2017

2017-23 China's Urban Gender Wage Gap: A New Direction?

Jin Song

Terry Sicular

Bjorn Gustafsson

China's Urban Gender Wage Gap: A New Direction?

by

Jin Song, Terry Sicular and Bjorn Gustafsson

Working Paper # 2017-23 **August 2017**

Western

Centre for Human Capital and Productivity (CHCP)

Working Paper Series

Department of Economics
Social Science Centre
Western University
London, Ontario, N6A 5C2
Canada

TWELVE

China's Urban Gender Wage Gap: A New Direction?

Jin Song
Associate Professor, Institute of World Economics and Politics
Chinese Academy of Social Sciences

Terry Sicular
Professor, Department of Economics
University of Western Ontario

Björn Gustafsson
Professor, Department of Social Work, University of Götenburg
Research Fellow, Institute for the Study of Labor (IZA)

Abstract

Using data from the urban household surveys of the China Household Income Project for the years 1995, 2002, 2007 and 2013, we provide consistent estimates of the gender wage gap in urban China and investigate those factors that have contributed to this gap. Similar to past studies, we find a substantial and progressive widening of the gap from 1995 to 2007. Based on new data for 2013, however, we find that from 2007 to 2013 the gender wage gap narrowed. For 2013 we estimate the gender wage gap at between 19 percent and 25 percent. Oaxaca-Blinder decompositions reveal that the contributions of the differences in characteristics between women and men to the wage gap declined over time, and by 2013 the gap is largely unexplained. We identify key factors underlying the gender wage gap in recent years, specifically, individual characteristics, such as age, education, marriage, and children, as well as employment sector and occupation.

Keywords: China, urban, inequality, gender, wage gap

JEL Classification: J16, J31, O15, P23

I. Introduction

Past studies of the gender wage gap in urban China have found that since the 1980s the gap between female and male wage earnings has progressively widened. This widening gender wage gap is not entirely surprising, as during this period China was undergoing the transition from a planned economy with an egalitarian wage structure to a predominately market-driven system with considerable wage differentiation. Using new data from 2013 China Household Income Project (CHIP) survey, we find a reversal in this trend. As measured by the ratio between mean female and mean male wages, the gender wage gap declined from 29 percent in 2007 to 25 percent in 2013. After controlling for age, education, marital status, ownership of work unit, occupation, production sector, and other characteristics, we find that the size of the gap is smaller and the decline persists. Although the extent of the decline in the gender wage gap is modest, it represents a change from the past and hints at possible future trends in the gender wage differential.

In theory, systematic differences in wage earnings, such as those observed in urban China, should reflect differences in labor productivity. Productivity is related to individual characteristics, such as education, experience, and age. Productivity can also vary across regions, types of employers, sectors, and jobs or occupation. Life events such as marriage, children and aging may have different effects on the perceived and actual productivity of women and men. Parental leave and retirement policies, which differ between female and male employees, influence the costs to employers. Consequently, life events can affect expectations, behavior, and productivity in ways that are likely to influence the gender wage gap.

Empirical studies of the gender wage gap typically find that controlling for such productivity-related characteristics reduces, but does not eliminate, the gender wage gap. The gender gap that remains after controlling for such characteristics is "unexplained" and is often attributed to discrimination. Discrimination can occur in the form of preferential hiring of men over women, and higher starting salaries, promotions and wage increases for men than women over time. The unexplained portion of the gender wage gap may also be due to factors other than discrimination that are not captured in an empirical analysis. In addition, questions exist about why women and men differ in their observed characteristics.

In this chapter, we document and discuss long-term trends in the urban gender wage gap in China from 1995 through 2013, with a focus on the most recent years when the gap narrowed. For reasons of comparability over time and consistency with the literature, we restrict our analysis to formal urban residents. Using data from the CHIP urban household surveys for the years 1995, 2002, 2007 and 2013, we estimate the size of the gender wage gap with and without controls for observable characteristics such as age, education, marital status, and sector. We find that controlling for observable characteristics reduces but does not eliminate the gender wage gap. A Oaxaca-Blinder decomposition identifies the extent to which the gap is explained by differences in the characteristics of women and men versus unexplained. The results show that by 2013 the gap was largely unexplained, reflecting that the characteristics of urban women have converged with those of urban men over time.

Wage regressions provide some insights into the recent narrowing of the gender wage gap. The estimates for 2007 reveal a larger gender wage gap between women and men with lower levels of education. In 2007 the gap was also larger between married women and married men (with and without children) than it was for those who were unmarried. Estimates for 2013

indicate that the narrowing of the overall gender wage gap from 2007 to 2013 was driven by improvements for particular subgroups. Specifically, the gender wage gaps narrowed for young, less-educated, and married workers.

Our work builds on a large literature on the gender wage gap in urban China (recent studies include Li and Song 2013; Liu 2011; Xiu and Gunderson 2013). We contribute to this literature in several ways. First, we provide in one place a set of consistent estimates of the gender wage gap from 1995 through 2013, therefore providing a long-term perspective. Second, using the CHIP 2013 data we update the literature and identify the recent narrowing of the gap. Third, we provide new evidence on factors underlying the changes in the gender wage gap, including life events such as marriage and children, that have been the subject of interesting recent research (Jia and Dong 2013; Qi and Dong 2016; Zhang and Hannum 2015).

Although differences in labor force participation are not the focus of this chapter, we recognize that the gender wage gap cannot be entirely disentangled from the question of who chooses to work (see Chi and Li 2014 for a discussion in the Chinese context). To some extent, we sidestep this selection problem by restricting our estimation sample to workers between the ages of 25 and 49, thus removing those younger and older individuals who are choosing when to enter and when to leave the labor force. Nevertheless, we present some background statistics on female and male labor force participation for a broader age range (ages 16 to 60). During the prime working age range from 25 to 49, which is the focus of our gender wage gap analysis, labor force participation is high for both women and men, although it is higher for men. More in-depth discussion of labor force participation using the CHIP data from 2013 and earlier years is provided by Xu and Li (2016), and additional analysis is available elsewhere in the literature (e.g., Hare 2016).

The wages of women and men are, of course, related to broad shifts in China's urban labor market and to changes in government policies. We therefore begin with an overview of recent developments in urban China's labor market and discuss some major policy measures relevant to gender wage differences. In Section III we introduce the data, present the descriptive statistics, and discuss the broad patterns of employment and the raw gender wage gap. Section IV explains our empirical methods. Sections V and VI report on our findings from the wage regressions and the Oaxaca decompositions. We conclude in Section VII with a discussion of our key findings and their implications.

II. Background: Developments in China's Urban Labor Market and Relevant Policies

A. Developments in China's Urban Labor Market

During the Maoist era and continuing through the 1980s, the allocation of labor in urban China was governed by planning and wages were set administratively. The major urban employers were state- or collectively owned units, and the urban economy was heavily based in manufacturing. China's economic reforms brought changes to the allocation of labor and to the setting of wages as well as producing major shifts in the structure of the urban economy. By the 2000s markets had replaced planning, the state and collective sectors had declined, and the non-state and foreign-owned sectors had emerged as major employers. Concurrently, the structure of the economy shifted from manufacturing to services, causing a shift in the composition of urban employment.

Under the planned economy the gender wage gap was relatively small. Liberalization of the setting of wages and the hiring of personnel led to the emergence of wage differentials, including those between men and women. Structural shifts in the economy also influenced the

gender wage gap. For example, the gender wage differential is smaller in the state sector than in other ownership sectors, so the declining share of employment in the state sector contributed to the widening of the average gender wage differential.

A significant change in recent years, especially since 2000, has been rural-urban migration. The entry of large numbers of relatively unskilled rural workers into the urban labor markets is thought to have widened the gap in pay between unskilled and skilled laborers. Higher proportions of women than men in urban China work in unskilled jobs. Increased competition from migrants for these unskilled jobs may therefore have influenced the gender wage gap.

Another notable development has been the dramatic expansion of higher education in China. The number of new graduates from regular institutions of higher education rose from 850,000 in 1999 to 4.5 million in 2007 and further to 6.4 million in 2013.[1] Women, who historically were less likely to continue on to post-secondary education, have benefited disproportionately from this expansion of education. Education among urban women has been catching up with that of urban men, with positive implications for their relative earnings.

During the global financial crisis, overall economic growth in China slowed down. The economy weathered the crisis well, in part due to a large stimulus package, but it is possible that the crisis had an impact on the urban gender wage gap. Our data are for one year before (2007) and one year after (2013) the peak years of the crisis. By 2013 China's economic recovery was well underway. Compared with 2007, in 2013 national GDP had increased 68 percent and urban

[1] National Bureau of Statistics data available in *Zhongguo tongji nianjian 2015* (China Statistical Yearbook 2015), Table 21-9. http://www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm. Accessed August 9, 2016.

employment had increased 24 percent.[2] We therefore consider our findings to be indications of long-term trends rather than of the short-term effects of the crisis.

B. Policies

In this section, we discuss selected recent policies relevant to the urban gender wage gap, specifically, minimum wage, parental leave, and retirement policies. Minimum wages can increase the wages of low-paid workers and may also have spillover effects for workers higher up on the pay scale. Since women are disproportionately represented in the lower rungs of the wage distribution, minimum wage policies potentially can reduce the gender wage gap. Using Chinese data, Li and Ma (2015) find such an effect for low-income workers during the period from 2002 to 2009.

China's minimum wage regulations were introduced in 1993. However, during the early years implementation was uneven and minimum wage levels remained low. In 2004 China strengthened its minimum wage regulations and expanded coverage to include more sectors and categories of workers. Local governments continued to set minimum wages, but local minimum wages were regularly reviewed by higher levels of government and enforcement was strengthened. The 2008 Labor Contract Law included a section on minimum wage policies, which further strengthened minimum wage policy and became part of formal legislation.[3] The period from 2007 to 2013 saw substantial increases in minimum wage levels. Overall, from 2007 to 2013 the national average monthly minimum wage rose 88.3 percent, outpacing the 76.9 percent increase in the national average monthly wage (Ye, Li, and Gindling 2015; Appendix

[2] GDP growth is in constant prices. Urban employment is for registered urban work units. National Bureau of Statistics data from *Zhongguo tongji nianjian* 2014 (China Statistical Yearbook 2014), Tables 3-5 and 4-2, http://www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm. Accessed Jan. 15, 2017.
[3] For a fuller discussion of minimum wage policies in China, see Ye, Li, and Gindling (2016).

Table A12.2). It is possible that these minimum wage increases contributed to the recent narrowing of the gender wage gap, especially among low-wage workers.

Child care and parental leave can influence women's labor force participation and wages. A recent study by Du and Dong (2013) reports that the decline in urban female labor force participation in China in the late 1990s and the early 2000s was associated with the loss of affordable, convenient child care accompanying the restructuring of public-sector enterprises. Du and Dong also find that the presence of day care in the community and the cost of child care affect urban women's labor participation and work hours.

Parental-leave legislation tends to increase women's labor force participation, but it is associated with lower relative wages for women (e.g., Ruhm 1998). China's parental-leave policies have evolved in recent years as provisions have become more generous and coverage has widened to cover more workers in more sectors. National policy allows fathers one week of parental leave with compensation. It also includes provisions for mothers' extended maternity leave with compensation as well as coverage for medical expenses. In the past, employers shouldered most of the costs associated with parental leave, thus creating negative incentives. In recent years, however, the government has reduced the burden on employers by establishing and expanding a maternity insurance program that pays many of the costs associated with the national parental-leave regulations. Maternity insurance is funded by mandatory employer contributions equal to a small percentage of the wage bill.

Two recent national policies affecting parental leave are the Social Insurance Law (2011) and the Special Provisions on Labor Protection for Female Employees (2012). Together these policies specify national standards for parental leave, including the length of maternity leave, which was extended from 90 to 98 days in 2011, compensation levels during maternity leave,

and employer contributions to maternity insurance. The Special Provisions also reinforce employment protection for women who become pregnant and take maternity leave. Note that local governments have introduced additional regulations and policies, so that benefits vary regionally.

In recent years the number of people covered by maternity insurance has grown substantially. From 2007 to 2013 coverage grew from 78 million employees to 164 million employees; as a share of employees in urban work units, coverage rose from 65 percent to 91 percent (NBS Department of Population and Employment Statistics 2014: 11, 390–393). The number of beneficiaries has also increased but remains relatively low, at 1.1 million in 2007 and 5.2 million in 2013 (NBS Department of Population and Employment Statistics 2014: 390-93). The small number of beneficiaries, which has been noted in several reports, is attributed to ongoing problems and uneven policy implementation (see, for example, China Labour Bulletin 2016; Lin 2011; Liu and Sun 2015). Reportedly, employers have been slow to join the maternity insurance program and to register all eligible employees. Employers have also been reluctant to hire young women who do not yet have children because of the "high risk" that they will become pregnant and take maternity leave. Moreover, when female employees become pregnant, employers have been known to try to "persuade" them, through semi-coercive measures, to resign. Such practices can affect the employment and wage earnings of women through the life cycle.

Since the 1950s the statutory retirement age has remained at age 60 for men, age 55 for women who are civil servants and employees of the state sector, and age 50 for all other women. In recent years the government has considered changing the statutory retirement age, and in 2016 it announced its intention to gradually increase the retirement age, with the specifics to be

announced in the future. Some reports hint that the plan may include reducing the difference in retirement ages for women and men.

