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Marketization, occupational segregation, and gender earnings inequality in urban China

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ABSTRACT

This article analyzes a large sample of the 2005 population mini-census data and prefecture-level statistics of China to investigate gender earnings inequality in the context of economic marketization, paying special attention to the changing role of occupational segregation in the process. We approximate marketization by employment sectors and also construct an index of marketization at the prefecture level. Results show that, despite the tremendous economic growth, marketization has exacerbated gender earnings inequality in urban China's labor markets. Gender earnings inequality is the smallest in government/public institutions, followed by public enterprises, and then private enterprises. The gender inequality also increases with the prefecture's level of marketization. Multilevel analyses show that occupational segregation plays an important role in affecting gender earnings inequality: the greater the occupational segregation, the more disadvantaged women are relative to men in earnings in a prefecture's labor market. Moreover, the impact of occupational segregation on gender earnings inequality increases with the prefectural level of marketization. These findings contribute to understanding the dynamics of gender earnings inequality and have important implications for policy to promote gender equality in urban China.

1. Introduction

Gender inequality in education, employment and earnings in Western societies has been well documented in the sociological and economic literature. Scholars have found a decline in gender inequality over time, and the temporal change is closely associated with other secular trends such as economic development and educational expansion (Reskin, 2003). While economic development and industrial upgrading have created a greater market demand for labor, the expansion of education—typically favoring women—has produced a larger, skilled female workforce for the service economy. Women's increasing engagement in paid work, especially since World War II, has profound implications for both the supply of labor and gender inequality (Goldin, 1990; Juhn and Potter, 2006).

Despite the huge progress made in achieving gender egalitarianism in education, gender pay gaps persist in labor markets in almost all developed countries (e.g., Blau and Kahn, 2007; Hausmann et al., 2009). Occupation can explain a

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significant portion of these pay gaps (Kim and Sakamoto, 2008; Mouw and Kalleberg, 2010). A gender pay gap exists within and across occupations primarily due to two distinct processes. In the first process, men and women are allocated to different occupations based on their personal attributes (including human capital) and also employers' preferences, thereby receiving different wages. This cross-occupation earnings inequality essentially reflects unequal "access" to differentially rewarding jobs for men and women, known as "occupational gender segregation" as the structural source of gender inequality in the labor market (Gross, 1968). In the second process, workers holding jobs of a similar nature and complexity may be paid differentially. While occupational segregation could be a result of "allocative discrimination" (Petersen and Saporta, 2004), in which women tend to concentrate in lower-paid occupation whereas men tend to concentrate in higher-paid ones, men and women's differential access to certain occupations may also have resulted from their own preferences and choices. For instance, women may prefer certain occupations over others. Empirical studies have shown that, occupational gender segregation can account for most part of gender pay gap (e.g., Marini, 1989), whereas the pay penalty within an occupation—measured by the unexplained earnings gap after taking into account the individuals' characteristics and structural position—is often cited as the evidence of wage discrimination against women.

These two mechanisms, undoubtedly, operate by the market principle subject to supply and demand constraints and the maximization of productivity. In other words, the market is implicitly a major agent creating gender inequality in western capitalist economies. On the other hand, the state plays an important role in ameliorating women's disadvantages in labor markets, not only through legal regulations that prohibit open discrimination against women (e.g., Beller, 1982), but also through various social policies, such as maternal leave and subsidized childcare, to ease married women's role conflict between paid work and housework (Chang, 2015). This helps facilitate female's labor force participation and promote gender equality in markets in many welfare states (Esping-Anderson, 1990; Orloff, 1996). For instance, gender earnings gaps are much lower in Scandinavian countries where family-friendly policies are adopted than in other western capitalist countries (Esping-Anderson, 1999).

Whereas the idea of the welfare state was primarily conceived with reference to western countries, the socialist state has played a similar but perhaps even more visible and direct role in promoting gender egalitarianism (Whyte and Parish, 1984). The Constitution of China in 1954 clearly stipulated gender equality and encouraged women to participate in the labor force. By virtue of the work unit (*danwei*) and the unified wage systems under the redistributive principle, the communist government successfully implemented various policies aiming to achieve "equal pay for equal work" and strictly prohibited discrimination against women. Severe discrimination against women in urban China can be found only in isolated pockets where the egalitarian state could not reach (Honig and Hershatter, 1988; Wang et al., 2008).

The introduction of market forces into a socialist redistributive economy and the subsequent expansion in China have provided scholars a unique opportunity to examine the institutional dynamics of the state and the market in reshaping gender stratification in a single-country setting. While numerous studies have focused on the changing effects of political capital and human capital on social stratification in the 1990s, notably under the theoretical framework of the "market transition debate" (Nee, 1989; Bian and Logan, 1996; Szelenyi and Kostello, 1996; Walder, 2002; Xie and Hannum, 1996; Zhou, 2000), the driving forces behind women's changing socioeconomic attainment have yet to be examined, both empirically and theoretically.

In this article, based on a large sample of data from the 2005 China population mini-census, along with social and economic indicators at the prefectural level, we aim to examine the impact of marketization on gender earnings inequality. By "marketization", we refer to the process in which the influence of the redistributive state is declining and the influence of the market forces is rising in China's rapid socioeconomic transformation over the past decades. We also investigate the specific role played by occupational gender segregation in this process, namely, how marketization affects the role of occupational gender segregation in creating gender inequality in the era of China's rapid economic development.

2. Gender stratification amid urban China's economic transition

From an institutionalist perspective, redistribution and the market are two distinctive mechanisms of resource allocation and social stratification. Both mechanisms could be at work in an economic system to jointly shape the pattern of social inequality among different social groups. Whereas inequality under state socialism is mainly the result of the redistribution, inequality under modern capitalism is generated based on the market principle (Szelenyi, 1978, 1983). The transition from state socialism to market capitalism thus had altered the pattern of social inequality in China since 1978.

One aspect of the institutional transition directly relevant to changing social stratification is the emergence and subsequent expansion of labor markets in urban China (Wu and Xie, 2003). In the pre-reform era, the Chinese economy had been dominated by state and collective enterprises, the two forms of public ownership. State control also penetrated non-profit institutions such as hospitals and schools, which were fully funded by the government (Bian, 1994). Under the urban work unit (*danwei*) system, government/party agencies, institutions and public enterprises were the major employer of the urban labor force, and all workers were assigned to work units and received wages as a part of the state redistributive plan (Wu, 2002). As the economic reform proceeded, most state-owned enterprises (SOEs) were forced to compete in the market. They were granted more autonomy in the recruitment, remuneration and dismissal of their employees than before (Wu,

2010). The private sector, at the same time, grew to become the most dynamic part of the Chinese economy, offering a myriad of job opportunities for school leavers and laid-off workers. As a result, China's urban labor market was fundamentally transformed. Job mobility surged from the mid-1990s onwards (Li, 2013): the proportion of urban employees who worked in state and collective sectors fell from 81.5 percent in 1990 to 23.5 percent in 2008, whereas the proportion of those employed by private and other types of companies rose from 14.9 percent to 64.5 percent within the same period (the remaining were self-employed) (National Bureau of Statistics, 2009).

Such substantial changes in urban labor markets are an integral part of China's marketization process, have yielded profound impacts on the rising inequality among different social groups. A systematic review of changing social inequality is beyond the scope of this article. Instead, in what follows, we will elaborate on how marketization affects women's economic status and well-being in reform-era urban China.

1 Marketization and Women's Economic Status

While rapid economic growth in China triggered by the economic reform has created new job opportunities for people and expanded their employment scope, working women have also had to endure more workplace discrimination and prejudice in the process of market liberalization (Nee and Matthews, 1996; Ngo, 2002). In other words, as the traditional *danwei* system was gradually dismantled under Chinese socialism, working women have lost the institutional protection afforded by the socialist state once committed to gender egalitarianism.

