**OCCUPATIONAL SEGREGATION AND ITS IMPACT ON GENDER WAGE
DISCRIMINATION IN CHINA'S RURAL INDUSTRIAL SECTOR***

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DISCUSSION PAPER 93.09

MARCH 1993

ISSN 0811-6067
ISBN 0-86422-257-2

* We are grateful to Bob Gregory for his helpful comments and to the National Centre for Development Studies at the Australian National University for financial assistance.

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Abstract

Labour markets in China's newly developed rural industrial sector possess a unique feature: recruitment is mostly controlled by the community authorities while firms have decision making power over wages. This paper examines the effect of this system on the gender wage differential. It is found that although the Chinese government has attempted to eliminate the impact of traditional gender discrimination, the different occupational distributions of men and women are partly due to discrimination in occupational assignment. While this form of discrimination has an impact on the gender wage differential, it is not as important as wage discrimination within each occupation. Moreover, it is found that within-occupation wage discrimination and inter-occupational wage discrimination are high compared with other industrial countries. Relative to intra-occupational discrimination, inter-occupational discrimination is more important than in the UK, the US and Australia. Possible explanations for these phenomena are provided.

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I Introduction

Studies of gender differences in labour market outcomes typically focus on wages *or* occupations. It is generally reported that the wage rate of women is considerably lower than that of men and that women are more likely to occupy positions lower down in the occupational status hierarchy. The interaction between occupational attainment and the wage differential has, however, received little attention in the gender discrimination literature. Yet it is obvious that as wages vary considerably across occupations, occupational segregation on the basis of gender will affect the gender wage differential. Some studies have been undertaken of this interaction for industrial economies [for example, Brown, Moon and Zoloth (1980); Miller (1987)] and they demonstrate that it is important to model occupational segregation when attempting to account for the lower wage received by women. Studies of this type are less frequent for developing countries and non-existent for centrally planned economies. In this paper this issue is addressed with reference to China.

The Chinese economy presents a particularly interesting subject for study of gender wage discrimination and occupational attainment. Recent economic reform has brought great changes to the economy. One of the most remarkable changes is the development of the rural industrial sector (the TVP sector). This sector was initially tightly controlled by the local authorities but since the late 1970s it has undergone a transformation towards a market economy. In 1985 its labour market possessed a unique feature: unlike in the market economies where firms take the market wage as given and have free choice over their employment, recruitment in the TVP sector is mostly controlled by the government authorities while firms have decision making power over wages.

This contrast between the operation of labour markets of the TVP sector and labour markets in industrial economies raises two major issues that provide the focus of the current study. The first relates to the determinants of occupational attainment, specifically, whether the determinants of occupational attainment in the TVP sector are similar to those in market economies and whether the determinants of occupational attainment in the TVP sector differ between males and females. The second issue relates to whether any difference in occupational attainment between men and women has an impact on the gender wage differential in the TVP sector, and whether this impact differs from that established for industrialised countries.

The data used in this study are from the *Township-, Village- or Privately-Owned Enterprises Sample Survey* conducted jointly by the World Bank and the Institute of Economics of the Chinese Academy of Social Sciences in 1986 and 1987.¹ Four counties were involved in the survey: Wuxi county in Jiangsu province, Nanhai county in Guangdong province, Jieshou county in Anhui province and Shangrao county in Jiangxi province. These four counties represent different levels of rural industrialization, and different degrees of administrative control or different ownership structures. This range of development conditions should approximately represent the situation in most areas of rural China.

The paper is structured as follows. In the next section background information on the TVP labour market is presented. Section III outlines the methodology for estimating wage discrimination when account is taken of occupational segregation. A comparison of female and male occupational attainment is provided in Section IV. Section V reports the impact of occupational segregation on gender wage discrimination. Section VI compares our results with studies of some industrial economies and Section VII concludes the study.

¹ These data are available from the World Bank or the Institute of Economics of the Chinese Academy of Social Sciences.

II Background of the TVP labour markets and the gender differential in wages and occupational attainment

In 1985, the year analysed in this paper, the TVP labour markets could be thought of as possessing three characteristics.

First, labour mobility was restricted at both inter-regional and inter-community levels. For example, over 90 per cent of employees in the sample lived in the same village, township or county as their firm was located in. Consequently, these markets should be viewed as being very segmented (typically each market corresponds with a township or village).

Second, within each market over one-half of the sample firms' recruitment was controlled by community authorities. This implies that firms had very limited rights in hiring or firing workers. Moreover, individuals would rarely acquire jobs through their own efforts in the market but were assigned to jobs by community authorities. This control extended to both the quantity and quality of employment, which means that local authorities had decision making power over the issues of how many workers could be employed and which particular person was assigned to a specific job.

