0.048
Others	−0.074	0.079	−0.189	0.073
Province				
Beijing	0.034	0.032	−0.040	0.038
Shanxi	−0.296	0.030	−0.487	0.035
Liaoning	−0.155	0.029	−0.279	0.034
Jiangsu	–	–	–	–
Anhui	−0.294	0.033	−0.343	0.037
Henan	−0.238	0.031	−0.342	0.036
Hubei	−0.220	0.029	−0.221	0.034
Guangdong	0.476	0.031	0.480	0.036
Yunnan	−0.197	0.031	−0.194	0.035
Gansu	−0.342	0.036	−0.438	0.041
Adj R^2	0.276		0.337	
F-value	47.50		56.41	
Mean of dependent variable	7.983		7.751	
N	5603		5011	

Source: Urban household income surveys 1989 and 1996.

the increase in the explained part is education. In the estimated equation for 1995 earnings effects of education are much larger than in the equation estimated for 1988 and on average men have longer educations than women. However, working in the opposite direction is age. The lower average age of the female worker had a lesser impact on the gender earnings gap in 1995 than in 1988. In 1995 the most important differences in variables cross gender for closing the crude earnings gap were ownership (9% of the gap), education and age (both 7% of the crude gap) followed by party membership.

8. Decomposition using the distribution approach

A number of interesting points stand out in Table 8 where we report numerical values for Jenkins' "discrimination" index. (When constructing Table 8 we

Table 7. Results of decomposition of gender difference of earnings in urban China

	$\beta m X_m - \beta m X_f$	Percent of total	$\beta m X_f - \beta f X_f$	Percent of total
1988				
Intercept	0	0	0.3628	203.12
Age group	0.0340	19.02	0.0110	6.14
Minority status	0.00005	0.03	0.0011	0.59
Party membership	0.0124	6.92	−0.0057	−3.19
Education	0.0056	3.14	0.0059	3.33
Ownership	0.0184	10.32	−0.0354	−19.83
Occupation	0.0122	6.85	−0.1476	−82.64
Economic sector	−0.0003	−0.16	−0.1240	−69.41
Type of job	0.0039	2.17	0.0067	3.76
Province	−0.0014	−0.78	0.0190	10.62
Total	0.0849	47.51	0.0937	52.49
1995				
Intercept	0	0	0.0462	19.87
Age group	0.0169	7.28	0.0645	27.74
Minority status	0.0001	0.02	0.0014	0.59
Party membership	0.0142	6.12	−0.0037	−1.60
Education	0.0172	7.40	0.0001	0.02
Ownership	0.0208	8.96	−0.0163	−7.03
Occupation	0.0114	4.92	−0.0199	−8.58
Economic sector	0.0003	0.14	0.0087	3.76
Type of job	0.0026	1.12	0.0060	2.59
Province	0.0020	0.84	0.0601	25.86
Total	0.0855	36.80	0.1469	63.20

Source: Urban household income surveys 1989 and 1996.

Table 7a. Difference of decomposition results between 1995 and 1988

	$(\beta m X_m - \beta m X_f)95 -$ $(-\beta m X_m - \beta m X_f)88$	$(\beta m X_f - \beta f X_f)95 -$ $(\beta m X_f - \beta f X_f)88$
Intercept	0	−0.3166
Age group	−0.0171	0.0535
Minority status	0.00005	0.0003
Party membership	0.0018	0.0020
Education	0.0116	−0.0058
Ownership	0.0024	0.0191
Occupation	−0.0008	0.1277
Economic sector	0.0006	0.1327
Type of job	−0.0013	−0.0007
Province	0.0034	0.0411
Total	0.0006	0.0532

Source: Urban household income surveys 1989 and 1996.

have aggregated some cells into broader categories.) Earnings "discrimina-
tion" has increased for most but not for all subgroups. Exceptions are persons
aged 36–45, the small group of persons in private or other ownership, the
heterogeneous occupation category "other" and in the provinces of Yunnan
and Gansu. There largest increases in group specific "discrimination" are re-