First, the labor contract system had replaced the life-long employment system with cradle-to-grave welfare in work units since the mid-1980s. Most SOEs were forced to compete in the market. With the emergence of the competitive urban labor market, these enterprises were granted more autonomy in the recruitment, remuneration and dismissal of their employees than before. At the same time, workers also gained the freedom to choose jobs. Based on workers' performance, the employment contract could then be renewed or terminated after a fixed term. Second, under waves of restructuring and downsizing in the late 1990s, SOEs were allowed to streamline their workforce to increase their competitiveness in the market. In large-scale state sector layoffs, the main victims were less educated, middle-aged workers, and women (Wu, 2010). Finally, the private sector grew to become the most dynamic part of the Chinese economy, offering a myriad of job opportunities for school leavers and laid-off workers. A significant proportion of private enterprises in the sector are in light industries manufacturing clothes, shoes, and consumer electronics, or in service industries catering for people's daily lives. These industries absorb a large number of female workers earning low wages. Unlike their counterparts in the state sector, these private firms emphasize economic efficiency over social justice when recruiting employees. They hire workers at their own discretion with little government intervention, often based on how closely workers' skills and potential productivity match the job requirements (Wu, 2002).

These structural changes in urban labor markets have led to open discrimination against women in the process of recruitment and work assignment. With the decline of communist gender ideology once backed by the state-owned work units, the traditional patriarchal values had been revived to a certain extent. Women are expected to fulfill their family obligations and to choose jobs more suitable for them (Wu et al., 2014). The enterprise reforms have sought to convert state work units to more profit-oriented entities that are less dependent on administrative fiats. This translates into more work pressure on employees, especially for married women with family obligations. When the SOEs were downsized, women were more likely to be transferred to jobs with lower pay, or to be laid off altogether. Women in China are normally expected to get married and to give birth. Given their roles within the family, women are perceived to be less committed to work and more likely to quit for family reasons than men, a pattern that appears to be true statistically (Cao and Hu, 2007). When hiring new employees, because it is almost impossible to tell how suitable a candidate really is for the job, employers tend to base employment decisions partly on certain visible features such as gender, and thus likely practice “statistical discrimination” against women in labor markets.[1] As a result, gender becomes an important factor in hiring and remuneration decisions (Zhang et al., 2008b). For certain positions, employers may prefer to hire men, as they anticipate that women would be less committed to work and would invest less into their career upon getting married and giving birth, leading to disparities in occupational distribution between working men and women. For the same reason, women workers also suffer from within-occupation wage discrimination, in addition to allocative discrimination.

Indeed, despite the fact that women have been catching up with men in educational attainment since the late 1980s (Laverly et al., 1990; Wu and Zhang, 2010), female labor force participation rates in urban China has dropped over time. Starting in the late 1950s and throughout the Maoist period, over 90 percent of married Chinese women were engaged in paid work (Wolf, 1985; Xu et al., 2014; Zuo and Bian, 2001). This rate remained roughly the same (89.4 percent) for all women aged 21–50 as of 1990 prior to the sweeping marketization, but it dropped to 63.5 percent in 2005 (Wu and Zhou, 2015). Women's earnings relative men's also declined at the same time, from 86.3 percent in 1988 to 76.2 percent in 2004 (Zhang et al., 2008a).

[1] According to the economic literature, even when an economic agent (e.g., consumers, employers) is rational and non-prejudiced, “statistical discrimination” can still exist when stereotypes based on a group's (e.g., women's) average behavior are relied upon (Arrow, 1998; Becker, 1957; Phelps, 1972).

2 Changing Occupational Segregation and Gender Earnings Inequality in Marketization

Accompanying the rapid economic growth in China is rising income inequality. The Gini coefficient—a common measure of income distribution—increased from 0.317 in 1978 to over 0.5 in 2012 (Xie and Zhou, 2014). With the emergence of urban labor market and the increase in job mobility, occupation, as the "backbone of reward structure" (Park, 1971, p18), has become more important than work units in determining earnings (Bian, 1994; Zhang and Wu, 2017). Compensations associated with occupations are now more differentiated than before.

According to Reskin (1993), in the labor market there are queues for jobs and there are queues for workers. Employers hire as many workers from the labor queues as they need, whereas workers accept the best jobs available to them. Unequal access to occupations may result not only from employers' allocative discrimination against women on the demand side (Petersen and Morgan, 1995), but also from differences in human capital (e.g., education, experience, and occupation-specific skills) between men and women, or from individuals' choice and preferences on the supply side (Gerson, 1985). As gender preference for different jobs is deeply rooted in cultural traditions, marketization could render employers more discretion in practicing allocative discrimination, believing that men and women possess fundamentally different skills (Becker, 1957; Charles and Bradley, 2009). Among those employed, women may show greater commitment to family than to work, and so they may opt for less demanding and more flexible jobs that typically come with lower pay, or simply withdraw from the labor markets altogether.

Hence, rapid marketization has altered the labor queues and job queues in urban China and affected men and women's access to high-paying occupations differentially, leading to a higher level of occupational gender segregation in which men tend to fill jobs with better pay and women tend to be left with the lower paying ones (Li and Xie, 2015; Shu, 2005; Wu and Wu, 2008). There is also some evidence suggesting that the occupation gender segregation, measured by the index of dissimilarity (Duncan and Duncan, 1955), increased from 1982 to 2010, or at least up to the 1990s in the non-agriculture sector (Wu and Wu, 2008; Li and Xie, 2015). Since occupational gender segregation can explain most of the earnings disparities between men and women in western market economies (Marini, 1989; Cohen and Huffman, 2003; Jacobs, 1989; Treiman and Hartmann, 1981), it may also play an important role in exacerbating gender earnings inequality in urban China with further marketization.

To be certain, the trend in occupational gender segregation may be affected by other dimensions of socioeconomic changes. For instance, over the past four decades, multiple interrelated macro-level forces have been jointly shaping the pattern of gender inequality in China, but in diametrically opposing ways. The transformation of the economic structure (from an agriculture-oriented primary industry to a manufacture-oriented secondary industry, and further to a service-oriented tertiary industry) and the expansion of education may also have yielded an impact on gender earnings inequality. More specifically, educational expansion—along with more jobs available in the tertiary sector—could boost female labor force participation, increase returns to human capital, and improve women's chances of entering higher status occupations that are traditionally dominated by men. Accordingly, women's earnings disadvantages relative to men's would be reduced if occupational gender segregation declines over time.

In this article, we focus on the effect of marketization on gender earnings inequality and the role of occupational segregation in this process. We argue that marketization pushes women into even more disadvantaged positions in urban labor markets, through either increasing occupational gender segregation or direct wage discrimination, resulting in worsening gender earnings inequality in urban China, even though the negative consequences may partially be offset by the upgrading of the economic structure and the educational expansion in the course of economic development.

3. Research design and hypotheses

As discussed in the introduction, our broad goal is to assess the distinctive roles of the state and the market in the process of gender stratification. We examine the dynamics of gender stratification in a unique setting of marketization in China. The difficulty in the empirical analysis lies in how to operationalize the process of marketization. A common measure is the passage of time (Bian and Logan, 1996; Nee, 1989; Shu and Bian, 2003; Zhou, 2000), and thereby temporal changes are often attributed to the result of the marketization. This approach has limitations because it cannot differentiate the effect of marketization from that of other socioeconomic forces in altering patterns of social inequality. These forces include economic development and educational expansion, which are also associated with the time change (He and Wu, 2014).[2] Moreover, marketization does not always increase linearly over time (Szelenyi and Kostello, 1996).