Regardless of possible future changes in the retirement age, for the period under analysis the retirement age for women has remained five to ten years earlier than that for men. Women's earlier retirement age has implications for the gender wage gap. For both women and men, the age-earnings profile tends to flatten among older workers as they approach retirement age. Wages tend to increase with age from entrance into the labor market through middle age, when they reach a peak, and then flatten or even decline for workers who are closer to retirement. As will be seen from the CHIP data, this is the case in urban China. Moreover, the age-earnings profile flattens at an earlier age for women than it does for men, a reflection of the earlier retirement age, thus creating a widening of the gender wage gap among older workers.

III. Data and Descriptive Statistics

A. Data

For our analysis, we use data from the CHIP 1995, 2002, 2007 and 2013 urban household surveys. To obtain consistent samples over time, we restrict the sample to the twelve provinces that are present in all four waves of the survey. In all cases, the sample provinces cover the eastern, central and western regions of China.[4] Except where noted otherwise, we employ two-level province times region (eastern/center/western) population weights in all calculations and regressions so that the estimates are nationally representative.

[4]The twelve provinces common to all four waves of the survey are Guangdong, Beijing, Shanxi, Liaoning, Jiangsu, Anhui, Henan, Hubei, Chongqing, Sichuan, Yunnan, and Gansu. Note that in 1995 Chongqing was part of Sichuan province (and thus was included in the Sichuan sample of the CHIP survey for that year).

Due to labor market segmentation between formal urban residents and rural-urban migrants as well as the non-comparability of some data between these two groups, we do not incorporate migrant households in our analysis. In other words, the sample is confined to formal urban residents, i.e., individuals with an urban household registration (*hukou*). For the descriptive analysis of labor force participation our sample includes individuals between the ages of 16 and 59. For analysis of the wage gap, including the wage regressions and the Oaxaca decompositions, we restrict the sample to individuals at wage employment ages, that is between ages 25 and 49 inclusive. We use the narrower age range for analysis of the wage gap to reduce the impact on our wage estimates of selection due to choices regarding labor market participation, which are mostly concentrated among the young who are choosing when to transition from school to work and among older workers who are choosing when to retire.

The wage data in the CHIP datasets were collected by the National Bureau of Statistics (NBS) for its household survey and then provided to the CHIP. In 2013 the NBS changed its definition of wage earnings. Consequently, the wage data for 2013 are not entirely comparable to those in earlier years. The new definition adds several new components of wages that were not included previously (see Table 12.1). Using available information in the 2013 data on the components of wages, we have adjusted the NBS 2013 wage data to be as consistent as possible with the 2007 NBS wage definition. A full correction is not possible due to a lack of information on some components of employer-paid contributions to benefits and social insurance. In our judgment, the remaining inconsistencies are minor and unlikely to significantly affect our findings.

[Table 12.1 about here]

B. Descriptive Statistics: Labor Force Participation and Employment

Table 12.2 summarizes information in the 1995, 2002, 2007 and 2013 CHIP surveys about the employment status of working-age adults (ages 16–59). In all years, most working-age adults worked; however, work participation rates were consistently lower for women than for men. Work participation was highest in 1995, at 85 percent for men and 75 percent for women, but in 2002 it dropped to 76 percent for men and 59 percent for women, a reflection of the enterprise restructuring and layoffs that took place in the late 1990s. By 2007 work participation rates for men had recovered and remained stable through 2013 at about 80. However, work participation rates for women never fully recovered, leading to the emergence of a gender gap in work participation. In 2007 and 2013 women's work participation rates were 62–63 percent, only modestly higher than those in 2002.

[Table 12.2 about here]

This persistent gender gap in work participation since 2002 consists largely of a gender gap in wage employment. In 1995 wage employment participation was 10 percentage points higher for men than for women. The gap widened to about 15 percentage points in 2002 and thereafter remained at this level through 2013.

Aside from wage employment, the largest gender differences in Table 12.2 are in the categories of retirement, home maker, and "other." Women are disproportionately represented in these three categories. In all years only 4 to 7 percent of men belonged to these three categories, as compared to 15 percent of women in 1995 and rising to more than 20 percent in later years.

Interestingly, although the share of women in these three categories combined was virtually identical in 2007 and 2013, the allocation of women among the three categories changed markedly. The proportion of women who reported being retired declined from 17

percent in 2007 to 11 percent in 2013, whereas those who reported being home makers rose from 4 percent to 9 percent, and those belonging to the "other" category rose from 1 percent to 4 percent. These shifts may reflect changing attitudes about these categories that affected the self-reporting in the survey. Individuals often fall into more than one of these categories, e.g., a retired person may also be a home maker. We speculate that over time retired women became more willing to identify themselves as home makers or as "other"; therefore, we consider the three categories together as a single group.

Figure 12.1 shows the shares of women and men with wage employment by age for the most recent two years of the CHIP data. For both women and men, wage job participation is low for the youngest age group but it increases rapidly, reaching over 75 percent for women and over 80 percent for men by the age of 25. After age 25 wage employment participation remains stable for women until their late 40s and for men until about age 50, after which it declines. Our choice of ages 25 through 49 as the age cut-offs for the gender wage gap analysis is based on this age-employment pattern.

[Figure 12.1 about here]

Comparing 2007 to 2013, we find that the gender gap in job participation rates remained stable for ages 16 through 35. For those between the ages of 35 and 49 the gender gap widened somewhat due to a decline in female job participation. For older ages, the gap in wage job participation narrowed slightly as men hastened and women delayed their departure from the wage labor force.

C. Descriptive Statistics: Characteristics of Female and Male Wage Employment

Table 12.3 provides descriptive statistics on wage employment for the restricted estimation sample of individuals between the ages 25 and 49. Here we note several patterns of interest. First, for both genders the age structure of wage workers shifted somewhat over time. In 1995 the dominant age groups were 35–39 and 40–44, with relatively few younger and older workers. By 2013 the age distributions had evened out, with some increases in the shares of younger (ages 25–29) and older (ages 45–49) workers. These shifts in age patterns reflect the combined effects of changes over time in the demographics of the urban population and in work participation by different age groups.

[Table 12.3 about here]

Second, the composition of the sample with respect to marital status also changed over time. The share of singles for both women and men increased and the share of married women and married men declined. Also, over time the differences in marital status between women and men narrowed. In 1995 a larger proportion of men than of women were single and a higher proportion of women than of men were married; by 2013 these proportions were basically the same for both women and men. Note that the proportion reporting an "other" marital status, which includes divorced or widowed, increased slightly but remained very small.

Third, education levels rose for both women and men. In 2013 more than 40 percent of both women and men had a post-secondary education, and less than 5 percent had only a primary education or less. Over time, the share of individuals with college educations or higher rose and those with less education—junior high school and below—fell. From 2007 to 2013 the share of women with a college education or above increased markedly so that by 2013 the share of women with a post-secondary education was almost the same as that for men.

Changes in the employment structure in the sample are consistent with the structural changes in the labor market. The share of individuals working in public and state-owned work units declined markedly, whereas the share working in private, joint-venture, and foreign-owned units increased. Similarly, the structure of employment by occupation shifted away from manual work toward commerce and services. With respect to production sectors, there was a substantial shift from the secondary sector to the tertiary sector.

Table 12.3 reveals some changes over time in the characteristics of gender differences. In 1995 the sectoral pattern of employment for women and men was similar, but in 2013 gender differences in the production sector of employment were substantial; in particular, in 2013 a much higher proportion of women than men were employed in the tertiary sector and a much lower proportion of women was employed in the secondary sector. With respect to most other characteristics, however, differences between men and women narrowed between 1995 and 2013. Notably, between 1995 and 2007 the education levels of women converged with those of men. Additionally, in 2013 the ownership of work units for women and men was more similar than it was in earlier years. As will be discussed below, the convergence of women's and men's characteristics over time has contributed to the trends in the gender wage gap.

D. Descriptive Statistics: The Raw Gender Wage Ratio

The gender wage ratio, calculated as the average female wage divided by the average male wage, provides a raw measure of the gender wage gap. This measure is "raw" in the sense that it is not adjusted for differences in the characteristics of women and men. A gender wage ratio of 100 percent indicates no gender wage gap; a ratio below 100 percent indicates that on average women earn less than men.

Table 12.4 shows the overall raw gender wage ratio and the raw gender wage ratio by subgroups. The overall ratio declined progressively from 87 percent in 1995 to 82 percent in 2002, and then further to 71 percent in 2007. Between 2007 and 2013 the downward trend was reversed and the gender wage ratio increased to 75 percent.

[Table 12.4 about here]

The gender wage ratio varies by age and education. Figures 12.2 and 12.3 show the ratios by age and education subgroups, respectively. With respect to age, in all years the wage ratio was higher for young workers and lower for older subgroups (Figure 12.2). Moreover, from 1995 to 2007 the gender wage ratio declined for all age groups, but especially for older workers. Notably, from 2007 to 2013 the gender wage ratio improved for middle-aged and older workers, but it changed little for younger age groups. As age is correlated with other variables such as education and marital status, below we report on the gender wage ratios by age based on multivariate regressions that control for other characteristics.

[Figure 12.2 and 12.3 about here]

The decline in the gender wage ratio with age is also evident if one follows birth cohorts in the CHIP sample over time. For example, consider individuals born in the years 1968 through 1972. This five-year birth cohort entered the labor force in 1995, at which time its members were between the ages of 23 and 27. In that year the average gender wage ratio for this cohort was 101 percent, that is, on average women and men in this age group received the same wages. Seven years later (2002) when this cohort reached the ages of 30 to 34, its gender wage ratio had fallen to 84 percent. Five years later (2007) at ages between 35 and 39, its gender wage ratio had fallen further to 68 percent. In 2013 at ages between 41 and 45 the ratio remained at 69 percent.

The next five-year birth cohort, born in the years 1973 through 1977, had not yet entered the labor force in 1995. Seven years later (in 2002) at ages 25–29, its gender wage ratio was 90 percent. Five years later (in 2007) at ages 30–34, the gender wage ratio of this birth cohort had declined to 79 percent, where it remained in 2013, at ages 36–40. These cohort-based patterns reveal that the gender wage gap is small when women enter the labor force but widens over time spent in the labor force.

With respect to education, the gender wage ratio has followed a two-step pattern that is lower for education levels up through high school and higher for vocational secondary school, vocational post-secondary school, college, and above (see Figure 12.3). The gender wage ratio shifted downward for the least educated from 1995 to 2002 and shifted downward again for all education groups from 2002 to 2007. From 2007 to 2013 the curve remained unchanged except for the least-educated subgroup, primary school and lower, for which the gender ratio improved. As of 2013, the gender wage ratios for primary education and lower, middle school, and general high school were roughly 70 percent, and for higher levels of education they were 77–79 percent. These differences in the gender wage ratio across education levels to some extent are correlated with age, as older cohorts tend to have less education. Below we examine the relationship between education and the gender wage ratio using a multivariate regression to control for correlated characteristics.

Table 12.4 reports the wage ratios for additional subgroups of interest. The gender wage ratio was close to 100 percent for single individuals in all years, indicating little or no gender wage gap. For married individuals, however, the wage ratio was lower and it declined markedly to 70 percent in 2007 and then remained basically unchanged at 72 percent in 2013. This pattern

by marital status is consistent with that found in other countries. Married women typically earn less than married men.

The gender wage ratio also varies by the number of children. In all years the gender wage ratio is lower for women with children than for women without children. Among all such subgroups the gender wage ratio deteriorated between 1995 and 2007. From 2007 to 2013 the increase in the wage ratio was most noticeable for women without children.

The gender wage ratio varies by ownership of the work unit and sector of employment. In most years the gender wage ratio was highest in public and state-owned work units. These subgroups include more highly educated workers, so their higher wages may reflect differences in education. With respect to sectors, increasingly few urban workers were employed in the primary sector. For the secondary and tertiary sectors, we do not see a clear pattern, except that for both sectors the gender wage ratios declined to about 70 percent in 2007 but then recovered between 2007 and 2013. Such differences in the gender wage ratios across ownership and occupation suggest that structural changes in the urban economy may be associated with trends in the gender wage gap.

IV. Empirical Methodology

Our empirical analysis is mainly based on an estimation of Mincer wage earnings equations using ordinary least squares (OLS) with standard errors adjusted to reflect the clustering arising from the survey sampling design. First, we estimate regressions pooling women and men together using the regression equation:

$$lnY_i = \alpha + \beta Female_i + \sum_j \gamma_j X_{ji} + \mu_i \ , \qquad (1)$$

where for each individual *i* the ln of wage earnings *ln* Y_i is a function of whether the individual is female (*Female* equals one if female, zero otherwise), plus *j* other characteristics X_{ji} and the residual μ_i. The coefficient of interest is $\hat{\beta}$, which indicates the presence of a gender wage gap after controlling for other characteristics.

Using the results from the estimation of Equation (1) we calculate the gender wage gap in percentage terms after controlling for other characteristics. As discussed in Giles (2011), in a semi-log regression the estimator of the percentage effect *p* of a dummy variable on the outcome variable is given by

$$p = \frac{e^c}{e^{(0.5*V_c)}} - 1 \ , \qquad (2)$$

where *c* is the OLS estimate of the coefficient on the dummy variable and V_c is the estimated variance of that coefficient (see also Halvorsen and Palmqvist 1980).

