Global Economy and Gender Inequalities: The Case of the Urban Chinese Labor Market*

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Objectives. This article examines the effects of economic globalization on gender inequalities in urban China. It argues that the significance of economic globalization on gender inequality depends on its impact on job queues in the labor market of a country. Methods. Using both individual- and city-level data, and a series of multilevel linear and logistic models, we analyze the effects of three city-level variables on the gender gap in income: foreign direct investment (FDI) per capita, growth rate of FDI, and opening up to overseas investment early on. We also examine gender differences in employment in high-paying foreign-invested firms, and in lower-paying export-oriented manufacturing. Results. We find no variation in gender gap in income among cities of varying levels of FDI, growth rates of FDI, or whether they were among the earliest to open up to international investment. Women are more likely to be employed in export-oriented manufacturing industries that offer lower wages and are less likely to work in high-paying foreign firms and joint ventures. Conclusions. These results suggest that economic globalization profoundly influences gender inequalities by changing the nature of job queues, and men and women are sorted and matched into jobs accordingly. Economic globalization contributed to and perpetuated a gendered distribution of male and female workers in the Chinese urban labor market in the late 1990s.

In the early 1980s, China began to promote market determination of economic outcomes, policies favoring foreign investment, and export-oriented production for international trade. The process of creating access to international investment and production unfolded swiftly and in multiple steps. China first established four special economic zones: Shenzhen, Zhuhai, Shantou, and Xiamen, and also designated Hainan Province as a special economic zone. In 1984, the state further opened 14 coastal cities to

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overseas investment, and in the following year extended the economic zones into an open coastal belt. Six years later, the Chinese government opened Pudong in Shanghai to overseas investment, then more cities in the Yangtze River Valley. Since 1992, the state has opened several border cities, all the capital cities of inland provinces and autonomous regions, and has established 15 free-trade zones. As a result, total export and import value increased by 22 times from 1978 to 2000 (Guthrie, 2006:119; National Bureau of Statistics of China, 2003:654). By the end of 2004, foreign investment topped \$550 billion in China, from more than 250,000 foreign-invested enterprises. Of the 500 largest multinationals, 450 have investments in China, and more than 30 have set up regional headquarters there. In 2003, foreign-invested companies accounted for 11 percent of the total investment in fixed assets, constituted 28 percent of industrial added value, contributed 55 percent of the total export volume, and employed 10 percent of China's nonagricultural working population (People's Daily, 2004).

Despite this phenomenal growth in foreign investment and international trade and increased participation in international production, we know little about the impact of economic globalization on social and economic inequalities in China. Similar to their role in the recent history of industrializing economies such as the Four Asian Tigers, women workers are crucial to the increasingly global Chinese economy. As in these other fast-growth economies, women are a direct source of cheap labor, especially in export manufacturing industries: in fact, women's labor is central to factories that produce or assemble commodities for the global market. For example, Chinese women constitute 84–91 percent of the workforce in state-owned cotton mills in the export sector (Zhao and West, 2001). Although there has been some information about local patterns of gender segregation and gender inequality in production for global markets, there has been no systematic national study on the impact of participation in the global economy on gender inequalities in Chinese labor markets.

Existing research on the relationship between economic globalization and gender inequality in developing countries consists primarily of two bodies of scholarly work. The first emphasizes cross-national patterns of foreign investment and gender inequality using national statistics on trade, foreign investment, and aggregate measures of gender inequalities in the labor market, including female labor force participation rate, index of gender segregation, or gender-based differentials in earnings (Fields, 1985; Galenson, 1992; Joekes and Weston, 1994; Krueger, 1983; Lim, 1990; Wood, 1990, 1994). These researchers, mostly economists, analyze between-nation variations in international trade and investment, and broad patterns of gender inequalities in the national labor market. They generally pay scant attention to the effects of the global economy on within-nation variations, such as differences among cities, industries, economic sectors, types of firms, and varying characteristics of different individuals.

The second school of research focuses on individual-, local-, and factory-floor-level labor process interactions in transnational corporations. Scholars in this field have studied the lives of factory women in the context of export-oriented production and economic growth (Greenhalgh, 1985; Hsiung, 1996; Kim, 1997; Kung, 1983; Lee, 1995; Roberts, 1994; Salaff, 1981). Their research carefully examines processes through which wage-earning women negotiate power relationships in both the workplace and the household, to shed light on the debate over whether export-oriented economic growth confers increased opportunities and status on women in these societies. Ethnographic studies of workers in global factories and global service avenues in China show that global production has uneven implications for women (Lee, 1995; Otis, 2003; Pun, 2006). This body of work cannot speak broadly to the scope and extent to which economic globalization has strengthened or undermined women's position and status in Chinese society.

This study aims to enhance our knowledge about the relationship between the global economy and gender inequalities in the urban Chinese labor market. We systematically analyze influences at multiple levels, including cities, industries, sectors, occupations, and individuals, as international investment and production influences gender inequalities at different levels. Individuals of both sexes possess different levels of human and political capital, come from different types of family structure, work in different industries, occupations, and sectors, and live in varied cities that engage in economic globalization to different extents, at different paces, and at different times. In particular, we test three city-level influences on the gender gap in income: levels of FDI, growth rate of FDI, and whether the cities were among the earliest to permit overseas investment. Further, we analyze gender differences in employment in the export-oriented manufacturing industry and in foreign-funded firms. To do so, we use a 2000 national sample of more than 3,000 respondents from 105 cities, and city-level statistics. Through a series of linear and nonlinear multilevel models, we estimate the effects of level and growth rate of FDI, time of opening up to international investment, and employment in export-oriented manufacturing and foreign firms and joint ventures, on gender-based inequalities in income and job placement in urban China.

Three Theoretical Perspectives

There are three broad perspectives on the relationship between economic globalization and gender inequality. Two of the paradigms hold opposing views on the impact of economic globalization on women's status in less developed countries (Brinton, 2001:40–41), while the third contends that the impact of global investment and production on women's status depends on its influence on job ranking in the receiving country.