Third, while most firms were unable to choose their own employees, they had decision-making power over employees' wages. About 70 per cent of firms in the survey analysed were able to set wage levels for their employees.

These features appear to have major implications for the wage structure and distribution of employees across jobs. Firms, for example, seem to set different wages for male and female employees. In general, females, who constitute 45 per cent of employees in the sample, earn 20 per cent less than men. The gender wage differential for staff is higher than that for workers². The extent to which this is attributable to the

² Two broad categories of employees are recognised in this study: staff who are classified as managerial or technical employees and the remainder who are classified as workers. The staff group are further divided into shift leaders, ordinary staff and middle level staff.

different levels of schooling and experience of male and female workers is examined in Section IV.

The occupational distributions of male and female employees also differ substantially. For example, the staff/workers ratio for men (0.96) is higher than that for women (0.26). This difference presumably reflects in large part the decisions of the community authorities. The extent of their influence in this regard is assessed below.

III Methodology for estimating wage discrimination by considering occupational segregation

Measuring gender wage discrimination has been a major issue in the economics literature. The conventional approach has mainly focused on wage discrimination without considering the difference in occupational attainment between men and women (Blinder, 1973; Oaxaca, 1973). An extension of this approach wherein occupational dummy variables are incorporated into the wage equation enables some insights into the impact of the different occupational distributions of the gender groups on the gender wage differential (Blinder, 1973), but does not enable an assessment of the relative importance of inter- and intra-occupational wage effects. Such an assessment is possible using Brown, Moon and Zoloth's (1980) model. They decomposed the total wage differential between men and women into components related to within-occupation wage differences, denoted wages, and occupational discrimination, denoted occupations. Their model may be developed as follows.

Let the wage of individual i in occupation j (W_{ij}) be expressed as

$$W_{ij} = \alpha_j + X_{ij}\beta_j + \varepsilon_{ij}$$

where X_{ij} represents the characteristics (eg. education, experience) of the individual, α_j and β_j are parameters to be estimated and ε_{ij} is a random error term. If estimates of α_j and β_j ($\hat{\alpha}_j$ and $\hat{\beta}_j$) are obtained using ordinary least squares, then the mean wage in occupation j is $\bar{W}_j = \hat{\alpha}_j + \bar{X}_j\hat{\beta}_j$ and the mean wage across all occupations is

$\bar{W} = \sum_j (P_j \hat{\alpha}_j + P_j \bar{X}_j \hat{\beta}_j)$, where P_j is the fraction of the employees in occupation j and

a bar over a variable denotes the mean value. Thus, the two components of the total wage differential identified by Brown, Moon and Zoloth (1980) are derived as follows:

$$\begin{aligned}\bar{W}^m - \bar{W}^f &= \sum_j (P_j^m \bar{W}_j^m - P_j^f \bar{W}_j^f) \\ &= \sum_j (P_j^m \hat{\alpha}_j^m - P_j^f \hat{\alpha}_j^f) + \sum_j (P_j^m \bar{X}_j^m \hat{\beta}_j^m - P_j^f \bar{X}_j^f \hat{\beta}_j^f) \\ &= \underbrace{\sum_j P_j^f (\hat{\alpha}_j^m - \hat{\alpha}_j^f) + \sum_j P_j^f (\bar{X}_j^m \hat{\beta}_j^m - \bar{X}_j^f \hat{\beta}_j^f)}_{\text{WAGES}} + \underbrace{\sum_j (\bar{X}_j^m \hat{\beta}_j^m + \hat{\alpha}_j^m) (P_j^m - P_j^f)}_{\text{OCCUPATION}}\end{aligned}$$

where the superscripts m and f refer to males and females respectively.

The component of the wage differential labelled "wages" was further decomposed by Brown, Moon and Zoloth into a portion due to differences in productivity (PD) and a portion attributable to discrimination (WD) between men and women as follows:

$$\text{WAGES} = \underbrace{\sum_j P_j^f \bar{X}_j^f (\hat{\beta}_j^m - \hat{\beta}_j^f)}_{WD} + \underbrace{\sum_j P_j^f \hat{\beta}_j^m (\bar{X}_j^m - \bar{X}_j^f)}_{PD}$$