To explore more fully the impact of marriage and children on the gender wage gap, we also estimate the pooled wage equations with added interactions between the gender dummy variable and the dummy variables for marital status and the number of children under the age of 16. The estimation equation is now:

$$lnY_i = \alpha + \beta_0 Female_i + \beta_1 (Female_i * Single_i) + \beta_2 (Female_i * OtherMarital_i) +$$
$$\beta_3 (Female_i * Onechild_i) + \beta_4 (Female_i * Morechildren_i) + \gamma_1 Single +$$
$$\gamma_2 OtherMarital_i + \gamma_3 Onechild_i + \gamma_4 Morechildren_i + \sum_{j=5} \gamma_j X_{ji} + \mu_i \ . \qquad (3)$$

The omitted reference group is male, married, with no children. Using estimates from this equation and the formula for the percentage effect (Equation [2]), we calculate the gender wage gaps for each of the following subgroups: single with no children (the sum of the percentage effects of β_0 and β_1); married with no children (the percentage effect of β_0); married with one child (the sum of the percentage effects of β_0 and β_3); and married with more than one child (the sum of the percentage effects of β_0 and β_4).

Second, we estimate wage equations for women and men separately. For each of the female and male samples we estimate Equation (1), but without the dummy variable *Female*. As above, in some specifications we include dummy variables for ownership of the individual's work unit, occupation, and sector of employment.

The estimated coefficients from the separate wage equations are used to carry out a decomposition of the gender wage gap. According to the Oaxaca-Blinder decomposition (Blinder 1973; Oaxaca 1973), the difference between average ln male and average ln female wages can be written as:

$$\overline{lnY_m} - \overline{lnY_f} = \left(\hat{\alpha}_m + \sum_j \hat{\gamma}_{j,m}\,\overline{X_{j,m}}\right) - \left(\hat{\alpha}_f + \sum_j \hat{\gamma}_{j,f}\,\overline{X_{j,f}}\right), \qquad (4)$$

where the bars indicate the mean values for males *m* and females *f*. The difference in average ln wages can then be divided into two components:

$$\overline{lnY_m} - \overline{lnY_f} = \left[(\hat{\alpha}_m - \hat{\alpha}_f) + \sum_j (\hat{\gamma}_{j,m} - \hat{\gamma}_{j,f})\,\overline{X_{j,m}}\right] + \left[\sum_j \hat{\gamma}_{j,f}\left(\overline{X_{j,m}} - \overline{X_{j,f}}\right)\right] . \qquad (5)$$

The first term on the right-hand side of Equation (5) is that portion of the wage difference that can be attributed to differences between male and female coefficients, including the constant terms (the "unexplained" portion). The second term is the portion of the wage difference that can be attributed to differences between male and female characteristics (the "explained" portion).

In all wage regressions, the dependent variable is the ln of monthly wage earnings. For 1995, 2002, and 2007 we use the NBS wage variable in the CHIP dataset; for 2013, we use the adjusted 2013 wage variable. Individual characteristics include dummy variables for marital status, number of children, ethnicity, age group, and education level. Dummy variables for province of residence control for provincial fixed effects. In some specifications, we include dummy variables for the ownership of the individual's work unit, occupation, and the sector of employment. All variables are from the CHIP datasets, and all estimates are carried out using two-level weights.

V. Pooled Wage Equations: Results

A. Results of the Basic Specification

Estimates of the coefficient $\hat{\beta}$ are reported in Table 12.5. The first row gives estimates from wage equations estimated without, and the second row with, controls for sector of ownership, occupation, and sector of production. The estimates are uniformly negative and significant, indicating an urban gender wage gap that is robust to specification and that persists over time. The coefficients are smaller with than without the additional controls, reflecting that women tend to work in lower-wage sectors and occupations than men.

[Table 12.5 about here]

Changes in the magnitude of the $\hat{\beta}$ coefficient over time confirm that the gender wage gap widened from 1995 to 2007, but narrowed from 2007 to 2013. Without controls for sector and occupation, the gender wage gap increased from 12 percent in 1995 to 18 percent in 2002 to 27 percent in 2007, and then decreased to 24 percent in 2013. With controls for sector and occupation, the gap increased from 10 percent in 1995 to 15 percent in 2002 to 22 percent in 2007, and then decreased to 19 percent in 2013.

Our regression-based estimates of the urban gender wage gap are similar to those in the literature, which indicate a widening trend in the gap during years prior to 2010. Li and Song (2013) report estimated coefficients on the gender dummy variable based on regressions using the urban CHIP data without controls for sector/occupation of 0.12, 0.20, and 0.27 in 1995, 2002, and 2007, respectively. Liu (2011) reports estimated coefficients based on regressions using urban data from the China Health and Nutrition Survey of about 0.15 for the late 1990s and early 2000s.

Full results from the pooled wage equations are reported in the Appendix Tables 12A.1, 12A.2, and 12A.3; here we note selected findings of interest. The coefficient on single marital status in all cases is negative and significant, ranging from –.17 to –.24 (married is the omitted reference category), with no clear trend over time. This result indicates that after controlling for other characteristics such as age and education, single individuals have lower wages, thus suggesting the presence of a marriage wage premium. The coefficients on the dummy variable for one child are largely insignificant, but the coefficients on the dummy variable for two or more children are significant and negative in 2002, 2007, and 2013 in the regressions that do not include controls for sector/ownership. These results indicate no wage penalty for the first child but a wage penalty for two or more children, as compared to no children. The fact that the

coefficients on two or more children are closer to zero and mostly not significant when controls for occupation/sector are included in the regression suggests that people with two or more children may sort into lower wage occupations and sectors.

The coefficients on the age variables indicate that in general wages rise with age up through the early 40s and then they level out. The estimated coefficients on education are mostly significant and consistent with expectations, with higher levels of education producing higher returns. Moreover, the additional returns to higher levels of education compared to lower levels of education increased substantially over time, especially from 1995 to 2007. The steepening of the education-earnings relationship implies that differences in education would increasingly generate wage inequality.

We see the expected patterns for ownership of work unit, occupation, and sector of employment. Estimates of the relevant coefficients are shown in Table 12.6. With respect to sector of ownership, in all years except for 1995 the coefficients are negative and significant, indicating that wages are highest in the reference category, i.e., the state sector. Moreover, the magnitude of the wage difference is large. In 2013, for example, the log point difference in wages between the state sector and the non-state sector was 0.23–0.24. Since proportionately fewer women than men are employed in the state sector, these wage differentials are relevant to the gender wage gap.

[Table 12.6 about here]

With respect to production sector, the reference category is manufacturing. As shown in Table 12.6, the coefficients for construction and mining are either positive and significant or not significant, which implies that wages in construction and mining have been similar to or higher

than wages in manufacturing. As of 2013, wages in construction and mining were not significantly different from those in manufacturing.

How do wages in the tertiary sector, which employs a high proportion of women, compare for women and men? The coefficients differ among the tertiary sectors and across the years, but as of 2013 none of the tertiary sector industries had positive, significant coefficients, and four had negative, significant coefficients. In other words, as of 2013 no tertiary sectors paid wages higher than those in the secondary sectors, and some paid significantly less than the secondary sectors. As the pattern of employment across sectors is not the same for women and men, these wage differences across production sectors contribute to the underlying raw gender wage gap.

B. With Interactions between Gender, Marital Status, and Children

Table 12.7 reports the estimated β coefficients from the pooled regression with interactions between the gender dummy variable and dummy variables for life events, as in Equation (2). Figure 12.4 shows the gender wage ratio in terms of percentage for each life event group, calculated using the estimated coefficients. These coefficients and ratios control for other characteristics such as age, education, location, etc. and thus they provide a clearer picture of the relationship between life events and wages.

[Table 12.7 about here]

[Figure 12.4 about here]

As shown in Figure 12.4, in 1995 when wages were largely determined administratively, differences in the gender coefficient across life event groups were modest. However, the differences widened in later years. In all years the gender wage ratios for singles remained high,

fluctuating but always above 90 percent. In other words, for single women and men the wage gap was either nonexistent or small. For married groups, however, the wage ratio deteriorated. Regardless of the number of children, the wage ratio for married women declined markedly from 80–90 percent in 1995 to below 75 percent in 2007. Between 2007 and 2013 the gender wage ratios for those married without children recovered substantially, but for those married with one or more children the ratios declined slightly.

Thus, as of 2013 and after controlling for other characteristics such as education, ethnicity, location, etc., the gender wage gap was smallest for individuals who were single with no children. The gap widened progressively from being single, to being married, to being married with one child, and to being married with more than one child. In 2013 single women without children earned only 3 percent less than single men without children. Married women without children earned 22 percent less than married men without children. Married women with children earned 30 to 33 percent less than married men with the same number of children.

These estimates indicate that the life event with the greatest impact on the gender wage gap is marriage. As will be seen in the separate female and male regressions, the impact of marriage on earnings differs for women and men.

VI. Separate Wage Equations for Women and Men and Oaxaca-Blinder Decompositions

A. Results of Separate Wage Equations for Women and Men

In this section, we report and discuss selected results of interest from separate wage equations for women and men—specifically the results related to age, education, and life events (see the Appendix Tables 12A.1, 12A.2, and 12A.3 for the full results). The estimates without and with controls for ownership sector, occupation, and production sector are similar, so here we only

discuss the results from the regressions without these controls. We mainly focus on the estimates for 2007 and 2013.

Figure 12.5 plots the age-earnings profiles of women and men for 2007 and 2013 based on the predicted wages from the separate female and male wage equations, expressed in constant 2013 prices. All characteristics except age are held constant and set equal to their respective means for each gender. As expected, in both years men's wages are on average higher than women's wages at all ages. In both years and for both women and men, the age-earnings relationship is steeper at younger ages and it flattens or turns down at older ages. Consistent with the younger statutory retirement age for women, the flattening of the age-earnings curve begins earlier for women. In 2013, for example, the wages of women rose with age through age 35–39, after which they remain flat for the two oldest age groups. For men, wages rise with age through ages 40–44, after which they decline for the oldest age group.

[Figure 12.5 about here]

The implications of these age-earnings curves for gender wage ratios are shown in Figure 12.6, which plots the gender wage ratios using the predicted wages in Figure 12.5. In 2007 the gender wage ratios do not change much with age. From 2007 to 2013, however, the wages of women in younger age groups caught up with the wages of men, so that the gender wage ratios improved for these subgroups. For older age groups, however, the catch-up was either smaller or nonexistent. Consequently, in 2013 the gender wage gap was two-tiered, at 20 percent for younger age groups and at 25–30 percent for older age groups.

[Figure 12.6 about here]

More education is associated with higher earnings for both women and men. Figure 12.7 plots the education-earnings profiles for women and men in 2007 and 2013 based on the

predicted wages. Earnings for both women and men increase with education. Moreover, the curves become notably steeper from 2007 to 2013, indicating increasing returns to additional years of education. However, in both 2007 and 2013, at all education levels women's wages are below men's wages. To attain the same wage level as men, women must have an education that is at least one step higher than that of men. For example, as shown in the figure, in 2013 an average woman with a high school education earned about the same wage as an average man with a primary school education or lower, and an average woman with a college education or higher earned about the same wage as an average man with a vocational post-secondary education.

[Figure 12.7 about here]

[Figure 12.8 about here]

Figure 12.8 gives the regression-based gender wage ratios by education level calculated using the predicted wages in Figure 12.7. In 2007 the gender wage ratio rose steeply with the level of education, from 58 percent for primary education and less to 82 percent for college education and higher. Between 2007 and 2013 the ratio improved substantially for the two lowest education groups and changed only slightly for the higher education groups. As of 2013 an average woman with a primary education or less earned 75 percent that of an average man with the same level of education. For those with a middle-school education the ratio was 70 percent, and for those with a college education or higher it increased to 80 percent.

The separate female and male regressions provide information about the differential impact of marriage and children on the earnings of both women and men. Studies in other countries have found that after controlling for other characteristics, married men earn more than single men, thus enjoying a "marriage premium." For women, the opposite is the case, that is,

women experience a "marriage penalty." Furthermore, men with children tend to earn more than men without children, whereas the opposite is true for women. There is some debate regarding the explanations for such differentials, e.g., whether this is due to time out of the labor force or differences in productivity. Such premiums and penalties can underlie the gender wage gaps within life event groups, as discussed earlier.[5]

Our estimates indeed reveal differences between women and men in the estimated coefficients on marital status and children, as reported in Table 12.8 for 2007 and 2013. The patterns, however, are somewhat different than those found in other countries. The coefficients on the marital status dummy variables are significant for both women and men and indicate that both women and men enjoy a marriage premium, although the premium for women is smaller than that for men. From 2007 to 2013 the male marriage premium declined, so that the gender difference narrowed. As of 2013, the log point difference between married men and single men was 0.25 and that between married women and single women was 0.15.

[Table 12.8 about here]

With respect to children, the estimates indicate that, overall, having children has little effect on men's earnings: for men, the coefficients on the children dummy variables are all insignificant. For women, the coefficients on the dummy variable for having a single child are insignificant but the coefficients for having two or more children are (weakly) significant and negative, suggesting the presence of a wage penalty for women with more than one child.[6]

B. Decomposition Results

[5] See Ribar (2004), Rodgers and Stratton (2010), and Schoeni (1995) for reviews of the literature on wage premiums and penalties associated with marital status and children.

[6] Note that in some years the number of women with two or more children in the dataset is small, which might lead to imprecise estimates and thus the weak significance of this coefficient. The number of women with two or more children in 1995 is 196, in 2002 it is 46, in 2007 it is 93, and in 2013 it is 96.