Economic Globalization Empowers Women

Popular among economists, the first perspective emphasizes the positive effects of international investment and production in reducing gender-based inequalities (Fields, 1985; Galenson, 1992; Joekes and Weston, 1994; Krueger, 1983; Lim, 1990; Wood, 1990, 1994). Neoclassical theory argues that discrimination is costly (Becker, 1959), so it can be derived that international trade expansion is expected to increase the demand for relatively abundant, low-skilled labor and reduce wage disparities between men and women. Scholars of this perspective argue that participation in the global economy leads to economic growth and increased opportunities in paid employment for women, and this new growth in turn increases women's labor force participation rate, reduces gender segregation, reduces gender discrimination, reduces the gender gap in earnings, and empowers women in both family and society (Fields, 1985; Galenson, 1992; Joekes and Weston, 1994; Krueger, 1983; Lim, 1990; Wood, 1990, 1994). They argue that producing exports for international markets creates new jobs and increases demand for female labor, thus promoting women's labor force participation rate (Joekes and Weston, 1994; Wood, 1990, 1994; United Nations, 1995). In addition, they contend that these new job opportunities eventually upgrade to better-paying jobs because production for world markets calls for labor-intensive jobs, and export production will use so much of the available labor that employers will need to raise wages (Fields, 1985; Galenson, 1992; Krueger, 1983; Lim, 1990). This perspective further holds that export-oriented production generates more and betterpaying jobs for women and men alike, and thus can lead to reduced gender wage differentials. For example, Dollar and Gatti (1999) found that with expanding global participation and economic growth in East Asia, women's access to jobs has increased and gender wage differentials have been reduced.

This perspective also maintains that higher levels of international trade and investment decrease gender segregation by drawing more women into traditionally male-dominated manufacturing and service sectors. They further argue that international trade motivates companies to reduce discrimination toward women. Because international investment increases competition among businesses worldwide, transnational corporations become more amenable to employing women, in order to use all the human resources available (Alder and Izraeli, 1994; Gothaskar, 1995; Sim and Yong, 1995).

Unequal International Division of Labor Undermines Women's Status

Opposing the studies cited above, scholars of this perspective argue that economic globalization entails a shift of labor-intensive jobs from developed

to less developed countries in search of cheap labor, and that women in these periphery economies occupy the worst jobs of the global capitalist system (Benería and Feldman, 1992; Fernandez-Kelly, 1983; Marchand and Runyan, 2000; Pyle, 1990; Tinker, 1990; Ward, 1990; Wolf, 1990).

As transnational corporations establish operations in developing countries to reduce costs, women (especially young unmarried women) in these nations are increasingly drawn into the manufacturing sector. Low female wages stimulate investment and exports by lowering unit labor costs (Seguino, 2000). Women are hired because they are often considered better suited both physically and mentally to perform tedious repetitive tasks (Fernandez-Kelly, 1983; Joekes and Weston, 1994; Marchand and Runyan, 2000; Ward, 1990), and to be unlikely to resist, to seek a union, or to agitate for improved wages and working conditions (Nash and Fernandez-Kelly, 1983; Sassen, 1988), as they have been subject to a long tradition of pa-

triarchal primacy (Shu, 2004).

Participation in international production is also associated with increasing gender segregation in the labor force, as women in the periphery and semiperiphery make up a large proportion of the unskilled labor required for export production in manufacturing and service sectors. There is already evidence that feminization of the labor force in export-oriented industries has now been firmly established in many Asian countries, concentrated in the manufacturing and agricultural sectors (Joekes and Weston, 1994). This perspective also holds that expansion of the export manufacturing sector through foreign capital investment has widened the gender earnings gap. Greater participation in international production involves increased competition to attract and maintain FDI: this in turn creates a tendency toward increased labor exploitation via lower wages and longer working hours, with very little job security and a downward pressure on wages, as expressed in the race-to-the-bottom syndrome (Pyle and Dawson, 1990; Barnet and Cavanaugh, 1994; Greider, 1997). Because of the increasing feminization of the labor force in the export sector, this heightened degree of labor exploitation falls disproportionately on women workers, further enlarging the earnings gender gap. For example, in Taiwan, being employed in more export-oriented industries adversely affects wages (Berik, 2000), and greater trade openness as measured by manufacturing-sector import ratio is associated with a wider gender gap in wages (Berik, Rodgers, and Zveglich, 2004).

Economic Globalization Changes Job Queues

The third perspective is inspired by an analysis of gender segregation in industrialized capitalist countries (Reskin and Roos, 1990; Reskin, 1993; Padavic and Reskin, 2002). These scholars assert that employers rank workers of both sexes based on their estimates of worker productivity and costs. The process of matching a specific worker with a specific job depends

on the worker's rank in the labor queue and the shape of the job distribution, both of which vary over time and place. These variations result from changes in the characteristics of occupations and industries (e.g., growth, decline, and reorganization), changes in market conditions, the emergence and demise of technologies, shifts in the characteristics of male and female workers (e.g., size, power, education or training), and changes in ideological or legal endorsement for gender equality.

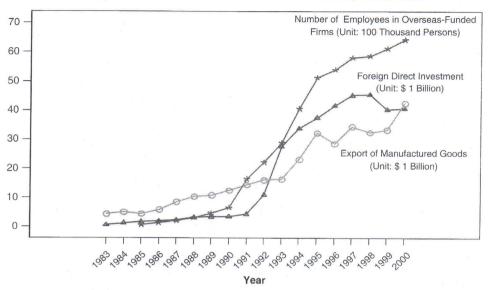
Reskin (1993) argues that the labor market functions as if it is comprised of ordered elements of labor queues and job queues. These queues govern labor market outcomes: employers hire workers from as high in the labor queue as possible, and workers accept the best jobs available to them in the job queue. Thus the labor market dictates which groups end up in which jobs. Male and female workers are ranked in the labor queue based on local cultural tradition and ideological beliefs of what is considered appropriate and desirable in workers for jobs under consideration. Because in nearly all modern societies, men generally specialize in breadwinning and women in homemaking and childrearing, men rank higher in the labor queue, particularly with regard to high-paying jobs. For example, using 1995 Chinese national data, Shu (2005) found that when the relative economic advantage of the state sector declined during the Chinese market transition, there was a relative attrition of male workers from the state sector. Similarly, integration into the global capitalist system can change conditions that shape the job and labor queues, which in turn can lead to shifts in the placement of men and women in the Chinese labor market.