Given the differentiation among work units and the emergence of the urban mixed economy in contemporary China, it seems logical to compare gender stratification regimes across different employment sectors. Based on a sector's closeness to the market, difference in earnings determinations between men and women can be interpreted as the consequence of marketization (e.g., Tang and Parish, 2000; Wu, 2002). A fine-tuned classification of work units—government/public institutions, public enterprises, private enterprises and self-employment—forms an often used continuum approximating the

[2] For instance, based on the China Household Income Project (hereafter, CHIP) in 1988 and 1995, Shu and Bian (2003) found that gender earnings inequality remained unchanged during the period examined. One reason was that different forces affected gender inequality over time, but not necessarily in the same direction.

decline in the influence of the redistributive state and the rise in the influence of market forces (Wu and Song, 2014; Zhou, 2000). As the first step, we employ this research design to examine the gender disparity across work sectors and show how marketization has affected women's earnings relative to men's in urban China. Based on our discussion in the preceding session, we propose the first hypothesis:

Hypothesis 1a. *Gender inequality increases with the degree of marketization of work sectors. In other words, earnings differentials between men and women are the smallest in government/public institutions and the largest in the private sector, with those in public enterprises falling somewhere in between.*

Although data on the sector-based measures are not difficult to collect and the sectoral continuum is theoretically appealing, employment sectors may differ in many ways (e.g., occupation structure), and so any implications for gender stratification would be ambiguous, especially those regarding the role of occupational segregation. This approach also overlooks the fact that labor market, if assumed to be operational, is fluid at the local level (Wu and Xie, 2003).

An alternative approach in previous literature is to approximate the local context of marketization with regions, either by developing a typology of regions, often on the basis of provinces (Cohen and Wang, 2009; Nee, 1996; Parish and Michelson, 1996), or using specific regional statistics (e.g., regional economic growth rate as in Xie and Hannum, 1996)). We improve this approach by further adopting an explicit and concrete measure of marketization and differentiate its effect from that of other confounding factors. Based on a large sample of cross-sectional data, we construct a composite index of marketization by taking advantage of prefecture-level statistics (see the appendix for details), and measure local labor market conditions across different prefectures in China. We thus propose the following hypothesis in line with Hypothesis 1a:

Hypothesis 1b. *The more marketized a prefecture is, the larger the gender earnings gap in that prefecture.*

Men and women are sorted into sex-type jobs, which at the aggregate level display the pattern of occupational gender segregation. Regions with a higher level of occupational gender segregation are associated with more structural barriers and normative constraints that tend to make it difficult for women to enter occupations dominated by men. Even if a woman succeeds in entering a male-dominated occupation, she is usually paid lower earnings because of gender stereotypes. To highlight the important role of occupational gender segregation in generating labor market inequality between men and women in urban China, as is the case elsewhere, we propose to test Hypothesis 2 as follows:

Hypothesis 2. *The higher gender segregation is in a prefecture, the larger the gender earnings gap in that prefecture.*

As aforementioned, we examine the impact of occupational segregation on gender earnings inequality in urban China's transitional labor markets. Because marketization tends to increase the effect of occupational gender segregation, which plays an important role in gender earnings inequality, we expect that marketization would enhance the role of segregation in the earnings gap between men and women. More specifically, we propose the following two hypotheses:

Hypothesis 3a. *The more marketized an employment sector is, the greater the negative effect of occupational segregation on the gender earnings gap.*

Hypothesis 3b. *The more marketized a prefecture is, the greater the negative effect of occupational segregation on the gender earnings gap.*

We test these hypotheses in the following section. We first examine how the gender earnings gap varies by marketization level measured by sectoral differences and the prefectural marketization index. We then construct the prefecture-level occupational gender segregation index to investigate how the gender earnings gap changes according to the degree of segregation. Finally, we show how the effect of occupational gender segregation on the gender earnings gap varies with the level of marketization.

4. Data and variables

4.1. Data

The data we analyze are extracted from a large subsample of the one-percent population mini-census of China in 2005. This multi-stage stratified clustering probability sampling survey was conducted by the National Bureau of Statistics to collect social and demographic information on the national population in China between two censuses. Unlike previous censuses and mini-censuses, the survey in 2005, for the first time, collected information on respondents' earnings, work unit sector, working hours, and fringe benefits, in addition to employment status, detailed occupation (2-digit code), *hukou* status, place of *hukou* registration, current place of residence, education and other demographics (Wu and He, 2015; Zhang and Wu, 2017). Compared to the academic survey data collected by research institutes, the mini-census has a much larger sample size, enabling us to link individuals to the small geographic units where they reside (i.e., prefecture), and also to compute the fine-tuned measure of occupational gender segregation in the local labor market.

We restrict the analysis to the non-farm working population in urban areas who were aged between 18 and 54 at the time of survey. We also match the individual-level data from the mini-census to prefecture-level statistics. After deleting cases with missing data at either the individual or prefectural level, we are left with 577,363 observations from 283 prefecture-level jurisdictions in 29 provinces of China. As far as we know, no other source of available data is comparable to the 2005 mini-census for the purpose of investigating the research questions here.

4.2. Variables and measures

Our main research interest in this article is gender earnings inequality. The mini-census solicited information on monthly income using the item "income in the last month" (October 2005), including wages/salary and other sources of work income such as that from self-employment. Thus income here, primarily wages, is almost identical to earnings. As the labor markets and employment have become increasingly flexible in China and individuals' working hours vary substantially, we compute the hourly wage rate and take its logarithm as the dependent variable in the following analysis.

At the individual level, our key independent variable is gender, coded as a dummy (1 if female and 0 otherwise). Other individual characteristics include years of schooling, work experience, as well as marital status, whether or not respondent lived with children under age 15, *hukou* status, ethnicity, employment sector, and occupation. We convert respondents' level of education to years of schooling: illiterate = 0; primary school = 6; junior high school = 9; senior high school = 12; specialized college = 15; university = 16; and graduate school = 19. To measure the potential work experience, we deduct age from 7 plus the years of schooling, and also add a squared term to capture the curvilinear relation between work experience and earnings (Mincer, 1974). Marital status, whether or not respondent lived with children under age 15, and *hukou* status are all coded as dummies (1 if married and 0 otherwise; 1 if lived with children under 15 and 0 otherwise; 1 if rural *hukou* and 0 otherwise). Ethnicity is also coded as a dummy (1 if ethnic minority and 0 otherwise). Employment sector is coded into three categories (1 = government/public institutions; 2 = public enterprises; and 3 = private enterprises) to approximate the varying influence of market forces. We exclude self-employment from the analysis here, as we are dealing with wage workers. Occupation is coded into 5 categories: 1 = managers; 2 = professional/associate professionals, 3 = office clerks; 4 = service workers; and 5 = manual workers. Both sector and occupation are treated as a set of dummy variables in multivariate analyses.

We employ the dissimilarity index to measure the difference in occupational distribution between men and women, i.e., occupational gender segregation (Duncan and Duncan, 1955).[3] While the index, a continuous variable ranging from 0 to 1, has been criticized for its sensitive to the relative size of workers in an occupation, other more sophisticated measures, such as standardize dissimilarity index (Gibbs, 1965), or the A index that is margin free (Charles and Grusky, 2004), have their own limitations. We decided to use the simple measure in the subsequent analysis to make results more interpretable. On the other hand, although the dissimilarity index *per se* does not imply which group is at a disadvantaged position, in the case of the occupation segregation between men and women, it is self-evident that the higher segregation index, the more concentrated women in lower-paid occupation. Hence, we take advantage of the large sample size of the mini-census and compute the dissimilarity index at the prefectural level to measure the occupational segregation in the local context. GDP per capita at the prefectural level is used as a control variable to measure the development of local economy.

