

Are Too Many Women Crowding out Men in the Job Market?

-- A Mlogit Empirical Test of Occupational Gender Segregation in China

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Abstract: Occupational gender segregation refers to the imbalance of occupational distribution and the large gap in occupational development between women and men due to gender characteristics, which is an important manifestation of gender discrimination in the labor market. Based on the data of China General Social Survey, the Duncan Index and Carmel-MacLachlan index, two indices measuring gender occupational segregation, were used to perform multiple logit regression for the explained variables with multiple values. Gender occupational segregation was found. Finally, based on the existing research, the regression analysis of the influence of traditional gender concepts and education level shows that the improvement of traditional gender concepts and education level is helpful to weaken gender occupational segregation.

Keywords: Gender Discrimination in the Labor Market; Gender Occupational Segregation; Multinomial Logit Regression.

1. Introduction

"In every society, the degree to which women are liberated is the natural measure of total social liberation." Equality between men and women, each person will not naturally suffer losses and gain additional profits from the economic rent because of gender, this principle is not only the basic national policy of our country, but also an important embodiment of social fairness and justice. The modern society should recognize this principle as the basic idea or ideology to formulate, maintain and adjust the social order. This principle is also the primary value of the socialist system.

Labor is an extremely important one of human rights and obligations. Communism ultimately wants to realize the comprehensive free development and liberation of everyone. Whether women get real equality in labor is an important indicator of the degree of women's liberation. Gender discrimination in the labor market can be divided into direct discrimination and indirect discrimination according to its manifestations. The so-called "direct discrimination" refers to the direct and explicit restriction or exclusion of rights; Indirect discrimination refers to provisions that appear to be gender neutral but have the effect of placing a particular group at a significant disadvantage. The famous "separate but equal" is an example of indirect discrimination. Gender discrimination in the labor market can be reflected in the inequality of employment opportunities and income. It can be reflected as horizontal occupational isolation or vertical occupational isolation.

Occupational gender segregation refers to the unbalanced distribution of opportunities and probabilities for women and men to enter different occupations due to gender characteristics. Horizontal occupational gender segregation is reflected in the number of men and women in different occupations or the degree of concentration and crowding of men and women in the occupation. Many occupations exclude women in different degrees and ways. The vertical and vertical occupational gender segregation is reflected in

the different distribution of vertical indicators such as the speed of promotion and status of both sexes after entering the same occupation. Occupational gender segregation is an important manifestation of gender discrimination in the labor market.

Horizontal horizontal segregation of occupational gender refers to the distribution of men and women in different occupations, "male occupation" and "female occupation", "male farming and female weaving" are typical manifestations of this horizontal segregation. Under the effect of horizontal segregation, women are often engaged in supporting jobs with low socioeconomic status and are easily overlooked. These jobs are often low-skilled and repetitive, with long hours and little pay.

The vertical and vertical segregation of occupational gender often shows that in the same occupation, compared with women, men are promoted faster, have higher income, better development prospects, and have a higher and more authoritative status. On the contrary, women face fewer promotion opportunities and lower development limits, which has been vividly described as the "glass ceiling". Not only are there more men in what have traditionally been considered "male occupations," but in "female occupations," with the same starting position and the same endowment, men are more likely to receive better job evaluations, more opportunities for promotion, and more implicit and non-monetary income. In addition to the "glass ceiling", the "glass cliff" is also a kind of occupational gender segregation. The "glass cliff" describes the phenomenon of bringing more women into or promoting them in the face of a crisis and excluding them when the crisis is over.

In China and in many developing countries, women have a relatively late opportunity to go out of their homes and to engage in socially recognized non-domestic work that pays for the reproduction of their own and family lives. For a long time, social ideologies about gender, such as "girls read so many books to waste", "it is better to marry", "men take the outside, women take the inside", have influenced social expectations of different genders and women's self-

positioning, and women have personally worsened their employment environment without realizing it. Traditional concepts stigmatize women who work independently as witches or sluts, and place them at the bottom and edge of the social structure, and do not recognize women's rights to earn labor remuneration as independent individuals, and try to return women to the family-oriented economic model and social order in various ways. Traditional concepts oppose women's entry into industries with higher social status, power and wealth, and denigrate the necessity and legitimacy of women's education, which is not conducive to the formation of female human capital. Based on the denial of women's intelligence, the conventional wisdom is that women are not capable enough to pursue skilled careers or gain recognition and promotion within the industry. With the development of the economy, women's labor market participation has ostensibly improved significantly compared to the past, and some people have begun to argue that China's occupational gender segregation has ceased to exist, and that instead, women have used the "politically correct" advantage of gender equality to squeeze out men's employment and promotion space. Therefore, this paper attempts to empirically test whether occupational gender segregation exists in China's labor market.