Table 8. Jenkins' indices of discrimination in 1988 and 1995 in urban China

		$\alpha = 0.5$		$\alpha = 1$		$\alpha = 2$	
		1988	1995	1988	1995	1988	1995
Age	Age 16–25	0.0269	0.0567	0.0525	0.1087	0.1001	0.2001
	26–35	0.0336	0.0423	0.0654	0.0820	0.1246	0.1544
	36–45	0.0451	0.0435	0.0874	0.0844	0.1645	0.1586
	46–55	0.0604	0.0797	0.1162	0.1520	0.2158	0.2775
	56–65	0.1264	0.2231	0.2358	0.3933	0.4129	0.6245
Education	High level	0.0294	0.0424	0.0572	0.0817	0.1088	0.1523
	Middle level	0.0408	0.0472	0.0790	0.0909	0.1486	0.1695
	Primary level	0.0785	0.1798	0.1497	0.3382	0.2738	0.6013
Ownership	State-owned	0.0400	0.0505	0.0775	0.0971	0.1456	0.1801
	Collective	0.0599	0.0606	0.1148	0.1160	0.2120	0.2131
	Private	0.1016	0.0696	0.1885	0.1321	0.3278	0.2388
	Other	0.1240	0.0536	0.2291	0.1030	0.3947	0.1912
Occupation	Owner	0.0925	0.0530	0.1755	0.1014	0.3169	0.1864
	Professional	0.0344	0.0406	0.0669	0.0785	0.1269	0.1470
	Manager	0.0403	0.0500	0.0775	0.0960	0.1438	0.1775
	Office worker	0.0385	0.0414	0.0745	0.0798	0.1400	0.1490
	Manual worker	0.0510	0.0710	0.0983	0.1361	0.1827	0.2508
	Other	0.1455	0.0689	0.2668	0.1313	0.4535	0.2399
Province	Beijing	0.0401	0.0522	0.0777	0.1001	0.1463	0.1854
	Shanxi	0.0530	0.0791	0.1021	0.1507	0.1898	0.2748
	Liaoning	0.0288	0.0676	0.0563	0.1293	0.1078	0.2375
	Jiangsu	0.0373	0.0441	0.0725	0.0851	0.1373	0.1594
	Anhui	0.0567	0.0485	0.1072	0.0935	0.1991	0.1748
	Henan	0.0527	0.0573	0.1015	0.1099	0.1889	0.2026
	Hubei	0.0251	0.0368	0.0490	0.0714	0.0938	0.1346
	Guangdong	0.0457	0.0479	0.0883	0.0925	0.1655	0.1719
	Yunnan	0.0446	0.0384	0.0864	0.0746	0.1623	0.1409
	Gansu	0.0823	0.0573	0.1564	0.1101	0.2833	0.2040
Total		0.0452	0.0530	0.0872	0.1017	0.1629	0.1880

Source: Urban household income surveys 1989 and 1996.

ported for the youngest and those with primary education, which is consistent with the development of the crude gender gap as shown above.[8] The indices for state-owned enterprises increased more than for collective enterprises. We report very high numbers for both years for women aged 56 to 65. However, as women in those ages are over the general retirement-age (while this is not the case for many men) the results might also be labelled different treatment of retired.

Finally we complement the description by looking at how total discriminaton is made up in 1988 and 1995 weighting the category specific indices by number of persons. Table 9 constructed by setting α equal to 1 shows contribution defined as the product of the within group index and the predicted earnings share. All numbers are expressed as a percentage of the aggregated "discrimination" index for the particular year. Several comments can be made.

Although the highest category specific "discrimination"-indexes are reported in ages when persons enter and exit working life, "discrimination" at such ages contributes relatively little to total "discrimination" due to the relatively small proportion of the sample belonging to those categories. Most of earnings "discrimination" in urban China can be attributed to persons in the middle of working life as they make up the dominating part of Chinese workers. Thus in both years about 40% of total earnings "discrimination" in urban China can be attributed to the relatively narrow age group of persons aged 36–45.

Looking at results for the education breakdown substantial changes between the years are evident. In 1995 18% of total "discrimination" is attributed to those with a high education, while the corresponding percentage was 6 in 1988. Mirroring this the proportion of total "discrimination" attributed to the occupations professional and manager has increased from 16% to 29%. At the other end of the spectrum, the contribution to total "discrimination" from those with only primary education decreased, although group-specific "discrimination" increased greatly. The dominating part of total earnings "discrimination" in urban China can be attributed to those with a middle level of education.

Finally pay attention when looking at ownership; one sees that the proportion of total earnings "discrimination" attributed to state-owned and other collective enterprises actually has increased from two thirds in 1988 to three fourths in 1995.

9. Conclusion

Using large samples we have investigated the gender earnings gap in urban China. We have taken advantage of samples covering many provinces and made comparisons between the years 1988 and 1995. During this period China experienced rapid industrialisation, urbanisation and transformation towards a market economy. A main result is that compared to the situation in many other countries the average gender earnings gap in urban China appears to be small. In 1988 average female earnings were 15.6% lower than for average males. The gender earnings gap is even smaller among the youngest wage-earners and those with longer educations.

Another important result is that the gender earnings-gap in urban China has increased since in 1995 females earned on average 17.5% less than males. Parallel to this, earnings inequality has increased rapidly. Analyses of earnings components show that the increase in the total earnings-distribution was driven by the development of the basic wage and of subsidies. The increased inequality in earnings is a sufficient explanation for the increase in earnings gap for urban China.