Another key contextual variable of our interest is marketization of the local economy, which is measured by a composite index we construct based on the socioeconomic statistics at the prefectural level from the *China City Statistical Yearbook* in 2005 (National Bureau of Statistics, (2006)). The indicators we select include the share of employment in the tertiary industry, the share of employment in the private sector, gross industry output value (GIOV), GDP per capita, education expenditure, the share of fiscal budget in local GDP, and among others, based on which we extract two common factors via factor analysis and construct the composite index of marketization and the composite index of economic development (see details in Appendix and also in He and Wu, 2014).

Table 1 presents descriptive statistics for selected variables in the analysis. As shown in the table, the average hourly wage is 6.74 *yuan* for men and 5.48 *yuan* for women. In other words, men on average earn 22.9 percent [= (6.735−5.482)/5.482] more than women per hour. Of course, the disparity may be due to different characteristics between men and women associated with earnings: men tend to have more schooling and more work experience than women. In this sample, men received 10.88 years of schooling on average and had 18.72 years of work experience, whereas women received 10.74 years of schooling and had 16.78 years of work experience. The gender differences in education are not as substantial as we expected. However, there is a clear gender difference in the distributions of employment sectors and occupation. Women are more likely to work in government/public institutions or the private sector, and are also more likely to work as professionals and service workers. As shown in the last two columns of Table 1, all the differences except for those in professional occupations are statistically significant ($p < 0.001$).

[3] The index of dissimilarity refers to the percentage of females/males that would have to move to different occupations to produce a distribution that is the same as that of the opposite sex. The basic formula is $\frac{1}{2}\sum_{j=1}^{N}\left|\frac{f_j}{F}-\frac{m_j}{M}\right|$, where f_j = female workers in the *jth* occupational category (2-digit classification), F = total female workers in the sample, m_j = male workers in the *jth* occupational category (2-digit classification), M = total male workers in the sample, and N = the total number of occupations.

Table 1
Descriptive statistics of selected variables, urban China.

	Whole sample	Male	Female	Diff	p-value
Individual-level variables					
Hourly wage (*yuan*)	6.204	6.735	5.482	1.250	0.000
	(6.824)	(7.412)	(5.850)	(0.018)	
Logged hourly wage	1.544	1.643	1.409	0.233	0.000
	(0.722)	(0.685)	(0.749)	(0.002)	
Years of schooling	10.822	10.878	10.744	0.134	0.000
	(3.115)	(3.024)	(3.233)	(0.008)	
Work experience	17.897	18.717	16.778	1.939	0.000
	(9.969)	(9.981)	(9.841)	(0.026)	
Married (%)	76.999	78.001	75.631	2.370	0.000
Live with Children under 15 (%)	30.780	30.590	31.050	−0.005	0.000
Rural *hukou* (%)	41.195	41.664	40.556	1.107	0.000
Ethnic minority	4.009	3.938	4.111	−0.168	0.001
Occupation (%)					
Manager	3.558	4.773	1.900	2.873	0.000
Prof./Associated Prof.	16.239	12.906	20.787	−7.881	0.234
Office Clerk	10.772	12.138	8.908	3.231	0.000
Service Worker	30.122	25.149	36.907	−11.758	0.000
Manual Worker	39.309	45.034	31.498	13.535	0.000
Work Sector (%)					
Government/Public Institution	15.533	14.891	16.408	−1.517	0.000
Public enterprise	23.699	25.469	21.285	4.184	0.000
Private sector	60.768	59.640	62.307	−2.667	0.000
Obs.	577,363	333,178	244,185		
Prefecture-level variables					
Dissimilarity index	0.394				
	(0.072)				
Marketization index	0.441				
	(0.116)				
Economic development index	0.127				
	(0.111)				
GDP per capita/100,000 (*yuan*)	0.170				
	(0.213)				
No. of Prefectures	283				

Notes: Numbers in parentheses are standard deviations.

In the following, we first employ OLS regression models to estimate the gender differences in hourly wage, and then replicate the exercise for each employment sector based on the assumption that government/public institutions, public enterprises, and the private sector form a continuum of marketization (Wu and Song, 2014). Finally, we run multi-level models to investigate how the effects of occupational gender segregation on earnings inequality vary by the level of marketization.

5. Empirical findings

5.1. Results from OLS regression

Table 2 presents estimated coefficients from OLS regression models. In the baseline, we include gender, years of schooling, work experience and its squared term, marital status, rural *hukou* status, ethnicity, employment sector, occupation, and prefecture dummies as the independent variables. Results show that, all of these variables have significant effects on the logged hourly wages ($p < 0.001$). Other things being equal, an additional year of schooling increases hourly wages by 7.5 percent ($=e^{0.072}-1$). Those who live with children under 15 tend to earn 5.8 percent ($=e^{0.056}-1$) more than those who are not; those who hold rural *hukou* are disadvantaged, earning 16.4 percent ($=1-e^{-0.179}$) less than their urban counterparts.

Because men and women may be sorted into different types of work sectors and occupations, which are likely to mediate the gender effect, we also include the employment sector (as two dummy variables) and occupation (as four dummy variables) in Model 1. Consistent with reports elsewhere (Wu, 2013), those working in public enterprises and private enterprises earn less than their counterparts in government/public institutions, by 0.6 percent ($=1-e^{-0.006}$) ($p < 0.01$) and 12.7 percent ($=1-e^{-0.136}$) ($p < 0.001$), respectively. Managers, professionals, office clerks tend to earn significantly more, while service workers tend to earn significantly less, than manual workers. Even after controlling for the effect of individual attributes, employment sector, occupation and prefecture, females continue to earn 12.5 percent ($=1-e^{-0.133}$) less than males. The difference is statistically significant ($p < 0.001$). To test Hypothesis 1a—how gender earnings inequality varies by employment sector, we run the baseline model for each of the three sectors. Results in Models 1a, 1b and 1c show that the gender earnings

Table 2
OLS regression predicting logged hourly wage by employment sector, urban China.

	All	Gov't/Institution	State/Collective	Private
Female	−0.133***	−0.051***	−0.086***	−0.129***
	(0.002)	(0.005)	(0.005)	(0.003)
Schooling	0.072***	0.095***	0.074***	0.058***
	(0.000)	(0.001)	(0.001)	(0.001)
Experience	−0.003***	0.021***	−0.003***	−0.022***
	(0.000)	(0.001)	(0.001)	(0.001)
Experience^2/100	0.019***	−0.018***	0.018***	0.053***
	(0.001)	(0.002)	(0.002)	(0.001)
Married	−0.003	0.024***	0.024***	−0.009**
	(0.003)	(0.005)	(0.005)	(0.003)
Live with Children under 15	0.056***	0.016***	0.059***	0.068***
	(0.002)	(0.003)	(0.003)	(0.002)
Rural *hukou*	−0.179***	−0.379***	−0.186***	−0.229***
	(0.002)	(0.007)	(0.005)	(0.003)
Ethnic Minority	−0.023***	−0.008	−0.012	−0.030***
	(0.004)	(0.007)	(0.008)	(0.005)
Work Sector (Ref: Gov/PubInst.)				
Public Enterprises	−0.006*			
	(0.003)			
Private Enterprises	−0.136***			
	(0.003)			
Occupation (ref: Manager)				
Prof./Associate Prof.	−0.236***	−0.021**	−0.167***	−0.360***
	(0.004)	(0.006)	(0.008)	(0.007)
Office Clerk	−0.314***	−0.032***	−0.249***	−0.485***
	(0.005)	(0.006)	(0.008)	(0.007)
Service Worker	−0.521***	−0.239***	−0.401***	−0.694***
	(0.004)	(0.008)	(0.008)	(0.006)
Manual Worker	−0.422***	−0.055***	−0.279***	−0.622***
	(0.004)	(0.008)	(0.008)	(0.006)
Prefecture Dummy	Yes	Yes	Yes	Yes
Constant	1.285***	0.809***	1.165***	1.324***
	(0.009)	(0.019)	(0.017)	(0.012)
N	577,363	89,679	136,831	350,853
R^2	0.415	0.505	0.391	0.357

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. Numbers in parentheses are standard errors; probability of being employed at the survey time is also controlled for.

gap is the smallest in government/public institutions, larger in public enterprises, and the largest in the private sector (Cohen and Wang, 2009). Other things being equal, women earn 5.0 percent ($=1-e^{-0.051}$), 8.7 percent ($=1-e^{-0.086}$), and 12.1 percent ($=1-e^{-0.129}$) less than men do in the three sectors ($p < 0.001$). Tests of the coefficients across equations also show that the differences are also statistically significant ($p < 0.001$). Therefore, confirming Hypothesis 1a, i.e., gender earnings gap increases with the marketization of the employment sector.