The results of the Oaxaca-Blinder decompositions based on the separate ln wage equations for women and men are shown in Table 12.9. The "explained" component of the decomposition is the share of the difference in ln wages between men and women that can be attributed to differences in the average endowments of women and men, that is, differences in the means of characteristics, such as age, education, and so on. The remainder, or "unexplained," component of the difference can be attributed to differences in the estimated coefficients and constant terms for women and men, and it may reflect discrimination as well as unobserved factors that are not captured by the regressions.

[Table 12.9 about here]

As shown in the table, a large majority of the difference in ln wages between men and women is unexplained. Without controls for sector/ownership, the unexplained portion was 87–90 percent of the gender gap in 1995, 2002, and 2007, and it rose to 97 percent in 2013. Differences in endowments contributed the remainder, roughly 10–13 percent of the gender gap in 1995, 2002, and 2007, and only 3 percent of the gender gap in 2013. With sector/occupation controls, the contribution of endowments is larger, no less than 25 percent in all years and the unexplained contribution is accordingly smaller. Here, the ownership of the work unit, occupation, and sector of employment are treated as endowments, so the fact that women tend to work in lower-wage sectors and occupations increases the explained component of the gender wage gap. Regardless, with or without the controls, most of the gender wage gap is unexplained. In other words, differences between women and men in terms of the observed characteristics were not the major source of the gender wage gap. Rather, the gender wage gap was largely unexplained.

To what extent are changes over time in the gender wage gap the result of changes in the contributions of endowments versus the contributions of the coefficients? From 1995 to 2007 the total differential between men and women in the ln wage (*T*) increased, but from 2007 to 2013 it declined. The decomposition results reveal that the increase in the differential from 1995 to 2007 was associated with increases in both the difference due to endowments (*E*) and to the difference due to the coefficients, including the constant terms (*C*). Similarly, the decline from 2007 to 2013 was associated with declines in both these components. In all years, however, the contribution of endowments was relatively small. In other words, changes over time in the gender wage gap, including the decline in the gender wage gap from 2007 to 2013, reflect changes in both the explained and unexplained components of the gap, but especially changes in the unexplained component.

VII. Conclusions

In this chapter, we provide consistent estimates of the gender wage gap in urban China from 1995 to 2013 and investigate factors contributing to this gap. From 1995 to 2007 we find a substantial and progressive widening of the gap. From 2007 to 2013 we find that the gender wage gap narrowed.

Changes in China's gender wage gap are related to changes in the urban economy as well as to changes in government policies that have different effects on women and men. Employment of both women and men has been shifting from the higher-paid to the lower-paid sectors, specifically from the state-owned sector to the non-state-owned sector and from the secondary sector to the tertiary sector. Women continue to be disproportionately employed in

the lower-paid sectors. These sectoral patterns contribute to the persistent gender wage differential.

Policies relevant to the gender wage gap include the minimum wage policy, the expansion of higher education, parental leave regulations, and retirement policies. Our findings indicate that recent changes in these policies in China have likely contributed to the narrowing of the gender wage gap after 2007. Retirement age policies, however, have remained unchanged and continue to mandate earlier retirement by women, thus depressing the earnings of older women relative to those of older men.

Changes in China's gender wage gap are also related to life-cycle events. In our data, the proportion of single individuals gradually increased for both women and men, but more so for women. Concurrently, the number of children slowly declined for both women and men. These trends in life-cycle events tend to moderate the gender wage gap because the gender wage differentials are smaller for single people than they are for married people and for people with no children or one child compared to those with more than one child.

What factors underlie the recent narrowing of the gender wage gap? Our decomposition analysis shows that to some extent the narrowing is due to the convergence of characteristics between women and men, that is, a reduction in the "explained" component of the gap. In this regard, the main change has been in terms of education. Between 2007 and 2013 differences in the education levels of women and men narrowed. Notably, the proportion of women with college educations or higher caught up to that of men.

The recent narrowing of the gender wage gap also reflects a reduction in the differences in the estimated coefficients or returns to the characteristics of women and men, that is, a reduction in the "unexplained" component of the gap. Our estimates from the separate female

and male regressions indicate that the reduction in this unexplained component of the wage gap between 2007 and 2013 was mainly driven by changes in the returns to several specific characteristics: being young (ages 25–39), having less education (middle school or less), being unmarried, and being married without children.

Recent changes in the coefficients on young ages and lower levels of education could reflect increases in minimum wage levels and strengthened enforcement of the minimum wage. Minimum wage policies compress wage differentials, including the gender wage gap, for low-paid groups, which are mainly composed of young and unskilled workers. At the other end of the age spectrum, our estimates show that older workers continue to experience a larger gender wage gap. This is not surprising given the lack of any change in the statutory retirement ages for women and men. If the proposed changes to the statutory retirement age include a reduction in the retirement age differential between women and men, it is possible that in the future the gender wage gap for older age groups will shrink.

Reductions in the gender wage gap for those who are single and have no children or who are married with only one child may be related to improvements in parental leave regulations and maternity insurance. In principle, these policy changes should lower the costs of maternity leave for employers, so employers would have less of an incentive to discriminate against women who are at "risk" of having children.

Is the new direction in China's urban gender wage gap a short-term or a long-term phenomenon? Prediction is a difficult business, but our analysis provides some basis for speculation. First, we suggest that the trend in the gender wage gap from 2007 to 2013 was not due to the short-term economic impact of the global financial crisis. The global financial crisis began a year after 2007 and the recovery was well underway by 2013. Second, many of the

underlying changes in the gender wage differences from 2007 to 2013 were related to secular changes in the economic structure, long-term trends in individual characteristics, such as education, marriage, and children, and policy changes that are ongoing and that are likely to continue.

Yet it is possible that some recent developments might offset these trends, in particular the recent relaxation of the one-child policy. Our analysis identifies a significant, positive relationship between having multiple children and the gender wage gap. This relationship reflects the heavier child-care burden on women, indicating the lack of well-funded child-care options (Guo and Xiao 2013; Du and Dong 2013; Qi and Dong 2013, 2016). Moreover, in a setting where the government mandates generous parental leaves for women but not for men and in which some of the costs of those leaves are still borne by the employers, the relaxation of the one-child policy will exacerbate the negative incentives for employers and will have future consequences for the gender wage gap.

Although we discuss the relationship between patterns in the gender wage gap and concurrent structural changes and policy measures, we do not formally analyze these relationships. In addition, our estimates of the gender wage gap are not corrected for selection, that is, we do not employ estimation methods that consider the possibility that the differences in the wages of women and men are affected by gender differences in wage job participation. Nevertheless, our findings provide a starting point for further research in these areas.

References

Blinder, A. S. (1973), "Wage Discrimination: Reduced Form and Structural Estimates," *Journal of Human Resources*, 8(4), 436–455.

Chi, W. and B. Li (2014), "Trends in China's Gender Employment and Pay Gap: Estimating Gender Pay Gaps with Employment Selection," *Journal of Comparative Economics*, 42(3), 708–725.

China Labour Bulletin (2016), "China's Social Security System," http://www.clb.org.hk/content/china%E2%80%99s-social-security-system. Accessed August 10, 2016.

Du, F. and X. Y. Dong (2013), "Women's Employment and Child Care Choices in Urban China during the Economic Transition," *Economic Development and Cultural Change*, 62(1), 131–158.

Giles, D. E. (2011), "Interpreting Dummy Variables in Semi-logarithmic Regression Models: Exact Distributional Results," University of Victoria Department of Economics Econometrics Working Paper, no. 1101.

Guo, J. and S. Xiao (2013), "Through the Gender Lens: A Comparison of Family Policy in Sweden and China," *China Journal of Social Work*, 6(3), 228–243.

Halvorsen, R. and R. Palmqvist (1980), "The Interpretation of Dummy Variables in Semilogarithmic Equations," *American Economic Review*, 70(3), 474–475.

Hare, D. (2016), "What Accounts for the Decline in Labor Force Participation among Married Women in Urban China, 1991–2011?" *China Economic Review*, 38, 251–266.

Jia, N. and X. Y. Dong (2013), "Economic Transition and the Motherhood Wage Penalty

in Urban China: Investigation Using Panel Data," *Cambridge Journal of Economics*, 37(4), 819–843.

Li, S. and X. Ma (2015), "Impact of Minimum Wage on Gender Wage Gaps in Urban China," *IZA Journal of Labor and Development*, 4(1), 1–22.

Li, S. and J. Song (2013), "Changes in the Gender-Wage Gap in Urban China, 1995-2007," in S. Li, H. Sato, and T. Sicular, *Rising Inequality in China: Challenges to a Harmonious Society*, 384-413. New York: Cambridge University Press.

Lin, Y. (2011), "Nü zhigong teshu laodong baohu zhidu de kunjing ji duice yanjiu" (Research about the Plight of the Protection System for Special Labor of Female Workers and Countermeasures), *Faxue zazhi* (Law Science Magazine), no. 11, 59–63

Liu, H. (2011), "Economic Reforms and Gender Inequality in Urban China," *Economic Development and Cultural Change*, 59(4): 839–876

Liu, T. and L. Sun (2015), "Maternity Insurance in China: Global Standards and Local Responses," *Asian Women*, 31(4), 23–51.

NBS (various years), *Zhongguo tongji nianjian* (China Statistical Yearbook). Beijing: Zhongguo tongji chubanshe.

NBS Department of Population and Employment Statistics (2014), *Zhongguo laodong tongji nianjian 2014* (China Labour Statistical Yearbook 2014). Beijing: Zhongguo tongji chubanshe,

Oaxaca, R. (1973), "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review*, 14(13), 693–709.

Qi, L. and X. Y. Dong (2013), "Housework Burdens, Quality of Market Work Time, and Men's and Women's Earnings in China," University of Winnipeg, Department of

Economics, Departmental Working Paper, no. 2013-01.

Qi, L. and X. Y. Dong (2016), “Unpaid Care Work's Interference with Paid Work and the Gender Earnings Gap in China,” *Feminist Economics*, 22(2), 143–167.

Ribar, D. C. (2004), “What Do Social Scientists Know About the Benefits of Marriage? A Review of Quantitative Methodologies,” IZA Discussion Paper, no. 998.

Rodgers, W. M. and L. S. Stratton (2010), “Male Marital Wage Differentials: Training, Personal Characteristics, and Fixed Effects,” *Economic Inquiry*, 48(3), 722–742.

Ruhm, C. J. (1998), “The Economic Consequences of Parental Leave Mandates: Lessons from Europe,” *Quarterly Journal of Economics*, 113(1), 285–317.

Schoeni, R. F. (1995), “Marital Status and Earnings in Developed Countries,” *Journal of Population Economics*, 8(4), 351–359.

Xiu, L. and M. Gunderson (2013), “Gender Earnings Differences in China: Base Pay, Performance Pay, and Total Pay,” *Contemporary Economic Policy*, 31(1), 235–254.

Xu, M. and S. Li (2016), "Female Labor Force Participation in China, 1998 to 2013," unpublished manuscript.

Ye, L., T. H. Gindling, and S. Li (2015), “Compliance with Legal Minimum Wages and Overtime Pay Regulations in China,” *IZA Journal of Labor and Development*, 4(1), 1–35.

Zhang, Y. and E. Hannum (2015), “Diverging Fortunes: The Evolution of Gender Wage Gaps for Singles, Couples, and Parents in China, 1989–2009,” *Chinese Journal of Sociology*, 1(1),15–55.

Appendix

Table A12.1. *Full results of the pooled wage equations*

	without sector and occupation controls				with sector and occupation controls			
	1995	2002	2007	2013	1995	2002	2007	2013
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
female	-0.132***	-0.200***	-0.319***	-0.270***	-0.106***	-0.162***	-0.252***	-0.213***
	(0.012)	(0.015)	(0.014)	(0.022)	(0.012)	(0.015)	(0.013)	(0.022)
single	-0.199***	-0.196***	-0.238***	-0.197***	-0.196***	-0.169***	-0.229***	-0.178***
	(0.044)	(0.043)	(0.037)	(0.054)	(0.047)	(0.041)	(0.036)	(0.053)
other marital status	0.030	-0.091	-0.082	0.070	0.045	-0.065	-0.043	0.100**
	(0.066)	(0.060)	(0.054)	(0.054)	(0.063)	(0.058)	(0.046)	(0.050)
1 minor child	-0.011	-0.021	-0.028	0.012	0.000	-0.015	-0.029*	0.007
	(0.018)	(0.022)	(0.018)	(0.029)	(0.018)	(0.021)	(0.017)	(0.029)
2 or more minor children	-0.036	-0.110*	-0.154**	-0.105*	0.001	-0.042	-0.141**	-0.060
	(0.034)	(0.062)	(0.063)	(0.061)	(0.033)	(0.061)	(0.061)	(0.061)
ages 30–34	0.129***	0.124***	0.096***	0.261***	0.106***	0.092***	0.077**	0.258***
	(0.026)	(0.037)	(0.032)	(0.041)	(0.027)	(0.035)	(0.031)	(0.040)
ages 35–39	0.237***	0.233***	0.148***	0.377***	0.216***	0.185***	0.115***	0.345***
	(0.025)	(0.036)	(0.031)	(0.042)	(0.025)	(0.034)	(0.030)	(0.041)
ages 40–44	0.293***	0.276***	0.141***	0.420***	0.250***	0.208***	0.099***	0.388***
	(0.024)	(0.035)	(0.030)	(0.042)	(0.025)	(0.033)	(0.029)	(0.039)
ages 45–49	0.278***	0.312***	0.151***	0.405***	0.242***	0.230***	0.103***	0.354***
	(0.028)	(0.038)	(0.033)	(0.046)	(0.029)	(0.036)	(0.032)	(0.044)
minority	-0.069**	0.055	-0.026	-0.046	-0.083***	0.055	-0.019	0.029
	(0.027)	(0.037)	(0.039)	(0.077)	(0.028)	(0.037)	(0.036)	(0.054)
middle school	0.152***	0.134**	0.135*	0.102*	0.102***	0.105*	0.079	0.075
	(0.028)	(0.053)	(0.075)	(0.056)	(0.029)	(0.054)	(0.070)	(0.055)
high school	0.223***	0.336***	0.294***	0.359***	0.131***	0.248***	0.179**	0.307***
	(0.029)	(0.053)	(0.074)	(0.057)	(0.030)	(0.055)	(0.070)	(0.056)
vocational secondary school	0.390***	0.545***	0.482***	0.438***	0.213***	0.354***	0.294***	0.325***
	(0.029)	(0.055)	(0.076)	(0.059)	(0.031)	(0.058)	(0.072)	(0.059)
vocational post-secondary school	0.409***	0.690***	0.685***	0.698***	0.213***	0.422***	0.442***	0.568***
	(0.028)	(0.053)	(0.074)	(0.055)	(0.032)	(0.056)	(0.071)	(0.057)
college and higher	0.512***	0.923***	0.953***	0.983***	0.285***	0.584***	0.641***	0.784***
	(0.031)	(0.055)	(0.075)	(0.054)	(0.035)	(0.060)	(0.072)	(0.061)
collective sector					-0.246***	-0.250***	-0.225***	-0.242***
					(0.021)	(0.028)	(0.029)	(0.051)
private/joint venture/foreign owned					0.142*	-0.241***	-0.162***	-0.229***
					(0.073)	(0.030)	(0.017)	(0.030)
other ownership					-0.107	-0.134***	-0.399***	-0.335***
					(0.094)	(0.026)	(0.032)	(0.051)