Results from estimating earnings functions indicate that the size of earning in urban China is highly dependent on geographic location and ownership of the enterprise. Best paid work is found in foreign owned enterprises and in joint-ventures, followed by the state sector. In addition earnings are positively affected by age standing for work experience and also (especially in the 90s) by education. The educational composition of the Chinese urban labour force has changed much from the end of the 80s to the middle of the 90s due to the greater education of those persons entering the labour force than those leaving

Table 9. Contributions of group discrimination to total discrimination ($\alpha = 1$)

Group variable		1988 Weight	1988 Percentage	1995 Weight	1995 Percentage
Age	Age 16–25	0.120	7.6	0.077	8.8
	26–35	0.325	25.4	0.266	21.9
	36–45	0.362	38.5	0.483	40.5
	46–55	0.185	25.9	0.166	25.4
	56–65	0.008	2.6	0.008	3.4
Education	High level	0.096	6.3	0.224	18.0
	Middle level	0.764	69.7	0.724	64.8
	Primary level	0.137	24.0	0.052	17.2
Ownership	State-owned	0.757	67.1	0.796	76.0
	Collective	0.230	30.1	0.154	18.0
	Private	0.009	1.8	0.035	4.5
	Other	0.004	1.1	0.015	1.5
Occupation	Owner	0.004	0.8	0.067	6.7
	Professional	0.188	14.2	0.280	21.6
	Manager	0.025	2.1	0.077	7.3
	Office worker	0.228	19.5	0.228	17.9
	Manual worker	0.550	62.0	0.328	43.9
	Other	0.005	1.4	0.021	2.6
Province	Beijing	0.050	4.4	0.087	9.9
	Shanxi	0.086	10.2	0.068	11.9
	Liaoning	0.111	7.4	0.092	13.7
	Jiangsu	0.130	10.8	0.120	11.8
	Anhui	0.085	10.5	0.057	6.5
	Henan	0.095	11.2	0.065	8.5
	Hubei	0.109	6.3	0.100	8.5
	Guangdong	0.164	16.7	0.152	15.5
	Yunnan	0.111	11.2	0.098	8.3
	Gansu	0.057	10.3	0.041	5.4
Total		1.00	100	1.00	100

Source: Urban household income surveys 1989 and 1996.

due to retirement. This makes the increased returns to education observed during the period even more remarkable.

Decomposing the average crude earnings-gap in urban China between women and men shows that about half in 1988 can be attributed to differences in average values for variables cross gender. The decomposition analyses show that different forces have affected the explained part of the average gender wage gap towards different directions. The shorter average education of Chinese women has tended to increase the average gender earnings gap but the fact that women workers on average are younger than male workers has worked in the other direction. Nevertheless the results show that a substantial and increasing part of the average earnings-gap cannot be explained by differences in variables between women and men. Actually the overwhelming part of the increase in the gender earnings gap is due to differences in co-

efficients between females and males. However, it is not self-evident if this stands for increased earnings discrimination of women or for productivity considerations being more important and women on average being less productive than men.

In segments of urban China where market forces have gained in influence earnings-differences between women and men have increased more rapidly than in other parts. Major examples of the former are young adults and persons with shorter educations. Analyses indicate that in such segments earning-differences between women and men having the same characteristics have increased particularly rapidly.

Endnotes

[1] Knight and Song (1993) use the same data for 1988.

[2] SSB (1995A) reports the following point estimates referring to persons of the urban population 15–64 years of age: Urban women (men) spend on paid work 7 h and 7 min (7 h and 30 min) and on housework: 4 h and 23 min (2 h and 10 min). Rural women (men) are reported to spend on out of household work 5 h and 46 min (7 h and 13 min) and on housework 5 h and 11 min (2 h and 14 min).

[3] White et al. (1996) p. 72 reports results from an investigation on opinions made in two cities point in this direction. Furthermore a general perception was found that the government was not active in addressing this issue.

[4] Recent useful introductions in English to the topic "China economic transformation" include articles in the December issue of China Quarterly (1995), Naughton (1996), World Bank (1996, 1997). See also Sachs and Woo (1997) for the discussion on the causes of Chinese economic growth.

[5] It seems as though the Chinese have differing opinions on the existence of earnings discrimination. White et al. (1996, pp 71–72) reports results from a survey of opinions made in two cities where the proportion of respondents agreeing that women receive lower pay than men was as large as the proportion who felt that there was no such discrimination.