Ensuring women's equal labor rights and rights, reducing and eliminating gender discrimination in the labor market, ensuring women's equal work opportunities, and obtaining the same standard and fair work evaluation are important foundations for ensuring women's other rights. Women go out of the house and engage in work that is recognized by the market and can be paid, which breaks women's economic dependence for a long time. Women's activity space extends beyond the family, and the interpersonal network extends to classmates, colleagues, superiors and friends in addition to blood relatives and in-laws, which means more possible social network support and anti-risk ability outside the family. Women's labor force has become a commodity flowing in the market, which not only enables women to obtain economic remuneration sufficient to support themselves and their families to maintain, develop and reproduce, but also the income and feedback obtained from work, which conveys to women themselves, their families and even the whole society that women have other possibilities besides taking care of their families, taking care of household affairs and being wives and mothers, and fully taps women's potential. It enables women to regain the value of unpaid household work in the family, corrects the misallocation of human resources, improves the welfare of individuals and the whole society, and is conducive to economic stability and reproduction in the long run.

2. Literature Review

In terms of the existence test and indicator measurement of occupational gender segregation, Xu Renlei (2016) discussed the horizontal and vertical dimensions of occupational gender segregation from the aspects of entry requirements, income levels, and differences in promotion and training Zhao Yuanyuan (2017) not only estimated the vertical and horizontal occupational gender segregation. Regional variables are also included in the analysis, highlighting the ways and effects of higher education levels on reducing occupational gender segregation. At the same time, studies have found that "female occupations" that theoretically isolate men hardly exist, while "male occupations" account

for nearly one-third Qing Shisong and Zheng Jiamei (2013) studied the impact of occupational gender segregation on different genders from the perspective of income. There was no significant drop in earnings for men, while there was a drop in earnings for women. Men have much to gain from occupational gender segregation. This accounts for about 30 percent of the gender pay gap. These two studies suggest that occupational gender segregation not only exists, but may also work against women.

In terms of the causes and mechanisms of occupational gender segregation and possible ways to improve it, Ebenstein (2014) studied from the perspective of cultural values and social gender, that is, traditional cultural stereotypes of men and women, and concluded that under the patriarchal family and social organization system, women leave their families and live with the families of men and their parents. This leads to a preference for men and discrimination against women. Kahn & Blau (2016) believes that horizontal occupational segregation has an increasingly important impact on women's economic status, and income and economic security are increasingly valued for the continuity of women's careers and types of industries. The explanatory power of human capital theory to gender income gap is weakening. These two works introduce the traditional gender concept elements for the follow-up research on occupational gender segregation.

Yuan Xuhong et al. (2022) used the data of China General Social Survey (CGSS2017) to verify the negative horizontal and vertical effects of gender attitudes on female employment by quantitative methods. This study also proposed that educational human capital can play a positive role in both gender attitudes and female employment. Indirectly weaken the negative effect of gender concept on female employment. Based on the data of CFPS China Family Tracking Survey (2014), Xu Yanhui and Xie Mengfan (2023) found that the improvement of gender concept is conducive to the improvement of vertical and vertical occupational gender segregation, and the modernization of gender concept improves the possibility of women's occupational status. Chen Jie and Liu Yafei (2019) deeply analyzed the endogenous issues and mechanism of the relationship between marital status and female labor participation. Compared with unmarried status, the negative effect of married status is significant, and urban women are more affected, the reason is related to receiving education and pursuing career. Zhang Xia (2017) summarized the relationship between fertility and female employment, and believed that to solve this dilemma, not only existing compensation and help measures are needed, but also women's dominant position should be enhanced and efforts should be made to promote the improvement of gender concepts inside and outside the family. Li Xiangrong (2017) found that occupational gender segregation is different for different graduation school levels and different graduation degree levels. The degree of occupational gender segregation is also related to the majors graduates study. Li Xiangrong also proposed that the nature of different employment units has an impact on the different performance of occupational gender segregation. Based on the heterogeneity analysis of China's Labor Dynamics Survey (CLDS), Li Jianqi (2022) believes that digitalization has a greater role in promoting the employment and wage income of young and highly educated women, and it can eliminate part of occupational gender segregation.