The first change in these conditions has been the rise of jobs in foreigninvested firms. Expansion of international investment and production has important implications for the structural features of job queues. Figure 1 shows the change in FDI, number of employees in overseas-funded firms, and the value of selected manufactured goods between 1983 and 2000. FDI in China grew from \$5 billion in 1991 to \$40 billion in 2000. This eightfold jump in overseas investment created a new category of employment, in which a variety of foreign-invested firms and joint ventures set up and expanded inside China. In the year 2000, 6.84 million people (3 percent of the urban labor force) worked in foreign-funded firms and joint ventures, up from only 1.62 million (<1 percent of the urban labor force) in 1990 (National Bureau of Statistics of China, 2003:126). The average wage of those in overseas-invested firms and joint ventures was 4,948 RMB yuan in 1993, compared to 3,532 RMB yuan of those in state-owned firms; these figures increased to 13,030 RMB yuan and 9,552 RMB yuan in 2000 for foreign-funded firms and state firms, respectively (National Bureau of Statistics of China, 2003:126, 158).

The second change is a decline in the job ranking of export-oriented manufacturing. Expansion of international production also has implications for manufacturing jobs, particularly export-oriented manufacturing. Figure 2 presents the wage gap between workers in manufacturing

FIGURE 1

Trends in FDI,^a Export Value in Selected Manufactured Goods,^b and Number of Employees in Overseas-Funded Firms^c in China, 1983–2000



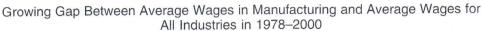
^aFDI is the amount of foreign direct investment actually utilized during the year. This is one of the three components of actually utilized foreign capital—foreign loans, FDI, and other investment. We collected this information from the 2001 *China Investment Yearbook*, pp. 620–21.

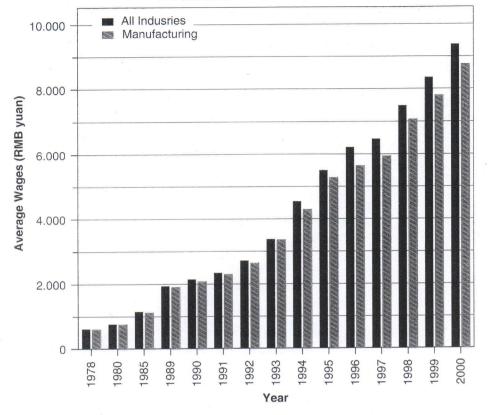
^bThis is the annual export value of light and textile industrial products, rubber products, and mineral metallurgical products. This information is based on Custom Statistics on Value of Exports by Category of Commodities. We collected this information from the 2001 *China/Statistic Yearbook*, p. 587.

^cThis is the total number of employees in units with funds from Hong Kong, Macau, and Taiwan, and foreign-funded units in the urban labor force. We collected this information from the 2004 China/*Statistic Yearbook*, pp. 122–23.

industries and the average wage of all industries from 1978 to 2000. The figure shows the average wage in the manufacturing industry prior to 1994 on par with the average wage of all industries. In 1993, FDI almost tripled over the previous year, and perhaps as a result of this jump, the export of manufactured goods increased by 50 percent the following year. Figure 1 shows that from 1994, accompanying these major increases in both FDI and manufactured goods export, wages in manufacturing start to lag behind the average for all industries, with gaps ranging from 6–9 percent. The actual gap between the average wage of export-oriented manufacturing and all industries could be larger than the figures shown, as separating export-oriented manufacturing from other manufacturing was impossible. Nevertheless, these figures show that a major increase in FDI preceded both a wage decline in the manufacturing sector and an increase in exports of manufactured goods.

FIGURE 2





Source: Data were compiled from page 154 of the *China Statistical Yearbook* (National Bureau of Statistics of China, 2003).

International investment and production influence job queues in less developed countries. Economic globalization creates new types of jobs and changes the ranking of the existing jobs, while local cultural traditions and gender norms determine what jobs men and women occupy in the new economic order. To analyze the consequence of economic globalization on gender inequalities in a country, we must carefully analyze changes in economic returns to different industries, sectors, and occupations, and the gendered pattern of the distribution of men and women in the labor market, in the context of economic globalization.

Hypotheses

We argue that economic globalization has no direct intrinsic implications for gender inequalities in the labor market. The contradictory evidence on the association between economic globalization and gender inequality presented in the early sections of this article shows that expansion of foreign investment and production has simultaneously a positive and negative effect on gender inequalities (for a review, see Braunstein, 2006). How economic globalization influences women's positions in the labor market depends on a number of factors: individual human and political capital, individual placement in occupation, industry, and sector, and an individual's family structure and migration status. Women of different social strata who are located in different sections of the economy experience different impacts from economic globalization. It is too general to expect economic globalization to have a simple, one-directional influence on all women in one society. We thus hypothesize:

- H_{1a}: Controlling for individual, occupation, industry, and work sector characteristics, level of FDI is not associated with gender income differentials.
- H_{1b}: Controlling for individual, occupation, industry, and work sector characteristics, growth rate of FDI is not associated with gender income differentials.
- H_{1c}: Controlling for individual, occupation, industry, and work sector characteristics, historical timing of opening to FDI is not associated with gender income differentials.

Expansion of FDI is associated with an increase of jobs in overseas-funded firms. Changes in rewards or working conditions relative to other jobs can result in changes in the sex composition of the workforce. In societies in which men specialize in breadwinning and women in homemaking and childrearing, men are often seen as more desirable workers and are ranked higher in the labor queue than female workers with identical characteristics. Thus, employers prefer male workers when filling high-paying positions. When some traditionally female jobs become more attractive than those dominated by men, male workers migrate and colonize those desirable jobs. Thus men take over those occupations that are better than other available male jobs (Reskin and Roos, 1990). Because there is evidence that jobs in overseas-funded firms provide higher wages than jobs in the state, collective, and private sectors, we expect that overseas-funded jobs rise in the job queue. We thus hypothesize:

H_{2a}: Women are less likely than men to be employed in overseas-funded firms.

Expansion in FDI and production also appears to be correlated with a decline in wages in the manufacturing industry. This change has implications for the distribution of men and women in the labor market (Reskin and Roos, 1990). Because women are generally seen as mothers and wives who focus on housekeeping and childbearing, they generally rank low in the labor queue, particularly for high-paying jobs. Women are more likely to enter male-dominated occupations when these jobs are undergoing de-skill-

ing, loss of autonomy, or declining earnings relative to all jobs. At such times, men leave these jobs as they become less desirable. It therefore becomes easier for women to enter those male jobs with declining advantages in earnings, mobility prospects, or autonomy. Evidence suggests that jobs in the export-oriented industry have declined in income, benefits, and working conditions, which is likely to lead to a decline in job ranking of export-oriented manufacturing. We thus hypothesize:

H_{2b}: Women are more likely than men to be employed in the export-oriented manufacturing industry.