commercial or service worker						-0.246***	-0.101***	-0.002
						(0.033)	(0.028)	(0.044)
office worker					0.066***	0.087***	0.075***	0.088**
					(0.018)	(0.023)	(0.022)	(0.040)
official or manager					0.173***	0.229***	0.216***	0.114*
					(0.021)	(0.031)	(0.034)	(0.065)
professional or technician					0.143***	0.140***	0.171***	0.141***
					(0.020)	(0.024)	(0.024)	(0.044)
agricultural and related							-0.071	-0.265*
							(0.081)	(0.136)
others					0.002	-0.384***	-0.044	-0.094
					(0.037)	(0.070)	(0.038)	(0.063)
agriculture					-0.054	0.038	0.016	-0.131
					(0.060)	(0.047)	(0.063)	(0.114)
mining					0.127***	-0.048	0.330***	0.100
					(0.041)	(0.043)	(0.053)	(0.094)
construction					0.084**	-0.024	0.015	-0.008
					(0.035)	(0.046)	(0.044)	(0.065)
public utilities					-0.014	0.006	0.171***	-0.065
					(0.038)	(0.025)	(0.029)	(0.057)
transportation and communication					0.060*	0.124***	0.068***	0.059
					(0.032)	(0.030)	(0.026)	(0.053)
commerce and trade					-0.109***	-0.025	-0.027	-0.149***
					(0.021)	(0.035)	(0.028)	(0.045)
finance and insurance					0.229***	0.121***	-0.066**	-0.200***
					(0.041)	(0.042)	(0.026)	(0.044)
education and culture					-0.003	0.090***	0.048*	-0.230***
					(0.019)	(0.028)	(0.028)	(0.055)
health and social welfare					0.038	0.171***	0.177***	-0.093
					(0.025)	(0.031)	(0.039)	(0.059)
scientific research and technology					0.110***	0.187***	0.200***	0.009
					(0.026)	(0.063)	(0.040)	(0.073)
government and social organizations					0.002	0.068**	0.018	-0.180***
					(0.018)	(0.027)	(0.025)	(0.049)
Beijing	-0.205***	-0.252***	-0.091***	0.154***	-0.215***	-0.239***	-0.135***	0.131***
	(0.027)	(0.037)	(0.026)	(0.039)	(0.028)	(0.037)	(0.025)	(0.038)
Shanxi	-0.499***	-0.459***	-0.284***	-0.106**	-0.512***	-0.488***	-0.394***	-0.180***
	(0.027)	(0.038)	(0.027)	(0.048)	(0.027)	(0.038)	(0.026)	(0.051)
Liaoning	-0.393***	-0.332***	-0.422***	-0.027	-0.380***	-0.263***	-0.427***	-0.065
	(0.026)	(0.034)	(0.027)	(0.057)	(0.027)	(0.033)	(0.025)	(0.055)
Jiangsu	-0.166***	-0.254***	0.020	0.255***	-0.124***	-0.237***	0.030	0.225***
	(0.025)	(0.034)	(0.032)	(0.042)	(0.025)	(0.033)	(0.031)	(0.042)

Anhui	-0.381***	-0.338***	-0.203***	0.063	-0.357***	-0.336***	-0.257***	0.017
	(0.027)	(0.035)	(0.027)	(0.050)	(0.027)	(0.034)	(0.026)	(0.049)
Henan	-0.479***	-0.336***	-0.343***	-0.041	-0.476***	-0.379***	-0.408***	-0.091**
	(0.028)	(0.031)	(0.026)	(0.044)	(0.028)	(0.030)	(0.025)	(0.044)
Hubei	-0.356***	-0.391***	-0.292***	-0.096**	-0.363***	-0.397***	-0.302***	-0.169***
	(0.025)	(0.031)	(0.033)	(0.047)	(0.025)	(0.031)	(0.030)	(0.046)
Chongqing	-0.174***	-0.190***	-0.178***	0.020	-0.194***	-0.189***	-0.147***	0.014
	(0.035)	(0.039)	(0.031)	(0.056)	(0.036)	(0.037)	(0.031)	(0.058)
Sichuan	-0.329***	-0.307***	-0.299***	0.005	-0.324***	-0.270***	-0.321***	-0.010
	(0.026)	(0.034)	(0.028)	(0.049)	(0.027)	(0.033)	(0.027)	(0.048)
Yunnan	-0.228***	-0.165***	-0.313***	-0.157***	-0.252***	-0.216***	-0.345***	-0.167***
	(0.023)	(0.031)	(0.029)	(0.056)	(0.024)	(0.030)	(0.027)	(0.055)
Gansu	-0.464***	-0.420***	-0.458***	-0.193***	-0.502***	-0.421***	-0.521***	-0.250***
	(0.028)	(0.039)	(0.028)	(0.060)	(0.029)	(0.037)	(0.027)	(0.060)
Constant	5.925***	6.357***	7.008***	7.083***	6.011***	6.529***	7.229***	7.410***
	(0.041)	(0.068)	(0.081)	(0.071)	(0.044)	(0.068)	(0.080)	(0.077)
Observations	8,858	7,380	8,061	4,815	8,278	7,064	8,019	4,633
R-squared	0.193	0.234	0.301	0.240	0.248	0.315	0.379	0.278

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, and * p<0.1

Table A12.2. ***Full results of the separate wage equations, without sector/occupation controls***

	Without sector/occupation controls							
	male 1995	female 1995	male 2002	female 2002	male 2007	female 2007	male 2013	female 2013
single	-0.199***	-0.176**	-0.264***	-0.107*	-0.318***	-0.153***	-0.253***	-0.151**
	(0.049)	(0.081)	(0.060)	(0.062)	(0.049)	(0.054)	(0.074)	(0.074)
other marital status	-0.158	0.114	-0.066	-0.088	-0.324***	-0.016	-0.009	0.151**
	(0.124)	(0.076)	(0.077)	(0.079)	(0.100)	(0.061)	(0.086)	(0.072)
1 minor child	-0.029	-0.002	-0.008	-0.044	-0.039	-0.036	0.062	-0.064
	(0.021)	(0.030)	(0.026)	(0.035)	(0.025)	(0.026)	(0.042)	(0.040)
2 or more minor children	-0.023	-0.060	-0.077	-0.176*	-0.159*	-0.173**	-0.053	-0.204**
	(0.037)	(0.060)	(0.081)	(0.092)	(0.090)	(0.086)	(0.085)	(0.083)
ages 30–34	0.194***	0.089**	0.080	0.183***	0.077*	0.123***	0.259***	0.266***
	(0.034)	(0.037)	(0.059)	(0.047)	(0.045)	(0.045)	(0.060)	(0.057)
ages 35–39	0.265***	0.231***	0.177***	0.307***	0.147***	0.169***	0.360***	0.386***
	(0.035)	(0.034)	(0.058)	(0.045)	(0.043)	(0.043)	(0.060)	(0.056)
ages 40–44	0.315***	0.292***	0.233***	0.331***	0.145***	0.145***	0.466***	0.345***
	(0.032)	(0.035)	(0.057)	(0.045)	(0.042)	(0.043)	(0.057)	(0.061)
ages 45–49	0.332***	0.234***	0.285***	0.339***	0.145***	0.149***	0.415***	0.372***
	(0.034)	(0.045)	(0.058)	(0.052)	(0.045)	(0.048)	(0.063)	(0.065)
minority	-0.046	-0.089**	0.020	0.060	-0.019	-0.035	0.064	-0.160
	(0.036)	(0.041)	(0.053)	(0.050)	(0.051)	(0.055)	(0.075)	(0.133)
middle school	0.148***	0.146***	0.095	0.166**	0.065	0.153	0.101	0.063
	(0.041)	(0.039)	(0.062)	(0.082)	(0.110)	(0.099)	(0.090)	(0.069)
high school	0.203***	0.229***	0.268***	0.405***	0.166	0.358***	0.340***	0.333***
	(0.043)	(0.039)	(0.062)	(0.082)	(0.109)	(0.097)	(0.090)	(0.074)
vocational secondary	0.325***	0.438***	0.390***	0.690***	0.323***	0.571***	0.404***	0.444***
	(0.041)	(0.041)	(0.065)	(0.084)	(0.111)	(0.100)	(0.095)	(0.074)
vocational post-secondary	0.335***	0.487***	0.547***	0.844***	0.536***	0.768***	0.668***	0.690***
	(0.041)	(0.040)	(0.061)	(0.082)	(0.108)	(0.098)	(0.088)	(0.071)
college and higher	0.443***	0.596***	0.785***	1.103***	0.769***	1.087***	0.928***	1.003***
	(0.043)	(0.044)	(0.063)	(0.086)	(0.110)	(0.099)	(0.087)	(0.069)
Beijing	-0.208***	-0.208***	-0.139***	-0.374***	-0.139***	-0.052	0.169***	0.139***
	(0.038)	(0.039)	(0.049)	(0.053)	(0.035)	(0.038)	(0.059)	(0.052)
Shanxi	-0.471***	-0.526***	-0.406***	-0.532***	-0.343***	-0.230***	0.064	-0.325***
	(0.035)	(0.041)	(0.049)	(0.059)	(0.035)	(0.040)	(0.067)	(0.069)
Liaoning	-0.390***	-0.399***	-0.266***	-0.403***	-0.401***	-0.456***	-0.020	-0.036
	(0.037)	(0.038)	(0.046)	(0.049)	(0.038)	(0.039)	(0.089)	(0.071)
Jiangsu	-0.184***	-0.140***	-0.231***	-0.267***	0.011	0.033	0.274***	0.241***
	(0.033)	(0.037)	(0.043)	(0.052)	(0.045)	(0.046)	(0.064)	(0.052)
Anhui	-0.373***	-0.383***	-0.279***	-0.407***	-0.224***	-0.180***	0.199***	-0.083
	(0.036)	(0.040)	(0.045)	(0.053)	(0.037)	(0.039)	(0.070)	(0.071)
Henan	-0.484***	-0.467***	-0.309***	-0.361***	-0.443***	-0.249***	-0.036	-0.037
	(0.037)	(0.041)	(0.042)	(0.045)	(0.035)	(0.038)	(0.066)	(0.059)
Hubei	-0.412***	-0.296***	-0.402***	-0.371***	-0.297***	-0.286***	-0.042	-0.143**
	(0.034)	(0.036)	(0.042)	(0.046)	(0.043)	(0.050)	(0.068)	(0.064)
Chongqing	-0.191***	-0.157***	-0.174***	-0.208***	-0.247***	-0.115***	0.089	-0.052
	(0.046)	(0.051)	(0.052)	(0.057)	(0.043)	(0.043)	(0.081)	(0.076)
Sichuan	-0.320***	-0.333***	-0.343***	-0.265***	-0.409***	-0.194***	0.067	-0.065

	(0.034)	(0.039)	(0.045)	(0.051)	(0.041)	(0.039)	(0.069)	(0.070)
Yunnan	-0.288***	-0.168***	-0.198***	-0.127***	-0.437***	-0.201***	-0.217***	-0.091
	(0.032)	(0.034)	(0.041)	(0.046)	(0.038)	(0.042)	(0.082)	(0.075)
Gansu	-0.474***	-0.450***	-0.385***	-0.460***	-0.501***	-0.413***	-0.178**	-0.197**
	(0.036)	(0.044)	(0.051)	(0.059)	(0.038)	(0.042)	(0.078)	(0.094)
Constant	5.947***	5.770***	6.469***	6.040***	7.210***	6.560***	7.040***	6.916***
	(0.055)	(0.058)	(0.090)	(0.097)	(0.118)	(0.107)	(0.108)	(0.087)
Observations	4,395	4,463	3,851	3,529	4,047	4,014	2,520	2,295
R-squared	0.192	0.175	0.207	0.235	0.277	0.238	0.214	0.243