Similarly, the component labelled "occupations" was further decomposed into a portion relating to differences in the structure of occupational attainment between men and women (OD) and a portion relating to differences in qualifications for the occupation (QD) as follows:

$$\text{OCCUPATION} = \underbrace{\sum_j \bar{W}_j^m (P_j^m - P_j^f)}_{QD} + \underbrace{\sum_j \bar{W}_j^m (\hat{P}_j^f - P_j^f)}_{OD}$$

where the new term $\hat{P}_j^f$ represents the proportion of women in the sample who would be in occupation j if women faced the same occupational structure as men. Thus the full model becomes:

$$\begin{aligned}\bar{W}^m - \bar{W}^f &= \underbrace{\sum_j P_j^f (\hat{\alpha}_j^m - \hat{\alpha}_j^f)}_I + \underbrace{\sum_j P_j^f \bar{X}_j^f (\hat{\beta}_j^m - \hat{\beta}_j^f)}_{WD} + \underbrace{\sum_j P_j^f \hat{\beta}_j^m (\bar{X}_j^m - \bar{X}_j^f)}_{PD} \\ &\quad + \underbrace{\sum_j \bar{W}_j^m (P_j^m - \hat{P}_j^f)}_{QD} + \underbrace{\sum_j \bar{W}_j^m (\hat{P}_j^f - P_j^f)}_{OD}\end{aligned}$$

Brown, Moon and Zoloth defined I and WD as *unjustified* differences in within-occupation wages, PD as the *justifiable* within-occupation wage differential, and QD and OD as the *justifiable* and *unjustifiable* portions of occupational segregation, respectively. Terms that are *justifiable* capture the wage differentials due to differences in characteristics between men and women, while those which are *unjustifiable* capture the wage differential which is unexplained and is normally attributed to discrimination.

Brown, Moon and Zoloth's method is superior to Blinder's and Oaxaca's where the occupational distributions of the gender groups differ appreciably. Since the occupational distributions of men and women in the TVP sector differ substantially, Brown, Moon and Zoloth's approach is adopted in this study.

The most innovative aspect of this model is the computation of a non-discriminatory occupational structure for women (ie, $\hat{P}_j^f$). This requires a model of occupational attainment to be estimated. Brown, Moon and Zoloth specified a reduced form multinomial logit model to capture how variables affect the probability of individual i working in occupation j . This probability may be defined as:

$$P_{ij} = \text{prob}(y_i = oc_j) = \frac{e^{x_i \beta_j}}{\sum_{k=1}^J e^{x_i \beta_k}} \quad i=1, \dots, N, \quad j=1, \dots, J.$$

where N =sample size,
 J =number of occupational groups
 x_i =a vector of exogenous variables affecting supply and demand factors.

Estimates of the parameters of this model are obtained for male observations, and the female data are then substituted into the estimated equation(s) producing for each woman a (vector of) predicted probabilities of belonging to each occupation. These predicted probabilities of being in each occupation are summed over observations to produce the predicted occupational distribution of women, $\hat{P}_j^f$.

The general procedures to estimate this wage decomposition involve four steps. First, a multinomial logit model of occupational attainment is used to calculate the female predicted occupational distribution, $\hat{P}_j^f$. Second, wage functions are estimated for each

occupation and gender category to get $\hat{\alpha}_j^m$, $\hat{\alpha}_j^f$, $\hat{\beta}_j^m$ and $\hat{\beta}_j^f$. Third, the information obtained in the first two steps is used to calculate I , WD , PD , QD and OD which may be summed to obtain the total gender wage differential. Finally, by dividing the sum of I and WD by the total gender wage differential, the proportion of the within-occupation wage differential that is unjustifiable is obtained. Similarly, PD over the total wage differential is equal to the proportion of the justifiable within-occupation wage differential; QD and OD over the total wage differential are, respectively, equal to the justifiable and unjustifiable portions of occupational segregation.

IV The model of occupational attainment

An individual's occupational attainment is specified as a function of the employers' willingness to hire that person (labour demand) and the individual's desire to work in a particular occupation (labour supply). Labour demand is largely determined by the individual's human capital, while the labour supply may be derived from a utility function which includes at least three components: income of occupations, taste for the work involved and family size (Brown, Moon and Zoloth, 1980). In the Chinese rural labour market, supply side determinants are not very important due to the scarcity of employment positions in the TVP sector and the widespread use of assignment during most of the period. Therefore, the model adopted for this study can be viewed as a job assignment model.

The independent variables used to estimate the occupational assignment multinomial logit model include education, other job experience (OJ), firm tenure (FT) and three regional dummies. The dependent variable is the probability of being in each occupational category. There are four occupational categories: workers, shift leaders, ordinary staff and middle level staff. The ranking of the four occupations here is approximately ascendant in terms of prestige. Separate models are estimated for males and females.

The results of the multinomial logit model are presented in Table 1, where the workers group is used as the reference category. These coefficients record the impact of the various variables on the log odds of being in the occupation listed in the first row of the table relative to the reference category of workers. A positive coefficient implies a higher probability of being in the designated occupation rather than in the reference occupation. In this instance it is found that the coefficients typically are of the same sign for each of the log odds (shift leader to workers, ordinary staff to workers and middle level staff to workers). The magnitudes, however, differ appreciably. Table 2 presents occupational rankings by size of coefficient on the three main variables³.