In summary, it can be found that the existing studies on occupational gender segregation in the labor market at home and abroad mainly focus on two aspects: one is the theoretical exploration of the causes of occupational gender segregation, and the current widely recognized causes of occupational gender segregation are mainly education level and gender concepts; the other is the empirical test of the integrity of occupational gender segregation and the existence of different industries. The current mainstream view is that with economic development, the problem of gender occupational segregation will not be solved "automatically". Gender is itself a class. Through its bondage to marriage and procreation, gender inequality reproduces class inequality and itself. Moreover, to the dismay of technologists, the Internet space is not gender-neutral, and technological progress is not a sufficient condition for addressing occupational gender segregation.

In the traditional gender concept, the gender division of labor in the "master" requires women to undertake housework, bear children, and take care of the elderly. The economy under the patriarchy requires a large number of cheap labor that is readily available, and the patriarchy requires the fruits of women's reproductive labor, and at the same time, the basic condition of social reproduction is a sufficient number of people to reproduce. Under the dual pressure of traditional concepts and economic needs, women have gained the right to work, but in a sense, the situation of women has worsened. With the development of social history, the modern economy needs more and more labor, and the law of real decline in the rate of profit and wages raises the cost of living for individuals and families: this means that women have to bear more and more of the labor of producing and raising children and caring for the elderly, and at the same time, the urgent need to work to maintain personal and family life under the capitalist system. The dual pressures of time and finance have led women to take support jobs. Domestic work, marriage, childbearing and care work reduce women's available time for learning and development, reduce women's education in general, and do not contribute to the formation of women's human capital. Women's disadvantage in education and human capital increases horizontal segregation between the sexes. According to the materialist view that social existence determines social consciousness in the final analysis, this horizontal horizontal separation between the sexes further consolidates the traditional concept of gender.

Under the discipline of traditional gender concepts and division of labor, men and women face different social rules and evaluation standards. This is one of the root causes of occupational gender segregation. Women should always take care of the family and bear more family responsibilities. Young women enter the workforce in the accumulation phase, and this accumulation process is often disrupted or interrupted by marriage, having children, raising children and engaging in domestic work. Men's careers tend to be more continuous. This has resulted in the disadvantage of women's energy and time investment, reduced the investment in women's education, hindered the formation of women's human capital, and resulted in women's inferior status among occupations and in the same occupation, which in turn maintains and reproduces biased traditional gender concepts. This cycle is the reason for the formation and maintenance of occupational gender segregation in both vertical and horizontal dimensions.

Based on existing studies, this paper empirically tests the overall existence of occupational gender segregation, and

simultaneously compares the occupational gender segregation in multiple industries. The marginal contribution of this paper is also to the question "Which factors in industries of different natures are the main reasons for weakening occupational gender segregation in this industry?"

3. Data Selection and Empirical Test

Based on the data of China General Social Survey, this paper divides different jobs into 5 categories as virtual explained variables according to the nature of work units. First, the two indexes of gender occupational segregation, Duncan index and Carmel-MacLachlan index, were measured. Then stata software was used to perform multiple logit regression for the explained variables with multiple values, taking gender dummy variables as explanatory variables. Finally, based on the corresponding existing research, regression analysis of the influence of traditional gender attitudes and education level is conducted to study whether the change of traditional gender attitudes and the improvement of education level can help weaken gender occupational segregation.

3.1. Duncan Index Measure & Carmel-Maclachlan Index Measure

Duncan index measure

$$D = \left\{ \sum_{i=1}^j |(W_i/W) - (M_i/M)| \right\} / 2 \quad (1)$$

Where, D is Duncan index, W_i is the number of women in occupation i , W is the number of women employed, M_i is the number of men in occupation i , M the number of men employed, j is the total number of occupations. If D is zero, there is no occupational gender segregation. If the D -index is 1, the corresponding occupation completely isolates the other gender.

Carmel-maclachlan index measure:

$$I_p = \left\{ \sum_{i=1}^j |(1-a)W_i - aM_i| \right\} / T \quad (2)$$

Where, T is the total employment, a is the proportion of women in the total employment, and the other variables represent the same meaning as the Duncan index.

Relation between Duncan index and Carmel-MacLachlan index:

$$I_p = 2a(1-a)D \quad (3)$$

Both indicators are relatively large, which can be considered as the existence of occupational gender segregation.

3.2. Mlogit Empirical Test of Occupational Gender Segregation

Using gender dummy variable as explanatory variable, multinomial logit regression was performed for explained variables with multiple values.

The test results are shown above. As can be seen from the figure, whether the male occupation is significant for the party and government organs, public institutions. Compared with women, men are more likely to hold jobs in party and government organs and public institutions. In at least these two job categories, there is gender occupational segregation to the disadvantage of women.