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, and * p<0.1

Table A12.3. ***Full results of the separate wage equations, with sector/occupation controls***

	With sector/occupation controls							
	male 95	female 95	male 02	female 02	male 07	female 07	male 13	female 13
single	-0.197***	-0.182**	-0.227***	-0.096	-0.294***	-0.150***	-0.205***	-0.135*
	(0.051)	(0.090)	(0.057)	(0.061)	(0.047)	(0.053)	(0.074)	(0.073)
other marital status	-0.209*	0.166**	-0.029	-0.064	-0.234***	0.011	0.026	0.162**
	(0.112)	(0.070)	(0.075)	(0.074)	(0.085)	(0.052)	(0.079)	(0.067)
1 minor child	-0.018	0.007	0.004	-0.045	-0.040*	-0.036	0.053	-0.062*
	(0.022)	(0.030)	(0.025)	(0.033)	(0.023)	(0.024)	(0.042)	(0.037)
2 or more minor children	0.012	-0.025	0.020	-0.126	-0.146	-0.156*	-0.018	-0.137*
	(0.037)	(0.057)	(0.076)	(0.089)	(0.091)	(0.080)	(0.085)	(0.082)
ages 30–34	0.175***	0.060	0.047	0.148***	0.053	0.111**	0.272***	0.255***
	(0.035)	(0.038)	(0.055)	(0.044)	(0.043)	(0.043)	(0.061)	(0.054)
ages 35–39	0.245***	0.205***	0.128**	0.243***	0.108**	0.140***	0.355***	0.340***
	(0.036)	(0.035)	(0.054)	(0.043)	(0.042)	(0.041)	(0.061)	(0.054)
ages 40-44	0.279***	0.238***	0.175***	0.237***	0.110***	0.093**	0.445***	0.311***
	(0.034)	(0.036)	(0.054)	(0.043)	(0.040)	(0.041)	(0.057)	(0.054)
ages 45–49	0.300***	0.185***	0.209***	0.237***	0.093**	0.105**	0.379***	0.318***
	(0.035)	(0.047)	(0.054)	(0.050)	(0.044)	(0.046)	(0.062)	(0.061)
minority	-0.049	-0.114***	0.008	0.079	-0.009	-0.028	0.072	-0.011
	(0.037)	(0.042)	(0.053)	(0.050)	(0.050)	(0.051)	(0.077)	(0.074)
middle school	0.116***	0.082**	0.070	0.141*	0.051	0.072	0.060	0.069
	(0.041)	(0.040)	(0.062)	(0.084)	(0.101)	(0.096)	(0.092)	(0.064)
high school	0.145***	0.111***	0.194***	0.304***	0.120	0.198**	0.281***	0.302***
	(0.044)	(0.040)	(0.062)	(0.086)	(0.101)	(0.094)	(0.093)	(0.070)
vocational secondary school	0.217***	0.202***	0.267***	0.434***	0.217**	0.317***	0.280***	0.346***
	(0.044)	(0.044)	(0.066)	(0.091)	(0.104)	(0.098)	(0.099)	(0.071)
vocational post-secondary school	0.203***	0.231***	0.326***	0.529***	0.375***	0.456***	0.541***	0.567***
	(0.045)	(0.045)	(0.064)	(0.089)	(0.101)	(0.096)	(0.093)	(0.072)
college and higher	0.287***	0.303***	0.504***	0.695***	0.563***	0.664***	0.747***	0.793***
	(0.047)	(0.051)	(0.068)	(0.095)	(0.104)	(0.099)	(0.099)	(0.076)
collective sector	-0.207***	-0.261***	-0.239***	-0.254***	-0.275***	-0.172***	-0.211***	-0.271***
	(0.029)	(0.029)	(0.046)	(0.035)	(0.047)	(0.037)	(0.070)	(0.071)
private/joint venture/foreign owned	0.145	0.119	-0.217***	-0.287***	-0.175***	-0.155***	-0.269***	-0.188***
	(0.118)	(0.090)	(0.040)	(0.044)	(0.023)	(0.025)	(0.044)	(0.039)
other ownership	-0.120	-0.088	-0.091***	-0.174***	-0.314***	-0.417***	-0.328***	-0.318***
	(0.170)	(0.107)	(0.035)	(0.038)	(0.057)	(0.040)	(0.083)	(0.060)
commercial or service worker			-0.199***	-0.221***	-0.082**	-0.084**	0.007	0.025
			(0.052)	(0.044)	(0.041)	(0.042)	(0.063)	(0.060)
office worker	0.039	0.088***	0.043	0.137***	0.062**	0.115***	0.088	0.112*
	(0.026)	(0.025)	(0.030)	(0.034)	(0.029)	(0.037)	(0.054)	(0.060)
official or manager	0.152***	0.230***	0.173***	0.386***	0.195***	0.290***	0.127	0.106
	(0.027)	(0.038)	(0.036)	(0.058)	(0.040)	(0.061)	(0.088)	(0.092)
professional or technician	0.116***	0.165***	0.104***	0.189***	0.129***	0.238***	0.122**	0.181**
	(0.026)	(0.030)	(0.031)	(0.037)	(0.030)	(0.040)	(0.056)	(0.071)
agricultural and related					0.022	-0.095	-0.293	-0.201
					(0.090)	(0.111)	(0.214)	(0.175)
others	-0.001	0.014	-0.220**	-0.469***	-0.000	-0.066	-0.193**	0.056

	(0.054)	(0.046)	(0.089)	(0.095)	(0.053)	(0.056)	(0.091)	(0.075)
agriculture	-0.036	-0.078	0.013	0.083	-0.084	0.115	-0.102	-0.188
	(0.064)	(0.111)	(0.066)	(0.064)	(0.079)	(0.103)	(0.183)	(0.129)
mining	0.102*	0.141**	0.004	-0.179**	0.350***	0.182**	0.063	0.011
	(0.057)	(0.056)	(0.043)	(0.091)	(0.066)	(0.074)	(0.104)	(0.198)
construction	0.095**	0.054	-0.038	-0.041	0.087*	-0.136*	-0.005	-0.117
	(0.048)	(0.049)	(0.056)	(0.081)	(0.049)	(0.082)	(0.080)	(0.099)
public utilities	0.031	-0.044	0.062*	-0.043	0.157***	0.171***	-0.114	-0.015
	(0.060)	(0.048)	(0.035)	(0.035)	(0.035)	(0.048)	(0.078)	(0.074)
transportation and communication	0.082*	0.021	0.101***	0.135***	0.023	0.129***	0.010	0.078
	(0.045)	(0.043)	(0.039)	(0.047)	(0.032)	(0.047)	(0.068)	(0.077)
commerce and trade	-0.136***	-0.083***	-0.069	-0.016	-0.052	-0.008	-0.185**	-0.140**
	(0.032)	(0.028)	(0.049)	(0.049)	(0.040)	(0.039)	(0.072)	(0.056)
finance and insurance	0.190***	0.281***	0.192***	0.034	-0.093**	-0.050	-0.224***	-0.188***
	(0.045)	(0.065)	(0.051)	(0.066)	(0.040)	(0.035)	(0.065)	(0.055)
education and culture	-0.041	0.020	0.160***	0.004	0.004	0.066*	-0.343***	-0.164**
	(0.027)	(0.027)	(0.037)	(0.043)	(0.041)	(0.040)	(0.086)	(0.072)
health and social welfare	0.007	0.067*	0.150***	0.169***	0.198***	0.140**	-0.121	-0.057
	(0.034)	(0.036)	(0.045)	(0.044)	(0.051)	(0.062)	(0.081)	(0.087)
scientific research and technology	0.102***	0.113***	0.153*	0.232**	0.114**	0.292***	-0.073	0.056
	(0.032)	(0.039)	(0.083)	(0.093)	(0.053)	(0.061)	(0.105)	(0.100)
government and social organizations	-0.039*	0.059**	0.091***	0.057	0.040	-0.009	-0.201***	-0.187***
	(0.023)	(0.029)	(0.033)	(0.044)	(0.034)	(0.037)	(0.066)	(0.071)
Beijing	-0.219***	-0.213***	-0.167***	-0.313***	-0.176***	-0.102***	0.133**	0.133***
	(0.038)	(0.041)	(0.051)	(0.053)	(0.034)	(0.036)	(0.059)	(0.050)
Shanxi	-0.490***	-0.527***	-0.479***	-0.497***	-0.431***	-0.369***	-0.053	-0.335***
	(0.036)	(0.040)	(0.050)	(0.058)	(0.034)	(0.039)	(0.071)	(0.072)
Liaoning	-0.391***	-0.367***	-0.242***	-0.264***	-0.431***	-0.432***	-0.067	-0.072
	(0.037)	(0.040)	(0.045)	(0.048)	(0.036)	(0.036)	(0.087)	(0.066)
Jiangsu	-0.174***	-0.064*	-0.236***	-0.225***	0.013	0.049	0.222***	0.235***
	(0.033)	(0.037)	(0.043)	(0.049)	(0.043)	(0.043)	(0.065)	(0.052)
Anhui	-0.374***	-0.335***	-0.311***	-0.350***	-0.254***	-0.263***	0.143**	-0.108
	(0.036)	(0.041)	(0.045)	(0.051)	(0.036)	(0.038)	(0.069)	(0.066)
Henan	-0.477***	-0.465***	-0.368***	-0.381***	-0.496***	-0.325***	-0.109*	-0.050
	(0.037)	(0.041)	(0.042)	(0.044)	(0.035)	(0.036)	(0.066)	(0.058)
Hubei	-0.415***	-0.307***	-0.415***	-0.374***	-0.320***	-0.283***	-0.152**	-0.174***
	(0.034)	(0.037)	(0.042)	(0.043)	(0.040)	(0.045)	(0.068)	(0.061)
Chongqing	-0.214***	-0.161***	-0.199***	-0.166***	-0.235***	-0.069	0.055	-0.030
	(0.048)	(0.052)	(0.052)	(0.052)	(0.043)	(0.043)	(0.083)	(0.079)
Sichuan	-0.321***	-0.315***	-0.341***	-0.184***	-0.419***	-0.227***	0.031	-0.052
	(0.036)	(0.040)	(0.045)	(0.049)	(0.040)	(0.037)	(0.071)	(0.063)
Yunnan	-0.315***	-0.188***	-0.267***	-0.163***	-0.441***	-0.262***	-0.233***	-0.085
	(0.033)	(0.036)	(0.042)	(0.044)	(0.036)	(0.041)	(0.080)	(0.072)
Gansu	-0.515***	-0.483***	-0.400***	-0.452***	-0.551***	-0.498***	-0.272***	-0.223**
	(0.038)	(0.043)	(0.049)	(0.057)	(0.037)	(0.039)	(0.080)	(0.092)
Constant	6.017***	5.890***	6.624***	6.265***	7.373***	6.869***	7.427***	7.202***
	(0.058)	(0.062)	(0.090)	(0.098)	(0.116)	(0.109)	(0.118)	(0.095)
Observations	4,111	4,167	3,686	3,378	4,038	3,981	2,435	2,198

R-squared	0.238	0.246	0.273	0.337	0.347	0.339	0.256	0.284

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, and * p<0.1

Table 12.1. ***Definition of wage earnings before and after 2013***

	NBS definition of wage earnings before 2013	**NBS definition of wage earnings, 2013**	**Adjusted wage earnings, 2013**
Wage and salary income (including bonuses and allowances)	√	√	√
In-kind payments from employer	×	√	×
Contributions to social insurance deducted by employer from employee earnings	√	√	√
Employer contributions to social insurance	×	√	√
Retirement payments and reimbursed medical expenses received by employees of administrative organizations that made no social insurance contributions (未缴纳任何社会保险费的行政事业单位人员获得的的离退休费和报销医疗费)	×	√	√
Severance payments	×	√	×

Table 12.2. ***Employment status of working-age adults, 1995, 2002, 2007, and 2013 (%)***

	1995		2002		2007		2013	
	male	female	male	female	male	female	male	female
Working, total	85.2	75.3	75.9	59.1	80.4	62.3	81.0	62.8
of which: wage jobs	83.7	73.7	72.0	56.4	74.4	58.4	72.1	54.9
of which: self employed	1.5	1.2	3.9	2.8	6.0	3.9	7.8	5.8
Unemployed	2.8	2.6	7.2	9.3	4.3	6.4	2.8	3.6
Retired	3.6	11.4	5.7	16.9	4.3	17.4	3.3	11.3
Student	7.8	7.5	10.1	9.8	10.3	8.8	9.4	9.3
Home maker	0.1	2.3	0.2	3.7	0.2	3.7	0.8	8.7
Other	0.6	0.9	0.9	1.2	0.5	1.3	2.8	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample size (unweighted)	7,440	7,817	7,417	7,755	7,919	8,370	5,741	5,990

Notes: Working age is 16–59 years, inclusive. Calculated using the CHIP urban data, with weights. The sample is restricted to formal urban residents (with an urban *hukou*) in the twelve common provinces. Note that due to missing values and rounding, in some years the percentage with wage jobs plus the percentage of self-employed do not equal the total percentage of those working.