Data and Measures

We use data at two levels. (1) Individual-level data came from the urban portion of the national Survey on Women's Status in China in 2000 (WOMEN2000). It surveyed 19,449 individuals in 30 provinces, autonomous regions, and municipalities. The urban sample includes 178 cities and counties from 29 provinces, with Qinghai excepted. This survey used a multilevel stratified sampling procedure at five levels: city district, street, neighborhood, household, and individual (All-China Women's Federation and National Statistical Bureau, 2000). City districts, streets, neighborhoods, and households were chosen based on systematic sampling of unequal probability. Adults aged 18-64 were randomly selected from each of the chosen households. Since reliable information on macro-level FDI in 1990 and 2000 was available only for cities above the county level, we further restricted our analysis to 105 prefecture-level and county-level cities.1 We analyzed adults aged 18-60 who were in the labor force at the time of the survey. There were 3,927 respondents (2,015 men and 1,912 women) in these 105 cities and counties. Sampling weights are available and are used in all of the analyses to address differential sampling probabilities. (2) The citylevel data for the 105 cities and counties in WOMEN2000 are from published urban statistical yearbooks in the years 1990 and 2000.

INCOME is defined as the respondent's total annual income including salary, bonuses, and dividends. We use the natural logarithm of income in the analysis. Three variables measure two dimensions of HUMAN CAPITAL—education and seniority in the paid labor force. EDUCATION measures years of schooling. We extrapolate years of education from levels of education completed using the following scales: illiterate or marginally illiterate = 0, primary school = 6, junior high school = 9, senior high school = 12,

¹We excluded 73 cities and counties for which reliable macro-level data were not available. These include 59 counties under the supervision of cities, 10 counties that were established after 1990, two prefecture-level cities that were established after 1990, and two prefecture-level cities in Tibet Province.

vocational and trade school = 12, community college = 14, college = 16, and graduate school = 19. As we do not have direct measures of SENIORITY, we derive it as the number of years since finishing schooling by calculating seniority = AGE - EDUCATION - 6. To capture the nonlinear effects of seniority on income, we also include SENIORITY SQUARED. AGE is the respondent's age measured in years at the time of survey. Political Capital is a dichotomous variable with 1 indicating the respondent is a member of the

Chinese Communist Party and 0 otherwise.

We use a series of dichotomous variables to indicate the respondent's work sector: STATE, COLLECTIVE, PRIVATE, and OVERSEAS FUNDED. The STATE sector includes state-owned enterprises and state-dominated shareholding units. The COLLECTIVE sector consists of urban and rural collective work units and enterprises. The PRIVATE sector encompasses private businesses and individual employees. The OVERSEAS-FUNDED sector includes enterprises funded by Hong Kong, Macau, Taiwan, and foreign countries. 2 We identify 13 INDUSTRIES using a series of dichotomous variables.³ The industries are categorized in groups as follows: farming, forestry, animal husbandry, and fishery; mining; export-oriented manufacturing; other manufacturing; production and supply of electricity, gas, and water; construction, geological prospecting, and water conservancy; transportation, storage, post, and telecommunication services; wholesale, retail trade, and catering services; finance and insurance; real estate and social services; public healthcare, sports, and social welfare; education, culture, and mass media; scientific research and technical development; party and government agencies; and social organizations. To explore the structural impacts of China's integration into the global capitalist market, we distinguish between non-export-oriented and export-oriented manufacturing industries. (Export-oriented manufacturing industry consists of those manufacturing textiles, clothes, hats, footwear and other fibers, furniture, toys, sports and office supplies, plastic products, electrical appliances, and electronic products.) These variables are coded 1 if the respondent belongs to the industry and 0 otherwise. We use a series of dichotomous variables to represent OCCUPATION—technical and professionals; managers and administrators; clerical and office workers; commerce workers; service workers; farming, forestry, animal husbandry, and fishery workers; and industrial workers. These variables are coded 1 if the respondent belongs to the occupation and 0 otherwise.

Two variables capture family characteristics. MARITAL STATUS is coded 1 if the respondent is married at the time of the survey and 0 otherwise.

³To make industry categories more comparable with prior studies on gender gap in income in China, we collapsed the 16 industries in the original survey into 13 categories.

²These enterprises take on three organizational forms—cooperative units, joint ventures, and solely foreign-funded units. In our sample, 1 percent of all respondents work for overseas-funded firms. This proportion is lower than the national level: in 2000, 4 percent of the total urban labor force worked for such firms (National Bureau of Statistics of China, 2003).

Presence of young children under age 5 at home is coded 1 if there is a child aged five years or younger in the household and 0 otherwise. We use a dichotomous variable to measure the MIGRATION STATUS of the respondent. For respondents with rural residential registrations (*hukou*) who were working in the urban area, we coded this variable 1 to indicate migrant status, and 0 otherwise.

We employ three city-level variables to measure the degree of economic integration into the global capitalist market. (1) FDI PER CAPITA IN 2000 measures the current scale of foreign investment. This is the ratio between total amount of FDI to the city/county and its total population at the end of year 2000. We take the natural logarithm of FDI/CAPITA in our analysis. (2) Annual growth rate of FDI/Capita in the period from 1990–2000 is calculated using the growth rate formula: $F_{2000} = F_{1990}*(1+GR_{1990-2000})^{10}$, where F_{2000} is FDI per capita in 2000, F_{1990} is FDI per capita in 1990, and $GR_{1990-2000}$ is the growth rate for the period between 1990–2000. (3) We use a dummy variable, EARLY BIRD, to distinguish the cities that enjoyed preferential "open door" policies prior to 1984, including the five special economic zones in 1980 and the 14 coastal cities in 1984. (4) We use GDP PER CAPITA IN 2000 to measure the degree of local economic development. We also take the natural logarithm of GDP/CAPITA in our analysis.

FDI is a critical measure of globalization because it has become an important driving force for economic globalization by redistributing global resources, expediting industrial restructuring, and promoting changes in the economic system and technology. We recognize that FDI alone does not capture the full complexity of the influences of globalization on gender inequality in China. Other measures of economic globalization, such as international trade and international capital markets, indicate a nation's overall degree of involvement in the global economy, yet these nationallevel measures cannot capture the complexity and diversity of global influences within a country. Chinese cities with higher levels of FDI also tend to participate heavily in international trade and international capital markets, and are more likely to be involved in international cultural experiences. In addition, FDI is also the only variable for which we have reliable multiple-year measures at the city level. We thus focus on the effect of FDI on gender inequality in this article. When interpreting our findings, readers should note the limitations of FDI as a sole measure of economic globalization.