Table 1. Multinomial logit regression the in the existence of occupational gender

Categories	Coefficient	Std.err.	Z	P> z
Party & government offices	.3768432	.1584582	2.38	0.017
	-2.337271	.1269895	-18.41	0.000
Enterprise	.0901077	.0670192	1.34	0.179
	.2151572	.059655	4.25	0.000
public institution	-.4358477	.0961995	-4.52	0.000
	-.7637647	.0668523	-11.42	0.000
Social organizations	-.3192951	.1956758	-1.63	0.103
	-2.496335	.1366083	-18.27	0.000
Self-employment	(base out come)			
Others	-.0823217	.1986914	-0.41	0.679
	-2.644755	.1463573	-18.07	0.000

Note: log likelihood = -6099.4325, Prob > chi2 = 0.0000, R² = 0.0034.

Table 2. Wald test

*wald test of the joint significance of sex
test sex
(1) Party and government offices sex = 0
(2) Enterprise sex = 0
(3) public institution sex = 0
(4) Social organizations sex = 0
(5) Self-employmento sex=0
(6) Others sex = 0
Constraint 5 dropped
chi2(5) = 41.45
Prob > chi2 = 0.0000

The gender variable was obviously highly statistically significant.

Based on the calculation of indicators and multiple logit regressions, it can be concluded that gender occupational segregation exists in the temporal range reflected in the survey data in the table.

3.3. Mlogit Empirical Test of Influential Factors

Female samples were retained, and multiple logit regressions were conducted using traditional gender attitudes and education level as explanatory variables to study whether changes in traditional gender attitudes and improvement in education level contributed to weakening gender occupational segregation.

Table 3. Female samples were retained, and multiple logit regressions were carried out with traditional gender concepts as explanatory variables

Categories	Coefficient	Std.err.	Z	P> z
Party and government offices	-.5016072	.4802111	-1.04	0.296
	-1.983298	.2753924	-7.20	0.000
Enterprise	-1.057444	.2121262	-4.98	0.000
	.5969191	.1192678	5.00	0.000
public institution	-1.297614	.3110257	-4.17	0.000
	-.3606145	.1494396	-2.41	0.016
Social organizations	-.769086	.5408393	-1.42	0.155
	-2.052291	.2839065	-7.23	0.000
Self-employment	(base out come)			
Oters	-1.125763	.6616236	-1.78	0.089
	-2.206441	.3041507	-7.25	0.000

Note: log likelihood = 779.01707, R² = 0.0212.

Table 4. Wald test

*wald test of the joint significance of atti
test sex
(1) Party and government offices atti=0
(2) Enterprise atti=0
(3) public institution atti=0
(4) Social organization satti=0
(5) Self-employmento atti=0
(6) Oters atti=0
Constraint 5 dropped
chi2(5)=33.06
Prob > chi2=0.0000

The improvement of traditional gender attitudes has a significant impact on enterprises and public institutions. It is easier for women without traditional gender concepts to enter

public institutions, weakening the occupational segregation of women in public institutions and enterprises.

In the same way

Table 5. Female samples were retained, and multiple logit regressions were carried out with education level as explanatory variables

Categories	Coefficient	Std.err.	Z	P> z
Party and government offices	.3833541	.0401574	9.55	0.000
	-4.856397	.3588957	-13.53	0.000
Enterprise	.2914458	.0186646	15.61	0.000
	-1.574005	.1200116	-13.12	0.000
public institution	.4593069	.025378	18.10	0.000
	-4.033443	.2143077	-18.82	0.000
Social organizations	.2895741	.0406312	7.13	0.000
	-4.228788	.3288564	-12.86	0.000
Self-employment	(base out come)			
Others	.0830199	.0491162	1.69	0.091
	-3.032497	.2972864	-10.20	0.000

Note: log likelihood = -2316.5958, R²=0.1055.

The level of education had a significant effect on each occupation. The higher the level of education, the easier it is to enter every profession. Higher levels of education have greatly reduced the extent and scope of gender occupational segregation.

4. Conclusion and Suggestion

Combined with the Duncan Index and the Carmel-mclachlan Index and multiple logit regressions, gender occupational segregation is found. Female samples were retained, and multiple logit regressions were carried out with traditional gender concepts and education level as explanatory variables to study whether the change of traditional gender concepts and the provision of education level can help weaken gender occupational segregation. It was found that the improvement of traditional gender concepts and education level can help weaken gender occupational segregation.