Table 1
Multinomial results of female and male occupational attainment
(workers=normalised group)

	shift leader		ordinary staff		middle level staff	
	women	men	women	men	women	men
Constant	-3.750 (-4.13)	-4.478 (-5.54)	-5.427 (-5.74)	-6.475 (-9.48)	-7.082 (-5.33)	-7.757 (-7.96)
Schooling	0.082 (1.04)	0.274 (3.97)	0.314 (3.98)	0.489 (8.70)	0.304 (2.91)	0.508 (6.59)
OJ	0.037 (1.30)	0.030 (1.45)	0.052 (1.99)	0.104 (7.30)	0.085 (2.26)	0.094 (4.69)
FT	0.100 (2.17)	0.070 (2.26)	0.108 (2.31)	0.109 (4.37)	0.294 (4.90)	0.184 (5.89)
Jieshou	-0.305 (-0.56)	-0.576 (-1.41)	-0.737 (-1.58)	-0.112 (-0.40)	-1.313 (-1.74)	-0.991 (-2.27)
Shangrao	0.682 (1.22)	-0.231 (-0.44)	-0.324 (-0.48)	-0.047 (-0.12)	-17.861 (-0.004)	-1.984 (-2.46)
Nanhai	-0.529 (-0.94)	0.506 (1.24)	-10.28 (-1.85)	0.121 (0.35)	-19.395 (-0.008)	-0.946 (-1.57)

Note⁴: (1) t-ratios are shown in parentheses.
(2) For the female sample, the sample sizes are:
total=473, workers=366, shift leaders=30, ordinary staff=50, middle level staff=22;
(3) For the male sample, the sample sizes are:
total=531, workers=271, shift leaders=53, ordinary staff=157, middle level staff=50.
(3) Likelihood ratio=520.68, $\chi^2=186.38$, pseudo $R^2=0.16$ (male multinomial logit model).
(4) Likelihood ratio=265.90, $\chi^2=89.84$, pseudo $R^2=0.14$ (female multinomial logit model).

³ For detailed explanation of the table, see Greene (1990) and Brown, Moon and Zoloth (1980).

⁴ The formula for the Chi-squared measure is $\chi^2 = -2(\ln L_c - \ln L)$, where $\ln L_c$ and $\ln L$ are the log-likelihood at the maximized value with the constant term only and the log-likelihood at the maximized value with all regressors in the model, respectively (Greene, 1990). The formula for the pseudo R-squared measure is: $R^2 = 1 - (\ln L_c / \ln L)$ (McFadden, 1974).

Table 2
Occupational ranking by size of coefficient on education, other job experience
and firm tenure

Women	shift leader	ordinary staff	middle level staff
Schooling	3	1	2
OJ	3	2	1
FT	3	2	1
Men	shift leader	ordinary staff	middle level staff
Schooling	3	2	1
OJ	3	1	2
FT	3	2	1

Tables 1 and 2 demonstrate that education is an important determinant of the TVP job assignment. A person with higher education is more likely to be in a higher position in the job hierarchy. There is a slight difference between men and women in this respect. For women, the higher the educational level a person acquired, the more likely she is to be an ordinary staff instead of a middle level staff (see the ranking of the coefficients presented in Table 2, rows 2 and 6). For males, however, additional education results in the worker being more likely to be a middle level staff than an ordinary staff. As middle level staff is the highest paying occupation, this implies, within the occupational assignment interpretation afforded the multinomial logit model in this paper, that better educated women are systematically excluded from senior positions in the TVP labour markets.

The experience variables have impacts on job assignment in the TVP sector similar to those reported in studies of occupational attainment in industrial economies (Brown, Moon and Zoloth, 1980, Miller, 1987 and Hawke, 1991). A person with longer other job experience and firm tenure is more likely to be in a higher position in this administrative hierarchy in both male and female labour markets, though other job experience is not a statistically significant determinant of whether a person would become a shift leader. The reason for other job experience being an insignificant determinant for shift leaders is probably that, compared with ordinary staff and middle

level staff, the management skill as a shift leader is more specific, therefore the skill one learned elsewhere may not be considered as an advantage for being a shift leader in the current firm. This picture suggests that human capital variables are considered important when community authorities determine which particular person should be assigned to a specific job.

The differences between the coefficients of the models of occupational assignment for males and females listed in Table 1 will contribute to the occupational segregation experienced by female employees. By following the Brown, Moon and Zoloth (1980) methodology and calculating a predicted female non-discriminatory occupational distribution, the question of whether and to what extent the difference in occupational attainment between men and women is due to the difference in endowments of men and women and to what extent it is due to discrimination of occupational distribution can be answered.