5.2. Findings from multilevel models

OLS regression models with prefecture dummies, nevertheless, would not allow us to examine specifically the role of occupational gender segregation in generating gender earnings inequality in local labor markets with varying levels of marketization. To measure occupational gender segregation in local labor markets, we have computed a dissimilarity index for each of the 283 prefectures. As Fig. 1 shows, the occupational gender segregation index increases with marketization of the employment sector and marketization of the local economy at the prefecture level, suggesting that occupational gender segregation is likely to play an important role in affecting gender earnings inequality.

To empirically investigate the effect of occupational gender segregation, we estimate two-level hierarchical linear models in Table 3. Individual-level variables (Level 1) include female, schooling, experience and its square term, married, rural *hukou* status, ethnic minority, employment sector, and occupation, whereas prefecture-level indictors (Level 2) include dissimilarity index and prefecture's GDP per capita (as a straightforward measure of economic development before marketization index was introduced in the models).

We first estimate the models for all samples. Model 1a of Table 3 include both individual-level variables and prefecture-level variables. Consistent with the results from OLS regression analyses reported in Table 2, women earn significantly less than men, holding constant the other variables. The estimated coefficient for the dissimilarity index (0.14) is statistically insignificant, suggesting that occupational gender segregation does not affect individuals' earnings level *per se*. As expected, local economic development significantly increases workers' wages, showing that people tend to earn more in prefectures that are economically more developed.

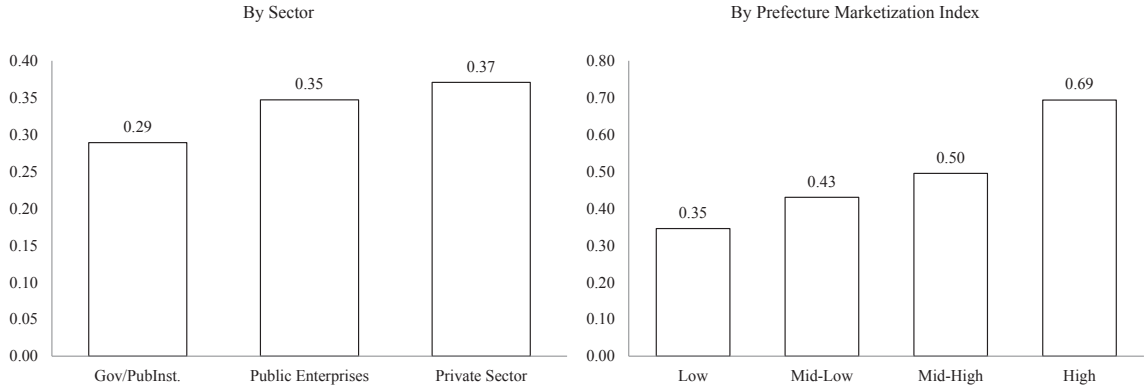


Fig. 1. Marketization and occupational gender segregation index.

Table 3
Estimation of hierarchical linear models predicting the effect of prefectural occupational gender segregation on gender earnings inequality in urban China, by employment sector.

	ALL		Gov't/Institution		State/Collective Enterprises		Private Enterprises	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Individual level								
Female	−0.164***	0.031	−0.049***	0.003	−0.147***	0.046	−0.166***	0.039
	(0.006)	(0.028)	(0.005)	(0.022)	(0.007)	(0.036)	(0.007)	(0.039)
Schooling	0.077***	0.077***	0.095***	0.095***	0.074***	0.074***	0.058***	0.058***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience	−0.002***	−0.002***	0.020***	0.020***	−0.002*	−0.002*	−0.021***	−0.021***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience^2/100	0.017***	0.017***	−0.017***	−0.017***	0.015***	0.015***	0.051***	0.051***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Married	0.002	0.002	0.023***	0.023***	0.027***	0.027***	−0.007*	−0.007*
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)
Live with Children under 15	0.055***	0.055***	0.016***	0.016***	0.057***	0.057***	0.068***	0.067***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Rural *Hukou*	−0.207***	−0.207***	−0.379***	−0.379***	−0.182***	−0.181***	−0.226***	−0.226***
	(0.002)	(0.002)	(0.007)	(0.007)	(0.005)	(0.005)	(0.003)	(0.003)
Ethnic Minority	−0.024***	−0.024***	−0.008	−0.008	−0.012	−0.012	−0.031***	−0.031***
	(0.004)	(0.004)	(0.007)	(0.007)	(0.008)	(0.008)	(0.005)	(0.005)
Work Sector	Yes	Yes	–	–	–	–	–	–
Occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture level								
Index of Dissimilarity	0.14	0.483***	0.233	0.322*	0.375*	0.494**	0.189	0.428**
	(0.125)	(0.134)	(0.146)	(0.151)	(0.153)	(0.155)	(0.142)	(0.149)
GDP per Capita	0.052***	0.052***	0.074***	0.074***	0.063***	0.063***	0.042***	0.042***
	(0.004)	(0.004)	−0.005	−0.005	−0.005	−0.005	−0.005	−0.005
Cross-level Interaction Term								
Female × Index of Dissimilarity		−0.498***		−0.137*		−0.489***		−0.524***
		(0.069)		(0.056)		(0.089)		(0.097)
Constant	0.490***	0.356***	−0.017	−0.049	0.462***	0.415***	0.679***	0.586***
	(0.051)	(0.054)	(0.062)	(0.064)	(0.064)	(0.065)	(0.058)	(0.061)
N	577,363	577,363	89,679	89,679	136,831	136,831	350,853	350,853
N of Prefecture	283	283	283	283	283	283	283	283
Chi square	2.57E+05	2.58E+05	46,313.44	46,340.61	42,695.62	42,861.39	90,382.6	90,726.25
Log-likelihood	−4.78E+05	−4.78E+05	−5.06E+04	−5.06E+04	−9.91E+04	−9.91E+04	−3.08E+05	−3.08E+05

Notes: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Numbers in parentheses are standard errors. Only the results from the fixed part are presented; information on the random part is available upon requests. Probability of being employed at the survey time is controlled for.

In Model 1b, we further allow the coefficient of female to vary by the prefecture-level occupational segregation index, by including an interaction term between female and the dissimilarity index. The coefficient is negative (−0.498) and statistically significant ($p < 0.001$), indicating that in prefectures with a higher level of gender segregation, women tend to be more disadvantaged in earnings. Therefore, Hypothesis 2 is confirmed.

Table 4
Estimation of hierarchical linear models predicting the effect of prefectural occupational segregation on gender earnings inequality in urban China.