⁴The nine early birds in our sample are Shenzhen, Xiamen, Dalian, Qinhuangdao, Tianjin, Qingdao, Shanghai, Wenzhou, and Guangzhou.

Analysis

Gender Gap in Income

To consider the combined effects of macro- and micro-level influences on gender inequality in income, we estimated a series of multilevel models (Raudenbush and Bryk, 2001; Goldstein, 1987). These models have two components. The micro component incorporates individual characteristics. The basic micro-level equation is:

$$Y_{ij} = \beta_{0j} + \beta_{1j}G + \sum_{k=2}^{4} \beta_{kj}H_k + \beta_{5j}P + \sum_{k=6}^{8} \beta_{kj}S_k + \sum_{k=9}^{20} \beta_{kj}I_k$$
$$+ \sum_{k=21}^{26} \beta_{kj}O_k + \sum_{k=27}^{28} \beta_{kj}F_k + \beta_{29j}M + \varepsilon_{ij}, \tag{A1.0}$$

where G is gender, H_{2-4} are three measures of human capital, P is political capital, S_{6-8} is a series of three dummy variables measuring ownership sector, I_{9-20} are 12 dummy variables measuring industry, O_{21-26} are six dummy variables measuring occupation, F_{27-28} are two measures of family structure, and M is migration status. β s are micro-level coefficients, and ε_{ij} is the micro-level random effect.

The micro component of the model is applied to each of the cities on which our analysis is based, but we expect the effects of the micro-level variables to vary across cities. In the macro component of the model, the micro coefficients are assumed to depend stochastically on macro-level characteristics. This macro component of the multilevel model can be expressed by the following set of equations:

$$\beta_{0j} = \alpha_{00} + \gamma_{01}FDI + \gamma_{02}GFDI + \gamma_{03}EB + \gamma_{04}GDP + \mu_{0j}$$
 (A2.0)

$$\beta_{1j} = \alpha_{10} + \gamma_{11}FDI + \gamma_{12}GFDI + \gamma_{13}EB + \mu_{1j}, \tag{A2.1}$$

where FDI is Ln foreign direct investment (FDI) per capita in 2000, GFDI is growth rate of FDI per capita between 1990–2000, EB is a dummy variable, EARLY BIRD, indicating whether the city opened to foreign investment in 1984 or earlier, GDP is Ln gross domestic product per capita (GDP) in 2000, γ s are coefficients, and the μ s are macro error terms. The macro error terms (the μ s) are assumed to be normally distributed with a mean of zero, independent and exchangeable across cities and correlated across equations. The two micro coefficients, the intercept β_{0j} , and the coefficient for gender β_{1j} are dependent quantities in these equations. These multilevel models as expressed by Equations (A1.0), (A2.0), and (A2.1) are "intercepts-and-slopes-as-outcomes" models (Raudenbush and Bryk, 2001) estimated by a combination of maximum likelihood and empirical Bayes

TABLE 1 Percentage of Variance in Ln Income Among 105 Cities (Model χ^2 and df in Parentheses)

	Total	Women	Men
Total variance among cities (p × 100%) Accounted for by FDI, FDI growth rate, and early	23.22***	24.66***	26.25***
	(12,560/3,765)	(5,085/1,628)	(6,826/2,200)
	7.26***	8.32***	8.51***
	(12,540/3,762)	(5,060/1,625)	(6,791/2,197)
bird status Accounted for by FDI, FDI growth rate, early bird status, and GDP	10.55***	11.74***	12.40***
	(12,454/3,761)	(5,034/1,624)	(6,758/2,196)

^{***}p < 0.001 (two-tailed test).

Note: Intraclass correlation coefficient (ρ) measures the proportion of variance in log income that is among cities. It is calculated by $\rho = \frac{Var(u_{gj})}{Var(r_{ij}) + Var(u_{0j})}$.

procedures using the EM algorithm in HLM (Dempster, Laird, and Rubin, 1977).

We choose to use the city as the primary unit in a multilevel framework. Cities are relatively independent economic entities that attract international investment, and labor markets are developed within the boundaries of cities as both labor supply and demand for permanent jobs are often regionally constrained. When cities are used as macro-level units in a multilevel model, the macro error terms, the μ_{0j} in Equation (A2.0), account for clustering effects among individuals who live in the same city. We also use sampling weights in all our analyses to account for differential probabilities.

Table 1 shows the total amount of variance among the 105 cities we study, and the amount of variance accounted for by macro-level variables. These results were estimated using multilevel modeling as in Equations (A1.0) and (A2.0), without any micro-level explanatory variables in Equation (A1.0). There is substantial variation among cities in income, with 22.22 percent of the variance, and this variation is consistent for both men (26.25 percent) and women (24.66 percent). Three macro-level variables, Ln FDI PER CAPITA IN 2000, GROWTH RATE OF FDI PER CAPITA IN 1990–2000, and EARLY BIRD opening to foreign investment, account for one-third of the total among-city variance, again consistent for both men and women. Adding Ln GDP PER CAPITA IN 2000 means that these models now account for a little less than half the total among-city variance. There is no gender-based difference in the proportion of variance explained by these macro-level variables.

Table 2 presents both gross and net effects of gender in Ln income using a series of multilevel models as represented by Equations (A1.0), (A2.0), and (A2.1). Results from Model 1 show that when gender is the only explanatory variable, the coefficient is -0.35, indicating a 35 percent gross gap in

TABLE 2

Effects of Gender and Proportion of Variance Accounted for by Different Models

		Gender Effect (Female = 1)	Percentage of Variance Explained
Model 1	Gender	-0.35***	2.3
Model 2	Model 1+human capital +political capital+family structure +sector+industry+occupation +migration status	- 0.24***	25.8
Model 3	Model 2+FDI+FDI growth rate +early bird status	-0.24***	32.9
Model 4	Model 3+GDP	-0.25***	36.4
Model 5	Model 4+gender*FDI+gender*FDI growth rate+gender*early bird status	-0.24***	36.2

*p < 0.05.