V The impact of occupational attainment on the gender wage gap

By substituting the female data into the estimated male multinomial logit model (the results are presented in Table 1), and summing over the predicted probabilities of being in each occupation, a simulated occupational distribution of women is obtained. Table 3 exhibits the actual occupational distribution of men and women and the predicted distribution for women assuming women are treated the same as men in terms of occupational outcome. It shows how women's occupational distribution changes when the male occupational attainment structure is used as the norm for women's job assignment.

Table 3
Predicted occupational distribution (multinomial logit model)

	women's actual occupational distribution		women's predicted occupational distribution		men's actual occupational distribution	
	frequency	%	frequency	%	frequency	%
Workers	338	79.3	261	61.2	271	51.0
Shift leader	30	7.0	43	10.2	53	10.0
Ordinary staff	38	8.9	94	22.0	157	29.6
Middle level staff	20	4.8	28	6.5	50	9.4

The prediction of the female occupational distribution based upon the multinomial logit regression results suggests that, in the absence of discrimination, there would be a shift from female workers to female staff groups (about 18 per cent). As this is a job assignment model, these results reflect the role the community authorities played in job assignment in the TVP sector. The majority of the shift that does occur is from the workers group to the ordinary staff group (about a 13 per cent increase in the ordinary staff group). However, even with the absence of discrimination, the predicted female staff membership is still 10 per cent lower than that for men. This suggests that the different occupational distributions of men and women are partly due to endowment differences, and partly due to occupational segregation between gender groups.

The decomposition of gender wage differentials is presented in Table 4. The calculation is based on the results of wage equations estimated for four occupational categories for both male and female employees and mean values of all the variables (presented in Appendix B)

Table 4
Decomposition of gender wage differentials

	value	% of total
Total LDW differential	0.2231	100.0
Intra-occupational	0.1707	76.5
Justifiable (PD)	-0.0501	-22.5
Unjustifiable (I+WD)	0.2208	99.0
Inter-occupational	0.0524	23.5
Justifiable (QD)	0.0213	9.6
Unjustifiable (OD)	0.0311	13.9
Total justifiable	-0.0288	-12.9
Total unjustifiable	0.2519	112.9

From the decomposition it is seen that there is a 22.31 percentage point differential in the mean wage of males and females. Of this, 17.07 percentage points (76.5 per cent of the total differential) derives from *intra-occupational* sources and 5.24 percentage points (23.5 per cent of the total) from *inter-occupational* sources. Focussing on the *justifiable* and *unjustifiable* components, it is apparent that the contribution of these components differs. Thus, there is a negative justifiable intra-occupational wage effect, meaning that females have greater levels of measured wage determinants than males. If it was not for this fact the gender wage differential would be 5.01 percentage points higher than the 22.31 percentage point differential recorded in the survey.

With respect to the unjustifiable (a large proportion of this unjustifiable portion may be attributed to discrimination) component, both the intra-occupational and inter-occupational effects are positive, indicating discriminatory elements in both aspects of wage determination. The results, however, show that discrimination within occupations (22.08 percentage point wage differential) is far more important than discrimination of occupational attainment (3.11 percentage point wage differential).

In summary, these results reveal three findings of note. First, intra-occupational wage effects are more important than inter-occupational wage effects. Second, unjustifiable

wage effects are more important than justifiable wage effects. Third, within the unjustifiable wage effects, discrimination within occupations is far more important than discrimination in occupational attainment.

VI Comparison with industrial countries

Miller (1987) and Hawke (1991) have used Brown, Moon and Zoloth's (1980) decomposition technique to study gender wage discrimination in the United Kingdom, Australia and the United States. Their results are summarized in Table 5.

Table 5⁵
Summary of decomposition of gender wage differential for UK, US and Australia

	UK (Miller)		US (Hawke)		Australia (Hawke)	
	value	%	value	%	value	%
Total wage diff.	0.495	100	157.05	100	109.27	100
Intra-occupational	0.433	87.34	185.95	118.4	109.60	100.3
Justifiable	0.191	38.6	22.30	14.2	35.29	32.3
Unjustifiable	0.242	48.9	163.65	104.2	74.30	68.0
Inter-occupational	0.062	12.6	-28.93	-18.4	-0.33	-0.3
Justifiable	0.134	27.1	0.13	0.1	8.09	7.4
Unjustifiable	-0.072	-14.5	-29.05	-18.5	-8.41	-7.7
Total justifiable	0.325	65.6	22.43	14.3	43.38	39.7
Total unjustifiable	0.170	34.4	134.6	85.7	65.89	60.3

Comparing the Table 4 results with the research by Miller and Hawke⁶ leads to three main conclusions. First, the portion of the gender wage differential attributable to

⁵ The wage differential in Miller's study is calculated by using mean log wages while in Hawke's study it is calculated by using mean monthly wages. The number of occupational groups used in Miller's study is 6 and in Hawke's study it is 5 for the US case and 8 for the Australian case.