Variables	Model 1	Model 2	Model 3	Model 4
Individual Level				
Female	−0.164***	−0.103***	0.023	0.065*
	(0.006)	(0.020)	(0.028)	(0.031)
Schooling	0.072***	0.072***	0.072***	0.072***
	(0.000)	(0.000)	(0.000)	(0.000)
Experience	−0.003***	−0.003***	−0.003***	−0.003***
	(0.000)	(0.000)	(0.000)	(0.000)
Experience^2	0.018***	0.019***	0.018***	0.018***
	(0.001)	(0.001)	(0.001)	(0.001)
Married	−0.002	−0.002	−0.002	−0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Live with Children under 15	0.055***	0.055***	0.055***	0.055***
	(0.002)	(0.002)	(0.002)	(0.002)
Rural *Hukou*	−0.179***	−0.179***	−0.179***	−0.179***
	(0.002)	(0.002)	(0.002)	(0.002)
Ethnic Minority	−0.025***	−0.025***	−0.025***	−0.025***
	(0.004)	(0.004)	(0.004)	(0.004)
Work Sector	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes
Prefecture level				
Marketization Index	0.544***	0.626***	0.542***	0.608***
	(0.079)	(0.083)	(0.079)	(0.083)
Index of Dissimilarity	0.117	0.116	0.397***	0.385***
	(0.100)	(0.100)	(0.108)	(0.108)
Economic Development Index	0.891***	0.892***	0.891***	0.892***
	(0.081)	(0.081)	(0.081)	(0.081)
Cross-level Interaction Term				
Female × Marketization Index		−0.136**		−0.108**
		(0.043)		(0.040)
Female × Index of Dissimilarity			−0.479***	−0.461***
			(0.069)	(0.069)
Constant	0.372***	0.335***	0.263***	0.238***
	(0.047)	(0.048)	(0.050)	(0.050)
N	576,058	576,058	576,058	576,058
N of Prefecture	283	283	283	283
Chi-square	2.64E+05	2.64E+05	2.64E+05	2.65E+05
Log-likelihood	−4.74E+05	−4.74E+05	−4.74E+05	−4.74E+05

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. Numbers in parentheses are standard errors. In this table, only the results from the fixed part are displayed. Work sectors, occupation dummies are controlled for in Model 5. Probability of being employed at the survey time is controlled for throughout all the models. Some coefficients appear to be identical across models after the 3-digit rounding because of large sample size and small covariance between the interaction term and the respective independent variables.

To investigate how the impact of occupational segregation on gender earnings inequality varies by the context of marketization, we follow the analytical strategy in Table 2 and replicate Models 1a and 1b for the subsample in each sector separately (Models 2a and 2b for employees in government/public institutions, Models 3a and 3b for employees in public enterprises, and Models 4a and 4b for employees in private enterprises). The coefficients for the cross-level interaction term between female and the dissimilarity index in the least, somewhat, and most marketized sectors are −0.137, −0.489 and −0.524, respectively. In other words, the more marketized the employment sector is, the higher the impact of occupational segregation on gender earnings inequality. Therefore, confirming Hypotheses 3a, marketization tends to exacerbate gender earnings inequality through occupational segregation.

Approximating marketization by three sectors may not be ideal as previously mentioned. Therefore, we employ a more fine-tuned measure, a constructed index of marketization, together with the economic development index at the prefecture level, in the multilevel models we estimated in Table 4. In Model 1, we include the marketization index, segregation index, and economic development index as independent variables in Level 2 (but drop the employment sector in Level 1). Again, the dissimilarity index has no effect on the level of earnings, whereas both the marketization index and economic development index at the prefecture level show significantly positive effect on individuals' earnings. In Models 2 and 3, we allow the coefficient for female to vary by a prefecture's marketization index and segregation index, respectively. The negative and significant coefficients for the cross-level interaction term suggest that marketization has increased gender earnings disparity, similar to the findings from cross-sectional comparisons in Table 2. Meanwhile, occupational gender segregation plays a similar role in exacerbating women's disadvantaged position in urban China's labor markets, lending empirical support to Hypothesis 2.

Table 5
Estimation of hierarchical linear models predicting the effect of prefectural occupational segregation on gender earnings inequality in urban China, by the prefecture-level marketization.

	Low	Mid-Low	Mid-High	High
Individual Level				
Female	−0.070*	−0.029	0.057	0.120
	(0.035)	(0.060)	(0.061)	(0.090)
Schooling	0.055***	0.067***	0.082***	0.069***
	(0.001)	(0.001)	(0.001)	(0.001)
Experience	0.012***	0.007***	−0.007***	−0.009***
	(0.001)	(0.001)	(0.001)	(0.001)
Experience^2	−0.016***	−0.006**	0.024***	0.030***
	(0.002)	(0.002)	(0.002)	(0.002)
Married	0.053***	0.017**	−0.023***	0.007
	(0.007)	(0.006)	(0.005)	(0.004)
Live with Children under 15	0.006	0.024***	0.041***	0.096***
	(0.004)	(0.004)	(0.003)	(0.003)
Rural *Hukou*	−0.019**	−0.066***	−0.208***	−0.251***
	(0.006)	(0.005)	(0.005)	(0.004)
Work Sector	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes
Prefecture level				
Index of Dissimilarity	0.515***	0.244	−0.255	0.019
	(0.150)	(0.239)	(0.310)	(0.383)
GDP per Capita	0.001	0.121***	0.095***	0.018***
	(0.032)	(0.028)	(0.014)	(0.005)
Cross-level Interaction Term				
Female × Index of Dissimilarity	−0.367***	−0.450**	−0.520***	−0.739***
	(0.091)	(0.147)	(0.147)	(0.224)
Constant	0.620***	0.556***	0.639***	1.041***
	(0.062)	(0.110)	(0.135)	(0.162)
N	89,387	115,430	165,225	202,481
N of Prefectures	108	74	60	42
Chi2	28,815.48	47,474.96	90,977.039	109,919.07
Log-Likelihood	−70,748.240	−94,119.515	−136,701.110	−168,918.250

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. Numbers in parentheses are standard errors. In this table, only the results from the fixed part are displayed. Work sectors, occupation dummies (broad category), probability of being employed at the survey time is controlled for.

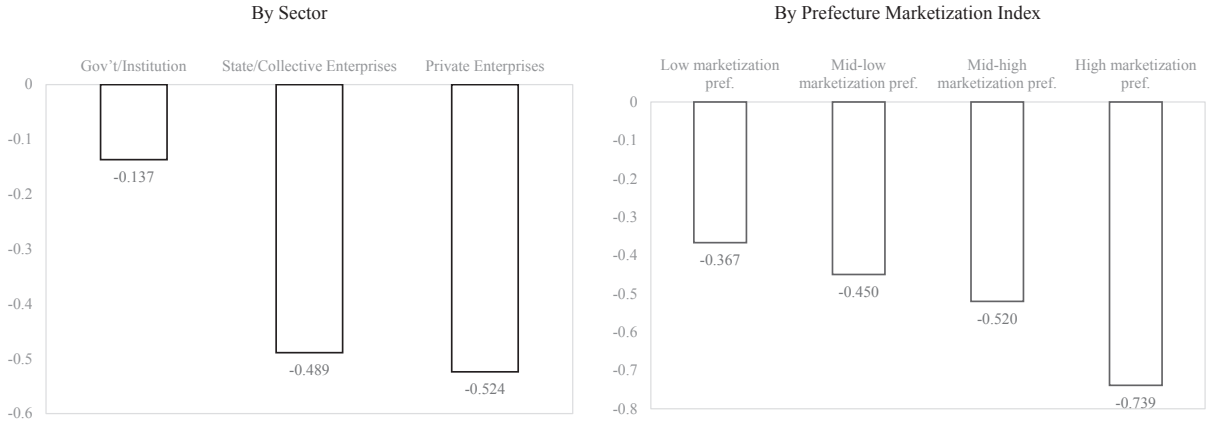
As marketization and occupational gender segregation may be correlated with each other (as plotted in Fig. 1), we include the cross-level interaction terms of female with both marketization and gender segregation in Model 4. Results show that the impact of either marketization or occupational gender segregation on gender earnings inequality still remains, even after controlling for the effect of other factors. This result holds even after we include work sector dummies and occupation (broad category) dummies. Hence, both Hypothesis 1b and Hypothesis 2 are confirmed again.