One of the empirical results: whether it is male or not is significant when the occupation is party and government organs and public institutions. Compared with women, men are more likely to hold jobs in party and government organs and public institutions. This may go against the prevailing stereotype that there are too many women in the civil service and the establishment. As jobs with high social status and income, party and government organs and public institutions are still male-friendly. The discrepancy between the popular discourse and the actual situation reflects the suppression and suppression of women by male preference thoughts.

The results of multiple logit regressions using traditional gender concepts and education level as explanatory variables show that women without traditional gender concepts are more likely to enter public institutions, and the higher the education level, the easier it is to enter every occupation. This result means easing or eliminating occupational gender segregation. On the one hand, it is necessary to increase the resource inclination and protection for women, improve women's education level, and enable women to have stronger professional ability and professional quality. On the other hand, the role of gender concept in improving women's occupational situation should be paid attention to.

How to alleviate or eliminate occupational gender segregation and eliminate gender discrimination is a problem

that more and more countries in the world pay attention to. Different countries have put forward policies, regulations, guidelines and corresponding promotion measures with different focuses. In 2005, China promulgated the "Law on the Protection of Women's Rights and Interests", the "Employment Promotion Law" promulgated and implemented in 2008, and the survey of the social status of Chinese women once every ten years since 1990, all reflect the Party and the State's attention and attention to gender discrimination. In December 2021, the Law on the Protection of Women's Rights and Interests was overhauled. The law's endorsement of the principle of eliminating weakening occupational gender segregation makes it feasible and the most powerful weapon to weaken occupational gender segregation. Improving social gender equality awareness, narrowing the living space of traditional gender concepts, and ensuring the quantity and quality of female education are the most effective ways to weaken occupational gender segregation. Strengthening supervision over occupational gender segregation is a reliable guarantee for achieving true employment equality. To improve occupational gender segregation, it is necessary to encourage women to expand their employment options according to their own conditions, open up new employment space, and break occupational gender stereotypes and self-constraints. In important key positions and key occupations with serious gender segregation, quotas shall be implemented in appropriate ways and methods to ensure a reasonable balance of gender. We will promote a maternity leave system for both husband and wife, so that the two sexes can share the cost of childbirth and family work, and reduce the economic pressure and concerns of enterprises to hire and promote women.

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References

- [1] Selected Works of Marx and Engels [M]. Central Compilation and Translation Bureau. People's Publishing House.2012.

- [2] Patriarchy and Capitalism [M]. (Japan) Chizuko Ueno. Zhejiang University Press.2020.
- [3] Gu Yue. Career Women in Ming and Qing Society: Centered on the shunting of the status of a stable woman [J]. Journal of Women's Studies,2021(04):113-122.
- [4] Xu Renlei. Analysis of Gender discrimination in Employment -- Based on Human capital Theory [J]. Modern Commerce Industry,2016,37(09):78-80.
- [5] Zhao Y Y. Trend analysis of occupational gender segregation in urban areas of China [J]. Population Journal,2017,39(05):56-66.
- [6] Qing Shisong, Zheng Jiamei. Job gender segregation and income stratification [J]. Population of Southern China, 2013, 28 (06):62-68.
- [7] Ebenstein A. Patrilocality and Missing Women[R]. SSRN, Working Paper, 2014.
- [8] Blau F D,Kahn L M The gender wage gap:Extent,trends,and explanations [R]. National Bureau of Economic Research 2016.
- [9] Yuan Xuhong, Zhang Huaizhi, Pan Yijin et al. Is gender inequality constraining women's employment? Evidence from China General Social Survey (CGSS2017) [J]. China Human Resources Development,202,39(12):112-130.
- [10] Xu Yan-hui, Xie Meng-fan. Gender perception and female occupational status promotion: An analysis based on CFPS Family Tracking Survey in China [J]. Journal of Shandong Women's University,2023(04):56-66.
- [11] Chen Jie, Liu Yafei. The effect of marital status on female labor participation: A study on the endogeneity of participation [J]. Population Journal,2019,41(04):28-40.
- [12] Zhang Xia. Rethinking the dilemma of Chinese women's employment and childbearing -- from the perspective of women's dominant position [J]. Reform and Strategy, 2017, 33 (10):48-52.
- [13] Li Xiangrong. The characteristics and heterogeneity of gender discrimination in starting salary of college graduates [J]. China Youth Research,2017(08):78-84. (in Chinese)
- [14] Li Jianqi. Digital transformation, unconventional skills premium and female employment [J]. Journal of Finance and Economics, 202,48(07):48-62. (in Chinese)