[6] We have found a considerably higher gender wage gap for urban China than Qian (1996) who reported it to be 9%. Thus we do not share her conclusion that China has by far the smallest gender wage gap observed in the world (p. 114). One explanation for the differences between the studies is that the gender earnings gap is smaller in the two provinces in her study (which also are included in our study). We report in Table 4 for 1995 a gender earnings gap of 14% in Beijing and 15% in Guangdong to be compared to 18% for urban China an a whole. In addition there are differences in definitions between the studies. Fox example our study is on earning and we include the self-employed while her study is on wages excluding self-employed.

[7] In a sensitivity analysis we dropped variables indicating occupation and economic sector from the earnings functions but received similar results. The gender earnings gap due to differences in mean values accounts to 43.8 percent in 1988 while it dropped to 36.4% in 1995.

[8] We do not have evidence as to why the increases are largest for those categories so explanations have to be speculative. First looking at young workers one can notice that they have been hired recently. It is therefore most likely that any increased preference among employer to hire male workers is strongest for this category. Therefore in order to get a job young female workers have (probably) been increasingly willing to accept lower wages (then males). Turing to the category of people with a short education one can notice that much work done by such people is physically demanding. Women might be less productive performing many such tasks, and this might be an important reason why the "discrimination index" has increased for this category.

References

Byron R, Manatoto E (1990) Returns to Education in China. *Economic Development and Cultural Change* 38:783–796

Blau F, Kahn L (1996) Wage Structure and Gender Earnings Differentials: An International Comparison. *Economica* 63 (Suppl) S29–S62

Brainerd E (1996A) Women in Transition: Changes in Gender Wage Differentials in Eastern Europe and the Former Soviet Union. Working Paper. Department of Economics, Williams College

Brainerd E (1996B) Winers and Losers in Russia's Economic Transformation. Working Paper, Department of Economics, Williams College

China Quarterly (1995) Special Issue: *Chinas Transitional Economy*, No 144, December 1995

Eichen M, Ming Z (1993) The 1988 Household Sample Survey – Data Description and Availability. In: Griffin K, Renwei Z (1993) *The Distribution of Income in China*. Macmillan, Houndsmills

Griffin K, Zhao R (eds) (1993) *The Distribution of Income in China*. Macmillan, Houndsmills

Gustafsson B, Johansson M (1998) Earnings Inequality and the Gender Gap – An Accounting Exercise for Sweden 1975–1991. *Labour* 12:715–744

Gustafsson B, Li S (1997) Types of Income and Inequality in China at the End of the 80:s. *Review of Income and Wealth* 43:211–226

Jenkins S (1994) Earnings Discrimination Measurements. *Journal of Econometrics* 61:81–102

Knight J, Li S, Zhao R (1997) A Spatial Analysis of Wages and Incomes in Urban China: Divergent Means, Convergent Inequality. Working Paper, Institute of Economics and Statistics, Oxford

Knight J, Song L (1993) Why Urban Wages Differ in China. In: Griffin K, Zhao R (eds) *The Distribution of Income in China*. Macmillan, Houndsmills

Li S, Travers L (1993) Estimates of Returns to Education in China. In: Zhao R, Griffin K (eds) *Research on Household Income Distribution in China*. Publishing House of Chinese Social Science, Beijing (In Chinese)

Meng X, Miller P (1995) Occupational Segregation and its Impact on Gender Wage Discrimination in China's Rural Industrial Sector. *Oxford Economic Papers* 47:136–155

Naughton B (1996) China's Emergence and Prospects as a Trading Nation. *Brookings Papers on Economic Activity* 2:273–344

Oaxaca R (1973) Male-Female Wage Differentials in Urban Labour Markets. *International Economic Review* 14:693–709

Qian J (1996) *Gender Wage Differentials in Urban China in the 1990s*. PhD. Dissertation, State University of New York at Binghamton

Sachs J, Woo WT (1997) Understanding China's Economic Performance. National Bureau of Economic Research, Cambridge, MA Working Papers Series, 5935

State Statistic Bureau (1995A) *Women and Men in China Society – Facts and Data* (In Chinese). China Statistical Publisher, Beijing

State Statistic Bureau (1995B) *China Statistical Yearbook 1996*. China Statistical Publishing House, Beijing

White G, Howell J, Xiaoyuan S (1996) In *Search of Civil Society. Market Reform and Social Change in Contemporary China*. (IDS Development Studies Series). Clarendon Press, Oxford

Woo M (1994) Chinese Women Workers: The Delicate Balance Between Protection and Equality. In: Gilmartin C, Hershatter G, Rofel L, White T (eds) *Engendering China. Women, Culture, and the State*. (Harvard Contemporary China Series 10). Harvard University Press, Harvard

World Bank (1996) *The Chinese Economy. Fighting Inflation, Deepening Reforms*. Washington D.C.

World Bank (1997) *China 2 020*. Washington D.C.