⁶ The difference between our results and those of Miller and Hawke may be partly due to the different nature of the occupational groupings and number of occupational categories used. (1) In the studies listed in Table 5, the "western standard" occupational classifications are used, such as professionals, clerical and trades. In this study, however, the occupational classification is based on the job hierarchy within the firms. The degree of substitution between the occupational classifications in this study (say, ordinary staff and middle level staff) may be different from those in the other studies (say clerical and trades). (2) The number of occupational categories used in this study is 4 which is less than that used in the other studies. These differences, presumably, affect the measured degree of occupational

intra-occupational discrimination in the TVP sector (99 per cent) is much higher than in the UK and Australia and slightly lower than in the US. Second, the portion attributable to inter-occupational discrimination in the TVP sector (a positive value of about 14 per cent) is higher than in any of the other three countries (-14 per cent in UK, -19 per cent in US and -8 per cent in Australia)⁷. Relative to intra-occupational discrimination, inter-occupational discrimination in the TVP sector is more important than in the UK, the US or Australia. Finally, the total wage differential attributable to discrimination for the TVP sector seems higher than that for Britain and Australia.

To sum up, the overall picture of the gender wage differential in the TVP sector seems to be as follows: within-occupation discrimination is larger than in developed countries; discrimination of occupational distribution is also greater than in developed countries.

Two questions naturally arise. First, why, in general, is gender wage discrimination greater in the TVP sector than in the industrial countries? Second, why is within-occupation discrimination greater than inter-occupational wage discrimination?

The first question might be answered by the following points. Traditionally, gender discrimination has been very serious in China, especially in rural areas. Discrimination in income distribution against women can be traced back to the old commune system. Under the commune system, income was distributed according to working-points evaluations among the members of the production team. However, there was a well-known unwritten rule for the evaluation of working-points between men and women which was that women would receive one or two points less than males even if they did the same job and made the same contribution. The TVP sector appears to have followed the same rules for their wage determination.

segregation and the wage decomposition. The degree and the direction of these effects, however, are unpredictable and untestable.

⁷ Negative values here mean that females are treated favourably in regards to occupational distribution in these countries.

Moreover, the TVP firms have monopsony power. In most rural areas in China, employment opportunities are scarce outside the home township or village. The only alternative is to work in the agricultural sector which has even lower income. Therefore no matter how low (so long as it is higher than what is paid in the agricultural sector) the wage paid to the employees they have to accept it. Given the tradition of discrimination, employers in the TVP sector might have a special dislike of female employees. If this is the case, they pay a lower wage to female employees than to male employees. The women have to accept the situation. Because there is no labour market competition (see Section II), this wage discrimination can be sustained for a very long period.

To explain why there is greater within-occupation discrimination but less discrimination of occupational distribution, it is necessary to recall the situation of the TVP's employment and wage decision-making. Recall that most employees are assigned to their current job by the township or village authorities while more than 60 per cent of employees' wages are determined by the firm leaders rather than by community authorities. It can be concluded that in the TVP sector, the decisions of occupational distribution are mainly made by the local government while the decisions of within-occupation wages are mainly made by the directors of firms.

A local government, township or village authority represents both the interests of local people and of higher level governments. Community authorities, thus, have dual objectives. As a representative of local government, they aim to fulfil economic, political and sometimes ideological targets set by the central and provincial governments. One of the political and ideological targets set by the communist government in China is equality of opportunities and income. Since traditional Chinese culture treats women extremely unfairly, the government has paid greater attention to improving the position of women in society. It is not unusual to hear in China that there is a government (or Communist Party) regulation that there has to be a given percentage of women in some important positions. Sometimes there is a serious

attempt to reach this kind of target. Generally speaking, women have equal opportunity in terms of occupational attainment and income distribution in state-owned enterprises where both decisions of employment and wages are made by the government. In the TVP sector, community authorities have incentive to implement this kind of government policy, but they are also affected by the traditional values. Therefore, when they make decisions of occupational distribution, they try not to strongly discriminate against women. Nevertheless, the fact that occupational discrimination is more serious in the TVP sector than in other industrial countries reflects the impact of traditional culture on the policy implementors. It appears that government control is less successful in this regard than the market mechanism.

Within-occupation wage determination depends mainly on the tastes of firms' directors. Government opinion does not have a strong influence on individual wage determination in the TVP sector. Considering the Chinese tradition of gender discrimination, directors are more likely to have a prejudice against women. This prejudice can be easily implemented in firms' wage setting.

VII Conclusion

Several issues concerning occupational segregation between gender groups and its impact on gender wage discrimination in China's rural industrial sector have been studied in this paper.