Moreover, Hypotheses 3a and 3b attempts to test how the effect of gender segregation varies with the level of marketization. One modeling strategy is to include the three-way interaction term among gender, occupational segregation and marketization. However, as the marketization index is a continuous variable, the estimated coefficient would be difficult to interpret.[4] Alternatively, we classify the marketization index into four quartiles representing low (including 108 prefectures), mid-low (including 74 prefectures), mid-high (including 59 prefectures), and high levels of marketization (including 42 prefectures), which, respectively, yield 89,820, 116,361, 165,252, and 204,625 individuals for analysis. We replicate cross-level models for each group separately and present the results in Table 5.

The coefficients of interest are those for the cross-level interaction terms across different levels of marketization: −0.367, −0.450, −0.520, and −0.739, respectively, for the groups with low, mid-to-low, mid-to-high, and high levels of marketization. As we can see, the negative coefficients, which increase monotonically across the four groups, are all statistically significant, suggesting that in more marketized prefectures, occupational gender segregation plays an even more important role in affecting gender earnings inequality in urban China. Hence, with a different approach and measure, we have reached the same conclusion as that in Table 3: marketization increases the effect of occupational segregation on gender earnings inequality in China, as plotted in Fig. 2. [5]

[4] Although the results, available upon request, are largely consistent with what are presented here.

[5] Because some people may delay their entry into the labor market so that they could receive more education, and women tend to retire earlier than men, whether or not we include these people in the analysis could potentially affect our results. We restrict our sample to those at the prime working age (i.e., those aged between 25 and 50). Results remain largely the same, except for slight differences in magnitude. Thus, our findings are robust.



Note: y-axis for both figures shows the coefficient for the interaction between female and occupational gender segregation.

Fig. 2. Marketization and the Impact of Occupational Segregation on Gender Earnings Inequality. Note: y-axis for both figures shows the coefficient for the interaction between female and occupational gender segregation.

6. Conclusions and discussion

Dramatic social and economic changes have taken place in China over the past four decades. These changes are multi-dimensional and have led to multiple consequences. Explaining this process of change and revealing its complex mechanism have presented a great intellectual challenge to social scientists. This article examines the changing gender earnings inequality—an important dimension of social stratification—in the context of macro-level social and economic changes, paying special attention to how marketization and occupational gender segregation have reshaped the socioeconomic relationship between men and women in urban China.

We analyze a large sample of data from the 2005 China population mini-census and examine how gender earnings inequality varies across sectors and regions (prefectures). Results from the linear regression analyses reveal that, in urban China's labor markets, women continue to be disadvantaged in earnings, even after taking into account their human capital and other characteristics. We find that gender gaps are the smallest in government/public institutions, followed by public enterprises and private enterprises in that order. Since the three sectors are seen to form a continuum of marketization, the evidence lends support to the argument that marketization increases gender earnings inequality in urban China. This pattern is confirmed in multilevel analyses using a finer measure of marketization in the local market, i.e., an index constructed at the prefecture level, and taking into account the impact of local economic development.

In addition to the direct effect of marketization on the gender earnings gap documented here and in previous studies, marketization also seems to enhance the effect of occupational gender segregation on gender earnings disparity. In multilevel models, we first show that, occupational gender segregation plays an important role in generating gender earnings disparities in urban China, as found in other countries, even though occupational gender segregation *per se* does not affect an individual's earnings attainment. The more segregated the local labor market of a prefecture is, the greater the gender earnings inequality. Moreover, this effect increases with the pace of marketization: in a more marketized sector, the effect of occupational segregation on gender earnings inequality is larger, as is the effect in a more marketized prefecture, even after controlling for the effect of economic development. In other words, marketization increases the impact of occupational segregation on gender earnings inequality in urban China's labor markets.

As mentioned in the introduction, we argue that gender earnings inequality are generated through the market mechanism, and the state plays a counterbalancing role in alleviating women's disadvantaged in labor markets, through legal regulations to prohibit gender discriminations or various social policies to ease the tension between married women's paid work and housework. Because state regulations and policies usually do not vary in a single country, scholars have mainly relied on cross-country comparative studies to buttress the claim. China's massive economic transitions over the past decades, as well as the huge regional variations in the pace of the change, have provided a single-country case for scholars to examine the institutional dynamics of the state and the market in reshaping gender stratification in labor markets through sub-national analysis. This dynamics can be generally characterized as the marketization, a process of the gradual retreat of the redistributive state in protecting the rights of disadvantaged groups and promoting socialist egalitarianism in the era of economic reform. Thus, those who used to enjoy the protection of the state found themselves at a greater disadvantage in the labor markets. The predictions are applicable to women as well as to ethnic minorities (Wu and Song, 2014; Wu and He, 2016). Chinese women are losing out in the course of marketization.

While our predictions on women's labor market positions are incidentally in aligned with empirical findings on temporal trends in gender inequality in labor force participation rates and earnings in urban China during a specific historical period

(Wu and Zhou, 2015; Zhang et al., 2008a), and approximation of temporal trend with spatial variations is not new to social scientists (e.g., Hammond and Kolasa, 2014; Xie and Hannum, 1996), the essential goal of this research is not to identify the temporal trend in gender earnings inequality. Instead, we view variations across employment sectors and prefectural labor markets as gender stratification regimes shaped by different institutional arrangement of market forces and the state, as well as their interactions. Studies in western industrialized countries have revealed that gender earnings gaps vary with the availability of employment in public sectors, paid parental leave, childcare facilities, as well as the tax system that encourages or discourages women's work (DiPrete and McManus, 2000; Gornick and Jacobs, 1998; Van der Lippe and Van Dijk, 2002), of which the welfare state plays a strong role in the provision. The evidence from China, on the other hand, depicts a dynamic scenario in which the withdrawal of the state would render women into more disadvantaged positions and increase gender earnings inequality, thus confirming that the state still matters in tackling women's exacerbating socioeconomic situations relative to men's in the labor market.

Our findings have important implications for understanding the dynamics of gender inequality and designing policies to promote gender equality in urban China. While the state once could implement its egalitarian policies via all-encompassing work units (*danwei*) to that support female workers, it no long works effectively with the dismantling of the work unit system after decades of economic reform. Notably, there have not been any legal regulations on hiring or wage discriminations in China, nor any nationwide social policies to support working mothers. Hence, the state is expected to continue to play an important but perhaps also a transformative role in checking the rampant gender discrimination and promoting gender equality in the labor markets in China.

Marketization increases gender earnings inequality both directly through within-job discrimination and indirectly through sorting men and women into occupations with different pay. Whereas the former process seems to be straightforward, the latter is somewhat counter-intuitive, and is clearly at odds with the temporal trend in occupational gender segregation observed since the mid-1990s.[6] This is because economic development over the past four decades, namely, the transformation of the economic structure (from an agriculture-oriented primary industry to a manufacture-oriented secondary industry, and further to a service-oriented tertiary industry) and the expansion of education, could also boost female labor force participation, increase in returns to human capital, and improve their chances of entering higher-status occupations that are traditionally dominated by men. Accompanied by the rapid economic development and the upgrade of economic structure, marketization may not necessarily lead to an increase in occupational gender segregation, but it would certainly increase the effect of occupational gender segregation on the gender earnings gap, at least in China where regions that are more gender segregated are associated with higher structural barriers and greater normative constraints.