Table 12.3. ***Characteristics of the estimation sample by gender, CHIP 2007 and 2013***

	1995		2002		2007		2013	
	Male	Female	Male	Female	Male	Female	Male	Female
Sample size (unweighted)	4,588	4,686	3,876	3,549	4,062	4,033	2,773	2,510
Age group (%)								
25–29	11.3	11.6	9.4	10.7	11.5	13.3	15.0	16.3
30–34	17.9	19.4	15.8	18.7	14.3	16.8	16.9	18.1
35–39	21.5	22.8	21.8	22.3	23.4	24.8	18.6	20.6
40–44	27.8	29.0	22.8	24.2	28.9	27.3	24.7	23.9
45–49	21.5	17.2	30.2	24.1	21.8	17.9	24.8	21.1
Ethnicity (%)								
Han	95.6	95.4	97.3	97.0	97.3	97.1	97.4	97.5
ethnic minority	4.4	4.6	2.7	3.0	2.7	2.9	2.6	2.5
Marital status (%)								
single	5.9	2.9	8.2	5.4	9.5	6.9	9.0	7.8
married	93.3	95.5	90.8	92.0	89.7	89.8	88.4	88.4
others	0.8	1.6	1.0	2.6	0.8	3.3	2.6	3.8
Educational attainment (%)								
批 primary school and less	5.6	8.8	2.6	2.9	0.9	1.4	2.8	4.3
middle school	34.0	38.2	24.7	25.7	14.8	15.3	24.3	23.6
high school	18.8	21.8	26.1	29.2	25.5	29.6	15.8	16.7
vocational secondary school (*zhongzhuan, jixiao*)	13.6	14.2	8.5	12.5	10.1	11.5	12.7	11.7
vocational post-secondary school (*dazhuan*)	19.6	12.7	24.2	21.9	27.2	29.1	20.6	22.0
college and beyond	8.4	4.3	14.0	7.8	21.5	13.1	23.7	21.7
Number of children under the age of 16 in the household (%)								
0	30.4	32.6	43.9	45.4	45.8	48.8	47.4	50.9
1	65.7	64.1	53.9	53.2	51.7	48.9	46.9	44.9
2 or more	3.9	3.3	2.2	1.5	2.5	2.2	5.7	4.2
Ownership of work unit (%)								
public unit and SOE	85.0	76.9	69.2	64.3	58.8	50.6	45.0	39.7
collective sector	12.3	20.3	5.7	10.1	5.5	7.8	4.3	5.0
private firm, self-employed, and joint-venture or foreign firm	2.2	2.0	13.7	11.7	31.4	31.8	44.6	47.5
other ownership	0.5	0.7	11.4	13.9	4.3	9.7	6.1	7.8
Occupation (%)								
manual worker	38.6	40.8	35.3	26.8	23.9	12.7	27.3	15.0
commercial or service worker			7.9	17.7	10.0	23.5	20.9	33.9
office worker	20.9	22.7	19.3	25.1	33.1	38.3	19.8	20.2
manager or official	15.8	5.3	14.1	4.8	7.3	2.5	5.9	4.5

professional or technician	21.7	24.3	21.3	23.1	20.9	17.5	19.8	21.8
agricultural and related					0.6	1.2	0.9	0.7
other	2.9	6.9	2.1	2.5	4.2	4.3	5.3	3.9
Sector of employment (%)								
primary	1.9	1.5	1.2	1.2	1.0	0.7	1.4	0.9
secondary	48.5	48.3	35.5	31.6	27.9	19.1	30.8	19.8
tertiary	49.6	50.3	63.3	67.2	71.1	80.2	67.7	79.3

Notes:

1.) Calculated using the CHIP urban data with weights. The sample is restricted to formal urban residents (with an urban *hukou*) between the ages of 25 and 49 with wage employment in the twelve provinces common to all four years of the data.

2.) Marital status "other" includes widowers/widows, divorcees, and cohabitation.

3.) Primary industry is agriculture; secondary industry is mining, manufacturing, public utilities, and construction; and tertiary industry is all other sectors. These definitions are from the NBS national accounts classifications. See http://www.stats.gov.cn/english/ClassificationsMethods/Definitions/200204/t20020419_72392.html Accessed April 28, 2016.

4.) In the CHIP 1995 survey the questionnaire did not include the occupation categories "commercial or service worker" or "agricultural and related." The reason is that in the 1990s the tertiary sector was quite underdeveloped and employment within commercial and service departments was small. Also, *hukou* restrictions in the 1990s were strict, preventing rural residents from living in the cities. Consequently, workers holding "agricultural and related" occupations were basically nonexistent.

Table 12.4. ***The raw gender wage ratio in the overall CHIP estimation sample and by subgroup (%)***

	1995	2002	2007	2013
Overall average	86.7	82.7	70.6	74.2
Ethnicity				
Han	86.7	82.4	70.5	74.3
ethnic minority	86.2	92.0	75.7	74.3
Marital status				
single	95.5	98.3	96.5	100.6
married	85.7	81.4	68.5	72.0
others	112.5	96.4	119.4	91.4
Number of children under the age of 16 in the household				
0	88.5	85.6	72.4	77.5
1	86.3	80.6	69.5	71.9
2 or more	81.2	73.6	68.2	68.7
Ownership				
public unit and SOE	89.6	87.6	74.9	78.9
collective sector	81.5	79.4	76.9	70.9
private firm, self-employed, and joint-venture or foreign firm	93.3	69.7	70.7	72.7
other ownership	76.6	76.4	65.6	85.2
Sector				
secondary	84.3	85.3	68.5	71.3
tertiary	88.7	80.9	70.0	74.8

Notes:

1.) Here and elsewhere, the 2013 CHIP wage data have been adjusted to be consistent with the wage data for the earlier years.

2.) Calculated using the CHIP urban data, with weights. Restricted to formal urban residents between the ages of 25 and 49 in the twelve common provinces.

3.) The primary sector is not shown due to the very small number of observations

Table 12.5. ***Estimated coefficient on the female dummy variable $\widehat{\beta}$ and the % gender wage gap***

	1995	2002	2007	2013
coefficient, without sector and occupation controls	-0.132***	-0.200***	-0.319***	-0.270***
coefficient, with sector and occupation controls	-0.106***	-0.162***	-0.252***	-0.213***
% wage gap, without sector and occupation controls	-12.4%	-18.1%	-27.3%	-23.7%
% wage gap, with sector and occupation controls	-10.1%	-15.0%	-22.3%	-19.2%

Notes:

1.) Estimates of $\hat{\beta}$ from the pooled female and male wage regressions using the CHIP urban data, with weights. The sample is restricted to formal urban residents, between the ages of 25 and 49, with wage employment in the twelve common provinces. These regressions do not include interactions between the female dummy variable and the other characteristics. See the Appendix Tables 12A.1, 12A.2, and 12A.3 for the full results.

2.) Estimates of the % gender wage gap are calculated as $p = [exp(\hat{\beta})/exp(0.5V(\hat{\beta}))]-1$, where $V(\hat{\beta})$ is the estimated variance of the coefficient $\hat{\beta}$. See Giles (2011) and Halvorsen and Palmqvist (1980).

3.) *** p<0.01, ** p<0.05, and * p<0.1

Table 12.6. ***Estimated coefficients on the sector of the employment dummy variables***

	1995	2002	2007	2013
Sector of Ownership (reference category: state ownership)				
collective sector	-0.246***	-0.250***	-0.225***	-0.242***
foreign/joint venture/private	0.142*	-0.241***	-0.162***	-0.229***
other ownership	-0.107	-0.134***	-0.399***	-0.335***
Sector of Production (reference category: manufacturing)				
1.) agriculture	-0.054	0.038	0.016	-0.131
2.) mining	0.127***	-0.048	0.330***	0.100
2.) public utilities	-0.014	0.006	0.171***	-0.065
2.) construction	0.084**	-0.024	0.015	-0.008
3.) transportation and communication	0.060*	0.124***	0.068***	0.059
3.) commerce and trade	-0.109***	-0.025	-0.027	-0.149***
3.) finance and insurance	0.229***	0.121***	-0.066**	-0.200***
3.) education and culture	-0.003	0.090***	0.048*	-0.230***
3.) health and social welfare	0.038	0.171***	0.177***	-0.093
3.) scientific research and technology	0.110***	0.187***	0.200***	0.009
3.) government and social organizations	0.002	0.068**	0.018	-0.180***

Notes:

1.) Based on the pooled female and male wage regressions estimated using the CHIP urban data, with weights. The sample is restricted to formal urban residents, between the ages of 25 and 49, with wage employment in the twelve common provinces. These regressions do not include interactions between the female dummy variable and other characteristics. See the Appendix Tables 12A.1, 12A.2, and 12A.3 for the full results.

2.) The numbers before the production sector indicate 1.) primary, 2.) secondary, or 3.) tertiary sectors.

3.) *** $p<0.01$, ** $p<0.05$, and * $p<0.1$

Table 12.7. ***Estimated coefficients on the*** **Female** ***dummy variable and its interactions with life-event dummy variables***

	without sector controls				with sector controls			
	1995	2002	2007	2013	1995	2002	2007	2013
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
b0 Female	-0.167***	-0.234***	-0.358***	-0.248***	-0.140***	-0.176***	-0.289***	-0.191***
b1 Female*single	0.071	0.175***	0.210***	0.182**	0.059	0.130*	0.178***	0.151
b3 Female*1 minor children	0.047*	0.044	0.036	-0.078*	0.045	0.016	0.036	-0.079*
b4 Female*2 plus minor children	-0.030	-0.046	-0.000	-0.114	-0.032	-0.142	0.024	-0.077

Notes:

1.) Based on pooled female and male wage regressions estimated using the CHIP urban data, with weights. The sample is restricted to formal urban residents between the ages of 25 and 49, with wage employment in the twelve common provinces. These regressions are the same as the pooled wage regressions reported in the Appendix Tables 12A.1, 12A.2, and 12A.3, except that they include interactions between the female dummy variable and marital status and between the female dummy variable and the children dummy variables.

2.) Earnings are the predicted wages by age group, which are calculated using the estimated coefficients from the separate female and male wage regressions without sector and occupation controls. All characteristics except education are set at the respective female and male means. Estimates with sector/occupation controls yield similar results. 2007 wages are expressed in 2013 prices based on the NBS national urban consumer price index (NBS, various years).

3.) *** $p<0.01$, ** $p<0.05$, and * $p<0.1$

Table 12.8. ***Estimated coefficients on marital status and children for women and men, 2007 and 2013, from separate wage equations for women and men***

	2007	2013
marriage		
men	0.318***	0.253***
women	0.153***	0.151**
one child		
men	-0.039	0.062
women	-0.036	-0.064
two or more children		
men	-0.146	-0.018
women	-0.156*	-0.137*

Notes:

1.) The coefficients on marriage are a measure of the percentage wage premium relative to being single, after controlling for all other characteristics.

2.) The coefficients on the children variables are a measure of the wage penalty of having one child age 16 or less in the household, relative to having no children, or having two or more children age 16 or less in the household relative to no children.

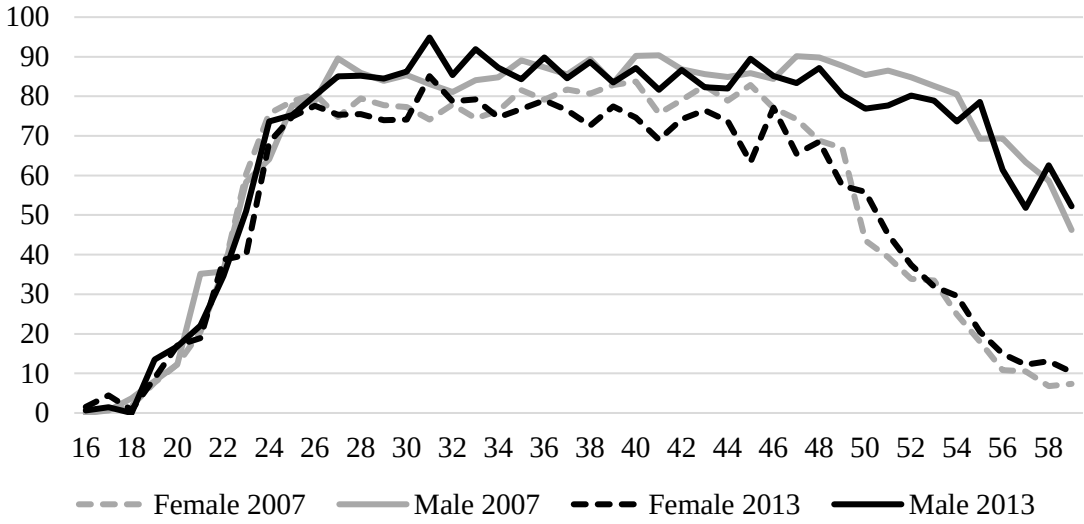
3.) Estimates are from separate female and male wage regressions, weighted, without controls for sector/occupation. The samples are restricted to formal urban residents between the ages of 25 and 49 in the twelve common provinces.