It is found that in this sector the determinants of occupational attainment for women are similar to those for men. Schooling, other job experience and firm tenure are statistically significant determinants of occupational assignment for both men and women in the TVP sector. The simulated non-discriminatory occupational distribution of women suggests that the different occupational distributions of men and women are partly due to endowment differentials between the two, and partly due to occupational segregation between gender groups.

The results of the wage decomposition show that discrimination of occupational assignment is not as important as wage discrimination within each occupation. Moreover, it is found that both within-occupation wage discrimination and inter-occupational wage discrimination in the TVP sector are high compared with industrial countries, and that, relative to intra-occupational discrimination, inter-occupational discrimination in the TVP sector is more important than in the UK, the US or Australia.

The serious gender wage discrimination in general can be explained by serious gender discrimination in Chinese tradition and the scarcity of employment opportunity in the TVP sector. However, the more serious within-occupation wage discrimination relative to inter-occupational discrimination can be explained by the decision-making procedure with respect to employment and wage level in the TVP sector. Township and village governments have decision-making power over occupational distribution. They implement equal opportunity policy in determining the TVP occupational distribution but appear to be less successful in this regard than the market economies. TVP firms make decisions concerning wage levels, and the directors of these firms appear to reflect more traditional values that tend to disadvantage women.

Appendix A: Detailed description of variables

The variables used in this study are created from responses to the *Workers Survey Questionnaire*, one of five questionnaires used in the *Township-, Village, or Privately-Owned Enterprises Sample Survey*.

Income. The *Workers Survey Questionnaire* asked: 'What was your yearly income in 1985', 'How many months did you work in 1985' and 'How many days did you work per week'. The daily income variable was obtained by the following formula: $yearly\ income / [days \times 4.345 \times months]$, where $4.345 = (365/12)/7$.

Years of schooling. Schooling data are defined in seven levels. Each level of education corresponds to the years of schooling indicated in Table A1:

Table A1 Years of schooling corresponding to education level

Level of education	Years of schooling
Illiteracy	0
4 years primary	4
6 years primary	6
Junior middle school	9
Senior Middle School	12
Television college	15
University and above	16

Labour market experience. Firm tenure (FT) and total non-agricultural job experience are reported in the questionnaire. Total experience is measured as age minus years of schooling minus 7. As there is a high degree of multicollinearity between total experience and firm tenure, the total experience variable is divided into firm tenure and other job experience (OJ), which is measured as total experience minus firm tenure.

Occupations: There are six categories of occupation reported in the *Workers Survey Questionnaire*. These are workers, shift leaders (SL), operational personnel (OP), technical personnel (TP), ordinary staff (OS) and middle level staff (MS). In this study the samples for female OP, TP and OS are quite small, and they are grouped

into one category, labelled ordinary staff. In the regressions, the category of workers is used as the base for the occupational dummies.

Regional dummies. There are four counties included in the survey: Wuxi, Jieshou, Shangrao and Nanhai. Wuxi is used as the base for the regional dummies.

Appendix B

Table B1
Mean values and standard deviations of dependent and independent variables for four occupational groups

	workers		S.L.		O.S.		M.S.	
	men	women	men	women	men	women	men	women
LDW	1.279 (0.58)	1.131 (0.45)	1.457 (0.46)	1.048 (0.57)	1.423 (0.46)	1.216 (0.43)	1.653 (0.47)	1.513 (0.44)
Schooling	7.627 (2.69)	7.831 (2.80)	8.903 (2.37)	7.933 (2.98)	9.682 (2.87)	9.605 (2.50)	9.755 (2.70)	9.65 (2.37)
OJ	8.634 (8.25)	7.433 (6.98)	8.365 (8.78)	9.233 (7.17)	12.879 (11.19)	8.711 (7.74)	11.33 (7.81)	10.05 (8.07)
OJ ²	142.42 (257.2)	103.89 (172.3)	145.5 (237.5)	134.97 (166.6)	290.3 (428.8)	134.13 (200.9)	188.02 (225.01)	162.85 (256.1)
FT	5.030 (4.78)	4.039 (3.38)	6.231 (4.17)	5.467 (4.37)	6.140 (5.20)	5.105 (4.69)	8.388 (7.31)	8.300 (5.59)
FT ²	48.09 (122.3)	27.69 (62.84)	55.89 (74.9)	48.333 (73.99)	64.48 (129.8)	47.47 (89.37)	122.71 (217.9)	98.600 (137.6)
JS	0.317 (0.47)	0.285 (0.45)	0.212 (0.41)	0.200 (0.41)	0.287 (0.45)	0.211 (0.41)	0.184 (0.39)	0.150 (0.37)
SR	0.119 (0.32)	0.101 (0.30)	0.096 (0.30)	0.200 (0.41)	0.121 (0.33)	0.079 (0.273)	0.041 (0.20)	0 (0)
NH	0.179 (0.38)	0.270 (0.44)	0.250 (0.44)	0.200 (0.41)	0.134 (0.34)	0.132 (0.343)	0.082 (0.28)	0 (0)

Note: (1) S.L.=Shift leader; O.S.=Ordinary staff; M.S.=Middle level staff.
(2) Figures presented in parentheses are standard deviations.