Our research design is built upon the assumption of regional heterogeneity. To be certain, regional variations in China may not be captured solely by the marketization and economic development that we have measured. As we mentioned before, gender ideology and norms, which are regionally specific yet often unmeasurable, may also play an important role, together with marketization and economic development, in shaping occupational gender segregation, the institutional arrangement between work and family in local economies, and thereby gender stratification dynamics. We can only hope that future data collection and analyses would allow us to address the issue of culture and norms more specifically in accounting for regional variations in the pattern of gender inequality in China.

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Appendix 1. Constructing the marketization index at the Prefecture Level

We collected social and economic statistics at the prefectural level from the *China City Statistical Yearbook* in 2005, including the share of employment in the tertiary industry, the share of employment in the private sector, gross industry output value (GIOV), GDP per capita, education expenditure, the share of fiscal budget in local GDP, and among others. Based on these factors, we conducted exploratory factor analysis and extracted two common factors. As a result, the share of employment in the private sector directly enters the first factor, along with other indicators of high loading such as GDP per capita, local average wages, and the share of domestic enterprises in GDP output, whereas GDP per capita and GIOV directly enter the second factor, along with other variables such as the share of employment in the tertiary industry, educational expenditure and the share of fiscal budget in local GDP. We refer to the two factors as marketization and economic development, respectively.

[6] Our own calculation based on the population census shows that the dissimilarity index declined monotonically from 0.414 in 1990 to 0.345 in 2010 in the non-agricultural sector.

Based on the two extracted factors, we constructed the index of marketization and the index of economic development in four steps. First, we standardized all the variables that entered the factors; second, for those variables with negative loading, we reversed the scale so that they all go in the same direction conceptually; third, for each factor, equal weights were assigned to the variables that belong to the factor (Treiman, 2009). To allow the index to vary from 0 to 1, in the last step, we subtracted the minimum value of the index from the figures we obtained from the second step, and then divided the number by the difference between the maximum and minimum values. To check whether the constructed index was in line with our intuitive understanding of variations across cities, we listed the top 10 prefectural cities in terms of either index (see Table 1A).

Table 1A
Top 10 Prefecture-level Cities by Index of Economic Development and Index of Marketization

	Marketization			Economic Development		
	Code	Name	Value × 100	Code	Name	Value
1	4403	Shenzhen	100.00	3101	Shanghai	100.00
2	3205	Suzhou	81.50	1101	Beijing	81.72
3	3502	Xiamen	78.77	4403	Shenzhen	74.92
4	3302	Ningbo	78.18	4401	Guangzhou	56.25
5	4420	Zhongshan	77.90	3205	Suzhou	46.61
6	3304	Jiaxing	77.76	1201	Tianjin	45.57
7	4404	Zhuhai	77.66	3301	Hangzhou	42.88
8	3505	Quanzhou	76.92	3302	Ningbo	39.21
9	4413	Huizhou	76.37	3201	Nanjing	38.12
10	3306	Shaoxing	72.04	3202	Wuxi	36.44

According to the index of economic development, Shanghai is ranked no. 1, followed by Beijing and Shenzhen; according to the index of marketization, Shenzhen is ranked no. 1, followed by Suzhou and Xiamen. Notwithstanding the high and positive correlations between marketization and economic development, the prefectures with the highest degree of marketization may not necessarily enjoy the highest level of economic development, and vice versa, as shown in Fig. 1A.

Such a composite index on marketization, we believe, is better than a single indicator as it can provide a fine-tuned measure of the local labor market situation for the investigation of gender earnings gap. As shown in Fig. 2A, the measure of marketization at the prefecture level may be more precise than the prevailing practice of coding regions based on provinces, because there are huge variations within each province.

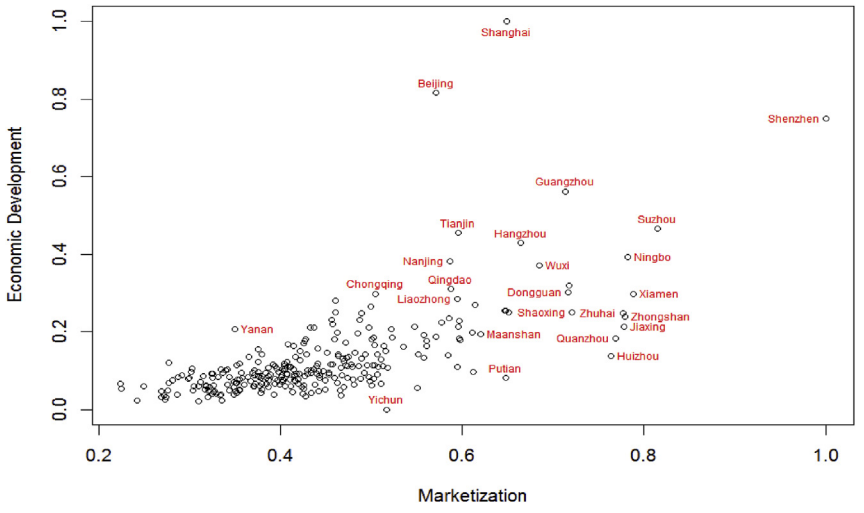

Fig. 1A. Scatterplot of marketization index and Economic Development Index.

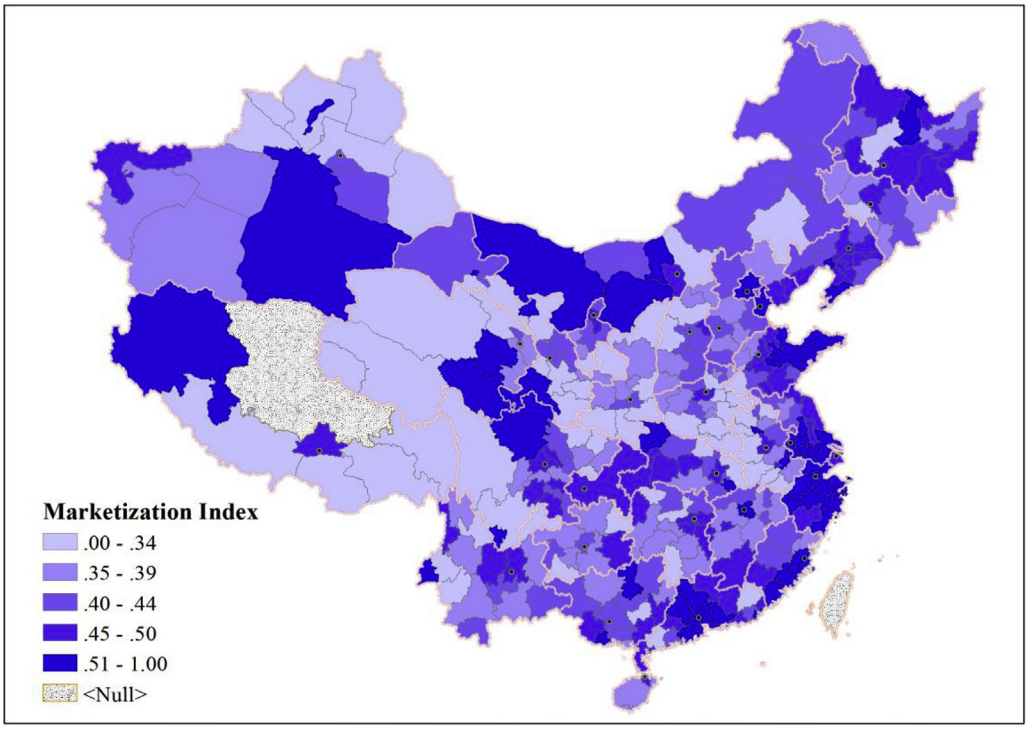

Fig. 2A. Marketization index for 283 prefectures in China.
*Here, marketization index are displayed in five groups, with intervals automatically divided in the GIS software. As expected, the correlation coefficient between marketization index and occupational gender segregation index is 0.1393, whereas that between economic development index and segregation index is −0.005.

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