Note: All results are weighted.

income between women and men. This gap represents a substantial increase over the approximately 20 percent gross gender income gap shown in data from the mid-1990s and earlier (Shu and Bian, 2002, 2003; Zhou, Tuma, and Moen, 1996), but is consistent with analyses of another data set from year 1999 (Cohen and Wang, 2006). Model 2 includes all micro-level explanatory variables, and shows a net gender effect of -0.24, indicating that after controlling for human capital, political capital, family structure, sector, industry, occupation, and migration status, the net gender gap in income is 24 percent. This is again substantially higher than what was previously found in the mid-1990s and earlier (Shu and Bian, 2002, 2003; Zhou, Tuma, and Moen, 1996), but is again consistent with findings from a 1999 data set (Cohen and Wang, 2006). In Model 3, we further add three macro-level explanatory variables, Ln FDI PER CAPITA, GROWTH RATE OF FDI PER CAPITA FROM 1990-2000, and EARLY BIRD status. The gender coefficient remains essentially unchanged, indicating little among-city variation in gender effect on income. However, adding these additional macro-level variables increases the percentage of variance explained from 26 percent to 33 percent. Model 4 adds GDP PER CAPITA IN 2000 and Model 5 adds three cross-level interaction terms between genders: the three macro-level measures of FDI, growth rate of FDI, and early bird status. By adding GDP to the model, we slightly increase the amount of variance explained to 36 percent, but the gender coefficient remains unchanged. The last model, Model 5, changes little either the size of the gender coefficient or the amount of variance accounted for.

Table 3 presents estimates of macro-, micro-, and cross-level coefficients from Model 5. The gender gap in income is -0.24 after controlling for all

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Least Squares Estimates from Multilevel Model of Ln Income, by Gender (2000 Urban Sample)

	Total		Women		Men		11/11/11
	Coefficient	S. E.	Coefficient	S.E.	Coefficient	S.E.	r value ror Gender Gap ^a
Gender (Female = 1) Gender*Ln FDI per capita in 2000 Gender*Growth rate of FDI 1990–2000 Gender*Early bird status (opened up in 1984 and earlier)	- 0.242*** - 0.002 - 0.019 - 0.087	0.025 0.007 0.027 0.117		-			
City-Level Variables Ln FDI per capita in 2000 Growth rate of FDI 1990–2000 Early bird status (opened up in 1984 and earlier = 1) Ln GDP per capita in 2000	0.004 - 0.019 0.236 0.240***	0.011 0.036 0.134 0.056	0.003 -0.034 0.123 0.228***	0.010 0.038 0.123 0.048	0.005 -0.031 0.277* 0.228**	0.013 0.038 0.122 0.069	-0.122 -0.056 -0.889 0.000
Human capital Number of years of education Seniority (\times 10 ⁻²) Seniority squared (\times 10 ⁻³)	0.057 *** - 0.028	0.007	0.056***	0.011	0.051 ** * (0.533 0.079 0.079	0.009 0.938 0.191	0.352 - 0.063 0.213
Political capital Communist party (CCP member = 1) Ownership Sector	0,113***	0.032	0.145*** 0.042	0.042	0.106**	0.041	0.664
Overseas-funded firms Private State Collective	-0.343** -0.417*** -0.551***	0.126	-0.311** -0.353*** -0.525***	0.104	-0.410* -0.522** -0.612**	0.202	0.436 0.794 0.388
Export-oriented manufacturing Export-oriented manufacturing Farming, forestry, animal husbandry, and fishery Mining Other manufacturing	0.039	0.096	-0.142 -0.113 0.030	0.130	0.007	0.111 0.135 0.054	-0.872 -1.070 0.000

TABLE 3—continued

	Total		Women	L.	Men			
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S. E.	t Value for Gender Gap ^a	
Wholesale, retail trade, and catering services Real estate and social service	0.046	0.052	0.046	0.077	0.038	0.078	0.073	
Scientific research and technical development	0.029	0.105	0.184	0.238	0.068	0.096	0.00	
Party and government agencies and social organizations	0.015	0.044	-0.010	0.073	0.054	0.054	-0.705	
Public healthcare, sports, and social welfare	0.181**	0.065	0.249**	0.087	0.122	0.082	1.062	
Education, culture, and mass media Production and supply of electricity gas, and water:	0.187 ***	0.053	0.218**	0.076	0.176*	0.081	0.378	
construction; geological prospecting and water conservancy	1					0.000	.450	
Transportation, storage, post, and telecommunication services	0.261 ***	0.061	0.273**	0.090	0.224**	0.074	0.421	
Finance and insurance	0.370***	0.079	0,440***	0.104	0.349**	0.114	0.590	
Occupation								
Managers and administrators	0.225 ***	0.050	0.164*	0.068	0.274***	0.073	-1.103	
Technical and professionals	0.203 ***	0.043	0.272 ***		0.123^{+}	0.069	1.630	
Clerical and office workers	0.166 ***	0.042	0.299 **		0.076	0.056	2.554*	
Service workers	0.154*	0.071	0.217*	0.108	0.114	0.113	0.659	
raffillig, lofestry, animal nusbandry, and lishery workers Commerce workers	120.0	0.041	0.093	0.059	0.010	0.058	1.245	
Industrial workers	0.020	0.0	7,000	0.0.0	0.02	700.0	0.205	
Family Structure								
Marital status (married = 1)	0.064	0.055	0.028	0.057	0.142	0.124	-0.835	
Presence of young children (child under age $5 = 1$)	600.0	0.043	-0.098+	0.058	0.085	0.058	-2.231*	
Migrant (working in city with rural $Hukou = 1$)	_ 0 035	0.070	0700	000			7	
Intercept N	9,125***	0.130	8.837 ***		9.177 **	0.218	- 0.722 - 1.387	
			1,10		200,1			
^a t test for H _o : $B_{\text{female}} - B_{\text{male}} = 0$.								

"t test for Ho.: $\beta_{\text{female}} - \beta_{\text{male}} = 0$.

*p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed test).

*p < 0.05 (one-tailed test).

NoTE: All results are weighted.

micro-, macro-, and cross-level effects. There is no intercity variation in the size of this gender gap in income, as none of the three interaction terms among gender and city-level measures of FDI, growth rate of FDI, and early bird status has any statistically significant effect. This finding is consistent with our Hypotheses 1a, 1b, and 1c, that foreign investment has no intrinsic implications for gender inequality in income, as gender gap remains constant across cities with varying levels of FDI, growth rate of FDI, and time of opening to international investment.