Table B2
Regression results of wage model for four occupational groups separately

	workers		S.L.		O.S.		M.S.	
	men n=268	women n=337	men n=52	women n=30	men n=157	women n=38	men n=49	women n=20
Constant	0.967 (7.53)	0.721 (7.30)	1.248 (3.22)	0.624 (1.64)	1.390 (7.43)	0.419 (1.16)	1.795 (4.47)	2.172 (3.67)
Schooling	-0.001 (-0.10)	0.023 (2.81)	-0.003 (-0.09)	-0.008 (-0.25)	-0.005 (-0.37)	0.040 (1.49)	-0.009 (-0.39)	-0.039 (-1.21)
Other job exp. (OJ)								
OJ	0.015 (1.86)	0.017 (1.52)	0.060 (2.85)	0.015 (0.38)	0.030 (3.64)	0.024 (0.90)	0.004 (0.17)	0.055 (1.32)
OJ ²	-0.0002 (-0.74)	-0.0003 (-0.61)	-0.0019 (-2.55)	0.0002 (0.10)	-0.0007 (-3.11)	-0.0004 (-0.37)	0.00002 (0.03)	-0.0019 (-1.64)
Firm tenure (FT)								
FT	0.050 (3.45)	0.055 (3.82)	0.018 (0.35)	0.123 (2.07)	0.004 (0.21)	0.106 (2.04)	-0.019 (-0.59)	-0.115 (-1.40)
FT ²	-0.0017 (-2.90)	-0.0017 (-2.50)	0.0002 (0.08)	-0.0047 (-1.25)	-0.0002 (-0.30)	-0.0053 (-1.89)	0.0008 (0.78)	0.0052 (1.62)
County dummy								
Jieshou	-0.216 (-3.63)	-0.235 (-5.05)	-0.444 (-3.13)	-0.270 (-1.27)	-0.250 (-3.28)	-0.232 (-1.35)	-0.309 (-1.92)	-0.556 (-1.46)
Shangrao	-0.221 (-2.81)	-0.405 (-4.47)	-0.502 (-2.36)	-0.615 (-3.25)	-0.655 (-6.54)	-0.356 (-1.44)	-0.987 (-3.67)	(a)
Nanhai	0.823 (8.24)	0.253 (4.40)	0.109 (0.81)	0.302 (1.05)	0.190 (1.94)	0.308 (1.46)	0.743 (3.36)	(a)
Breusch-Pagan χ^2	35.3 (8)	54.4 (8)	8.2 (8)	3.4 (8)	2.8 (8)	5.8 (8)	5.5 (8)	10.3 (8)
Adjusted R ²	0.41	0.32	0.35	0.62	0.32	0.32	0.43	0.07

Notes:

(a)=variable not added;

The Breusch-Pagan χ^2 is a test for heteroscedasticity. The degrees of freedom for these statistics are presented in parentheses following the test statistics.

't' statistics in parentheses are corrected for heteroscedasticity in columns 2 and 3 and are derived using the conventional OLS covariance matrix in columns 4, 5, 6, 7, 8 and 9.

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References

- Blinder, A. S., 1973. "Wage Discrimination: Reduced Form and Structural Estimations", *The Journal of Human Resources*, 8, pp. 436-55.
- Brown, R. S., Moon, M. and Zoloth, B. S., 1980. "Incorporating Occupational Attainment in Studies of Male/Female Earnings Differentials", *The Journal of Human Resources*, 15, pp. 3-28.
- Greene, W. H., 1990. *Econometric Analysis*, New York: Macmillan Publishing Company.
- Hawke, A., 1991. "Male-Female Wage Differentials: How Important is Occupational Segregation?" The Australian National University, Centre for Economic Policy Research, *Discussion Papers* No. 256.
- McFadden, D., 1974. "The Measurement of Urban Travel Demand", *Journal of Public Economics*, 3, pp. 303-28.
- Meng, X., 1992. *Individual Wage Determination in Township, Village and Private Enterprises in China* (Ph.D dissertation) Australian National University.
- Miller, P. W., 1987. "The Wage Effect of the Occupational Segregation of Women in Britain", *The Economic Journal*, 97, pp. 885-96.
- Oaxaca, R., 1973. "Male-Female Wage Differentials in Urban Labour Markets", *International Economic Review* (October, 1973), 14(3), pp.693-709.

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