Overseas-funded firms pay substantially higher incomes: workers in overseas-funded firms earn 55 percent more than those in collectives, 42 percent more than those in state firms, and 34 percent more than those in private firms, differences that are all statistically significant. This pattern holds for both sexes: for both men and women, employment in overseas-funded firms provides the highest monetary reward, with income in overseas-funded firms 31–53 percent higher among women and 41–61 percent higher among men. This also suggests that employment in foreign-funded firms now ranks the highest among all jobs, since these firms bestow the highest earnings.

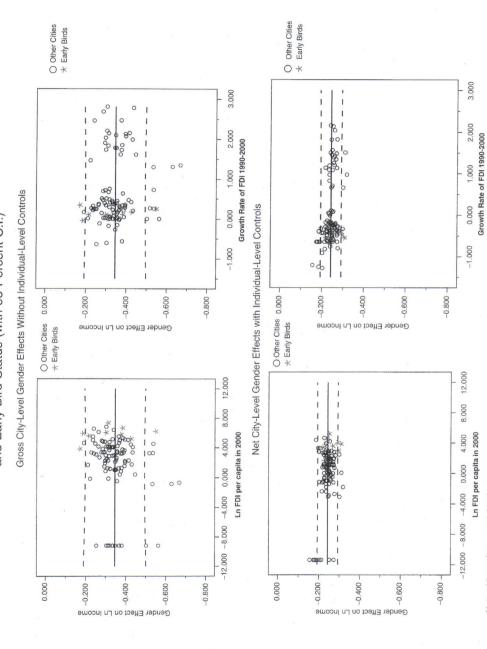
Employment in export-oriented manufacturing is negatively associated with income. The income of workers in export-oriented manufacturing is 37 percent lower than those in the finance and insurance industry, 26 percent lower than transportation and telecommunication workers, 23 percent lower than utility industry employees, 19 percent lower than those in education, culture, and mass media, and 18 percent lower than those employed in the public health, sports, and social welfare industries. Income in export-oriented manufacturing is also 3–7 percent lower than in all other industries except farming, husbandry, and fishery, but these differences are not statistically significant. Again, separate analyses of men and women show similar patterns, indicating that regardless of gender, employment in export-oriented manufacturing is associated with an income penalty.

Figure 3 shows empirical Bayes estimates of gender effects on Ln income by level of FDI in 2000 and growth rate of FDI in 1990-2000. These four graphs are consistent with the findings in Table 3 that city-level gender effects are not associated with level of FDI or growth rate of FDI. The early bird cities, not surprisingly, are those with higher levels of FDI, but there is no difference in gender effects on income between them and other cities, a finding that again confirms our Hypotheses 1a, 1b, and 1c. When individual-level control variables are not included, there are large variations in city-level gender effects on income, ranging from -0.20 to -0.65, as shown in the top two graphs. After controlling for individual human and political capital, labor market placement, family structure, and migration status, city-level variation in gender effects is substantially reduced to a range between -0.15 and -0.32. This shows that city-level variations in gender gap in income are largely accounted for by the city-level clustering effect of individuals with different levels of human and political capital and job placement.

Note: All results are weighted.

FIGURE 3

Empirical Bayes Estimate of Gross and Net City-Level Effects on Ln Income, by Level of FDI in 2000, Growth Rate of FDI 1990-2000, and Early Bird Status (with 95 Percent C.I.)



Gender Differences in Employment in Overseas-Funded Firms and Export-Oriented Manufacturing

To consider the combined effects of macro- and micro-level influences on placement in the labor market, particularly employment in foreign-invested firms and international production, we estimated a series of multilevel logit models (Raudenbush and Bryk, 2001; Goldstein, 1987). These models also have two components. The micro component incorporates individual characteristics. The basic micro-level equation is:

$$E_{ij} = \log \left[\frac{\varphi_{ij}}{1 - \varphi_{ij}} \right]$$

$$= \beta_{0j} + \beta_{1j}G + \sum_{k=2}^{4} \beta_{kj}H_k + \beta_{5j}P + \sum_{k=6}^{7} \beta_k F_k + \beta_8 M + \varepsilon_{ij}, \quad (B1.0)$$

where E_{ij} is the log odds of employment in either overseas-funded firms or export-oriented manufacturing, G is gender, H_{2_4} are three measures of human capital, P is political capital, F_{6_7} are two measures of family structure, M is migration status, β s are micro-level coefficients, and ε_{ij} is the micro-level random effect. The macro component of the model can be expressed by the following set of equations:

$$\beta_{0i} = \alpha_{00} + \gamma_{01}FDI + \gamma_{02}GFDI + \gamma_{03}EB + \gamma_{04}GDP + \mu_{0j}$$
 (B2.0)

$$\beta_{1i} = \alpha_{10} + \gamma_{11} FDI + \gamma_{12} GFDI + \gamma_{13} EB + \mu_{1i}, \tag{B2.1}$$

where FDI, GFDI, EB, and GDP are the same as in Equations (A1.0) and (A1.1), γ s are coefficients, and the μ s are macro error terms.

Being female is negatively associated with employment in overseas-funded firms. Table 4 shows the coefficients from multilevel logit models of employment in overseas-funded firms and in export-oriented manufacturing. Controlling for human capital, political capital, family structure, and migration status at the individual level, and city-level characteristics of FDI, growth rate of FDI, early bird status, and GDP per capita, women's odds of entering into overseas-funded firms are only 0.17, compared with men's odds of 1.0.⁵ This finding confirms our Hypothesis 2a that women are less likely to be employed in overseas-funded firms. This gender gap is smaller, however, in cities with high FDI, as indicated by the positive effect of the interaction term between gender and Ln FDI per capita in 2000. This shows that in cities where the FDI level is high, labor demand is also high, thus employers in foreign-funded firms need to move down the gender queue to tap into the female pool of qualified labor. FDI is also positively associated with employment in overseas-funded firms, showing that overseas-funded

 $^{^5\,\}frac{\phi_{ij}}{1-\phi_{ij}}=e^{-1.754}$ for women versus $\frac{\phi_{ij}}{1-\phi_{ij}}=e^0=1$ for men.

TABLE 4

Coefficients from Multilevel Logit Models of Affiliation with New Sector and Export-Oriented Manufacturing Industry in 2000

	Foreign-Funded Firms		Export-Orie Manufactu Industry	ring
	Coefficient	S.E.	Coefficient	S.E.
Gender (Female = 1)	- 1.754*	0.784	0.411**	0.154
Gender * Ln FDI per capita in 2000	0.850***	0.244	0.007	0.032
Gender * Growth rate of FDI 1990–2000	- 0.804	1.053	0.046	0.161
Gender * Early bird status (opened up in 1984 and earlier = 1)	- 2.209	1.251	- 0.553	0.392
City-Level Variables	0.017	0.120	-0.014	0.048
Ln FDI per capita in 2000 Growth rate of FDI 1990–2000	- 0.520	0.120	0.003	0.161
Early bird status (opened up in 1984 or earlier = 1)	0.324	0.900	0.443	0.280
Ln GDP per capita in 2000	0.756*	0.362	0.559***	0.148
Individual-Level Variables				
Human capital				
Education	-0.042	0.073	- 0.062 **	0.024
Age	-0.044	0.027	0.011	0.011
Political capital				
Communist party (CCP member = 1)	- 0.215	0.520	- 0.210	0.180
Family structure	=			
Marital status (married = 1)	- 1.459 **	0.452	-0.240	0.341
Presence of young children (child under age 5 = 1)	0.004	0.668	- 0.257	0.219
Migration status				
Migrant (working in city with rural <i>Hukou</i> = 1)	- 1.103	0.843	- 0.339	0.287
Intercept	- 4.888***	0.600	-2.362***	0.361
N	3,334		3,216	

^{*}p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed test).

Note: All results are weighted.

firms concentrate in cities with high levels of FDI and that individuals' odds of entering these firms are generally higher in these cities than in other cities. Overseas-funded firms are also more likely to employ those who are unmarried.

Women are more likely to be affiliated with the export-oriented manufacturing industry. If a man's odds of entering export-oriented manufac-

turing are 1.0, the odds are 1.51 for a woman with identical characteristics in a city with identical traits. This lends support to our Hypothesis 2b, that women are more likely to be employed in export-oriented manufacturing. This higher probability for women is consistent across cities, net of the influences of FDI, growth rate of FDI, or early bird status. FDI level is again positively associated with the overall probability of working in export-oriented manufacturing, showing that cities with high levels of FDI are more likely to engage in international production. The poorly educated are also more likely to be employed in this industry.

Conclusions

Inspired by the model of structural features of job queues, we argue that international investment and production influence job queues in less developed countries. Economic globalization creates new types of jobs and changes the rankings of existing jobs, while local cultural tradition and gender norms determine how men and women come to occupy which jobs in the new economic order. Economic globalization thus has no intrinsic positive or negative implications for gender inequalities in a country. Therefore, we should carefully analyze changes in economic returns to different industries, sectors, and occupations, and gendered patterns of distribution of men and women in the labor market, in the context of economic globalization. We used a 2000 national sample of more than 3,000 respondents from 105 cities, and city-level statistics. Through a series of linear multilevel models, we estimated the effects of city-level variables: level of FDI, growth rate of FDI, and time of opening up to international investment on gender inequalities in income. Using a series of multilevel logistic models, we further estimated gender differences in employment in export-oriented manufacturing and in overseas-funded firms in urban China.

We find that economic globalization has no intrinsic positive or negative effect on gender inequalities in the Chinese urban labor market. None of the three city-level characteristics—the level, the pace, or the historical timing of participation in the international economy—is associated with a city-level gender effect on income. These results indicate that after controlling for individuals' human capital, political capital, placement in the occupation, industry, and sector, and their family structure and migration status, the gender gap in income remains constant among cities of different level, pace, and duration of integration into the global economy.

Economic globalization influences job ranking, and thus the placement of men and women in two significant ways. First, overseas investment created a new category of jobs in overseas-funded firms. These new jobs quickly and substantially surpassed jobs in state firms in wages, thus reaching a position

 $^{^{6}\}frac{\varphi_{ij}}{1-\varphi_{ij}}=e^{\cdot 411}$ for women versus $\frac{\varphi_{ij}}{1-\varphi_{ij}}=e^{0}=1$ for men.

as the highest-ranked jobs in the urban labor market. As a result, men are now more likely to be employed in overseas-funded firms than women. Second, expansion of international production negatively influences jobs in the export-oriented manufacturing industry. Along with the rise of FDI and export of manufactured goods, wages in the manufacturing industry experienced a substantial decline relative to the average wages of all industries. Perhaps as a result of this decline in relative wages, the ranking of jobs in export-oriented manufacturing has also experienced a drop. Our results show that women workers are more likely to be employed in export-oriented

manufacturing.

These findings show the profound implications of economic globalization on gender inequalities in the Chinese urban labor market. Although our analyses reveal no net effect of FDI on gender income inequality, foreign investment and global production have changed the nature of job queues. Economic globalization does influence the pattern of gender segregation in the Chinese labor market by simultaneously upgrading the positions of some jobs and downgrading those of other jobs. As a result of this changed job order, men and women are now sorted into these jobs based on the joint characteristics of gender queues and job queues. Chinese men are more likely to be channeled into the newly emerged jobs in foreign firms and joint ventures that offer substantially higher earnings, while Chinese women tend to participate in global production by entering export-oriented manufacturing. The advances of the global economy inside China also brought with it a new gender division of labor in that country: men holding premier jobs in global firms and women holding low-paying jobs in global factories. The global economy perpetuates gender segregation in the Chinese urban labor market.

The negative impact of the global economy on gender inequality should not be overstated, however. Despite this marked pattern of gender-based bifurcation in labor distribution in the global economy, the impact of economic globalization on gender inequality is complex and not unidirectional. First, there is no evidence that the level, the pace, or the length of participation in the international economy are associated with a negative gender effect on income. Second, measures of economic globalization do not increase the gender gap in earnings accounted for by multilevel models using both individual- and city-level explanations. Our models only account for 30 percent of the total gender gap in 2000, similar to multilevel models using city FDI and 1999 data from the largest 35 cities that account for about 26 percent of the gender gap (Cohen and Wang, 2006). This is much lower than the 50 percent of the gross gender gap in earnings accounted for using national data from 1988 and 1995 (Shu and Bian, 2003). Last, higher levels of FDI reduce gender segregation in entry to foreign firms and joint ventures. Our analysis thus reveals that although economic globalization has introduced new forms of gender segregation in the labor market, there is no evidence that FDI has a direct bearing on gender-based income differentials. These indicate that the global capitalist market has become a new source of gender segregation, substituting the socialist state in regulating gender-based labor distribution in China.

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