Table 12.9. ***Decomposition of the ln gender wage gap***

	without ownership, occupation, and sector controls				with ownership, occupation, and sector controls			
	1995	2002	2007	2013	1995	2002	2007	2013
Total differential (T = E+C)	15.5	23.9	35.6	28.2	15.2	23.6	35.4	27.0
Amount attributable to:								
endowments (E)	2.0	2.9	3.6	0.9	4.2	5.9	9.4	7.0
coefficients + constant term (C)	13.5	21.0	32.0	27.3	11.0	17.7	26.0	20.0
% of total explained by endowments (E/T)	12.9%	12.1%	10.1%	3.2%	27.6%	25.0%	26.6%	25.9%
% of total unexplained (C/T)	87.1%	87.9%	89.9%	96.8%	72.4%	75.0%	73.4%	74.1%

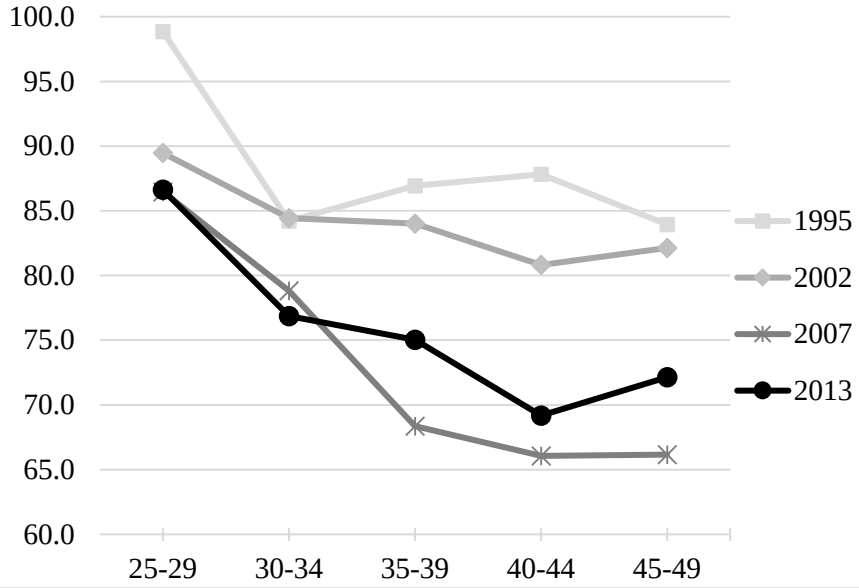
Note: Calculated using the estimates from the separate wage equations for women and men.

Figure 12.1. ***Shares of women and men with wage employment, by age (%)***



Note: Calculated using the CHIP urban data, ages 16–59, with weights.

Figure 12.2. Female/male wage ratio, by age (%)



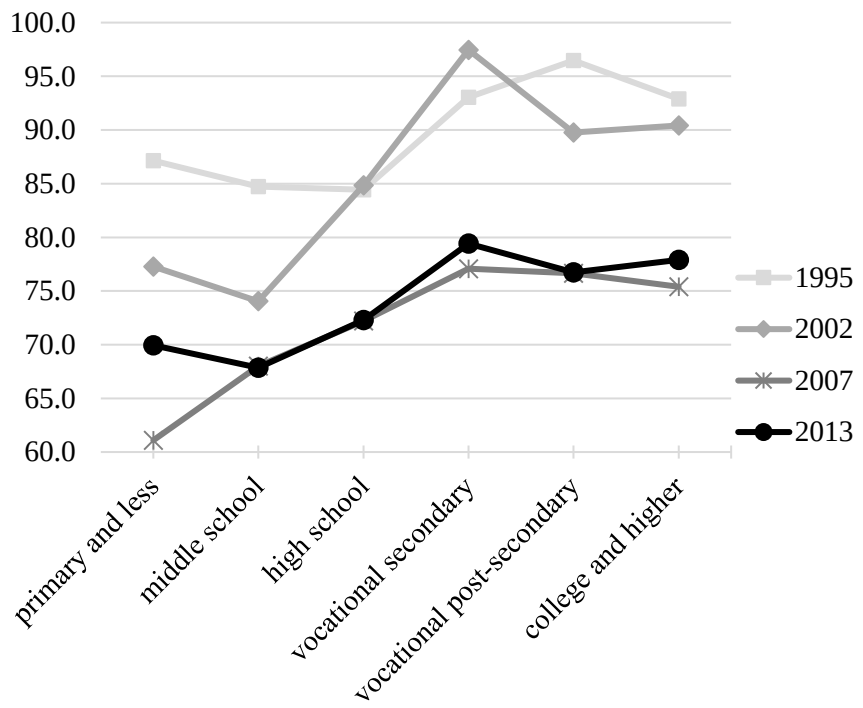
Notes:

1.) 2013 wages are adjusted to be consistent with the 2007 NBS income definition of wage earnings.

2.) Calculated using the CHIP urban data for the twelve provinces common to all four waves of the survey, with weights.

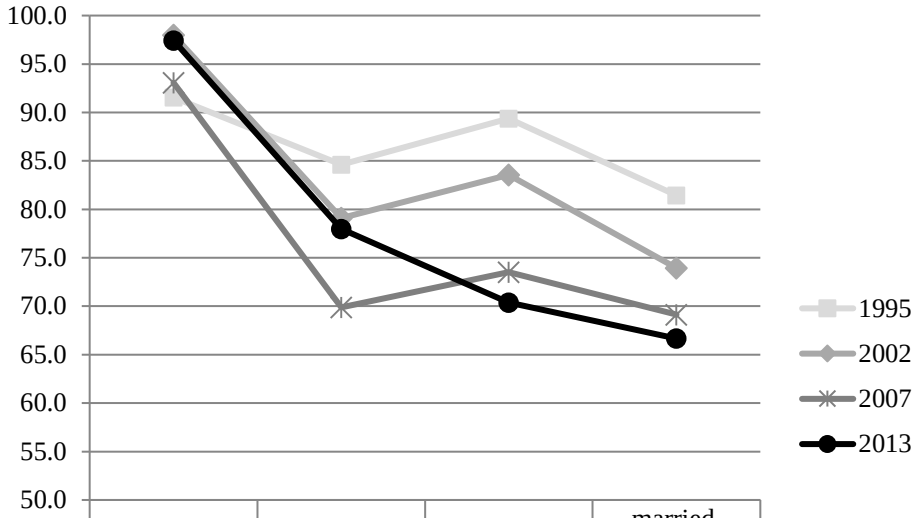
3.) The sample is restricted to individuals with wage employment between the ages of 25 and 49 who are formal urban residents (with urban *hukou*).

Figure 12.3. Female/male wage ratio, by education (%)



Notes:
1.) 2013 wages are adjusted to be consistent with the 2007 NBS income definition of wage earnings.
2.) Calculated using the CHIP urban data for the twelve provinces common to all four waves of the survey, with weights.
3.) The sample is restricted to individuals with wage employment between the ages of 25 and 49 who are formal urban residents (urban *hukou*).

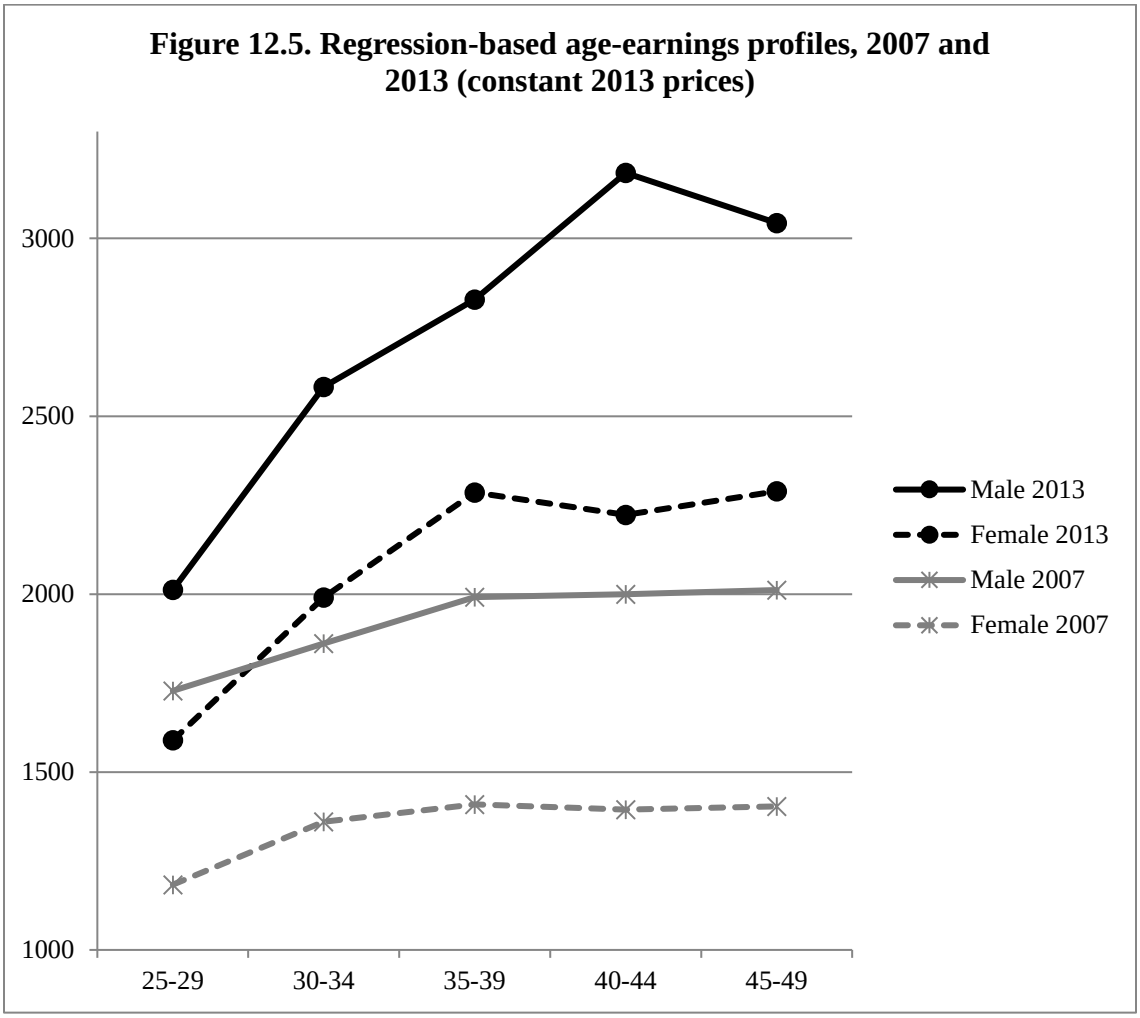
Figure 12.4. Regression-based gender wage ratios by life-event groups (%)



	single, no children	married, no children	married, one child	married, more than one child
1995	91.6	84.6	89.4	81.4
2002	98.0	79.1	83.6	73.9
2007	93.1	69.9	73.5	69.1
2013	97.4	78.0	70.4	66.7

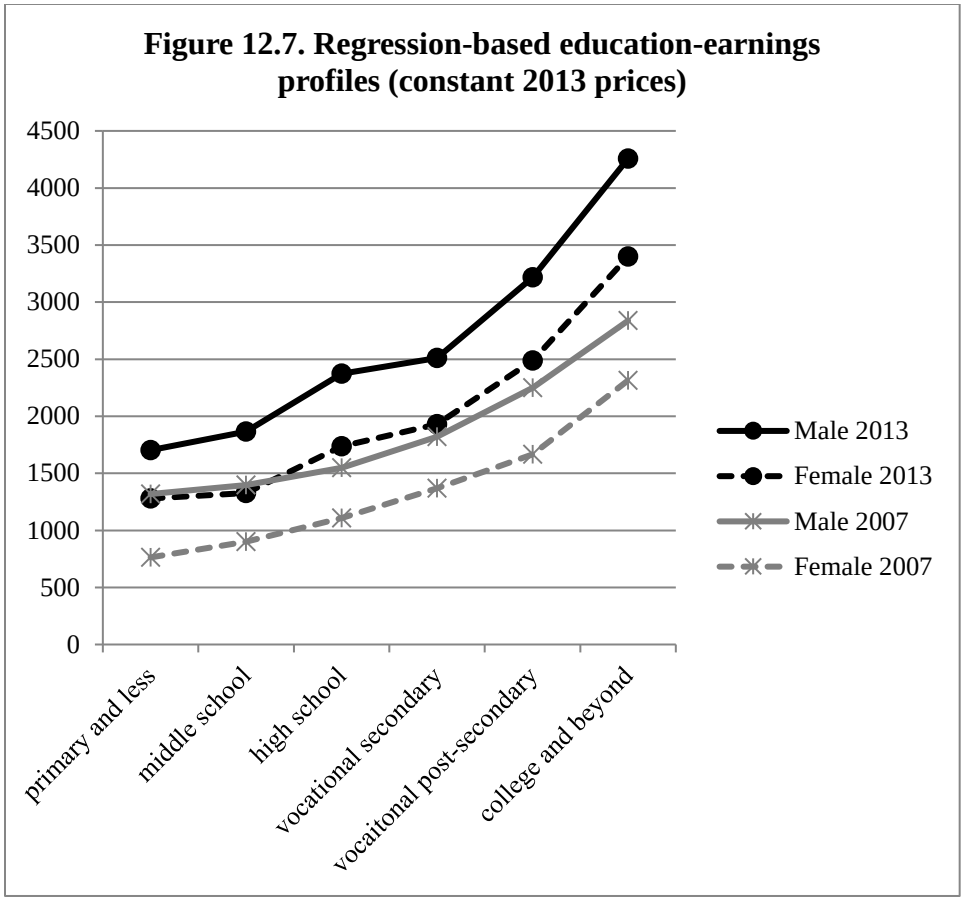
Notes: This figure shows the regression-based gender wage ratios within life-event groups, e.g., the ratio of the wages of married women with no children to those of married men with no children. Calculated using the Giles (2011) formula for the percentage effects of dummy variables in semi-log regression equations, using estimates from pooled wage regressions without sector/occupation controls that include the interaction female * life event dummy variables. The results with sector/occupation controls are similar. See Table 12.7.

Figure 12.5. Regression-based age-earnings profiles, 2007 and 2013 (constant 2013 prices)

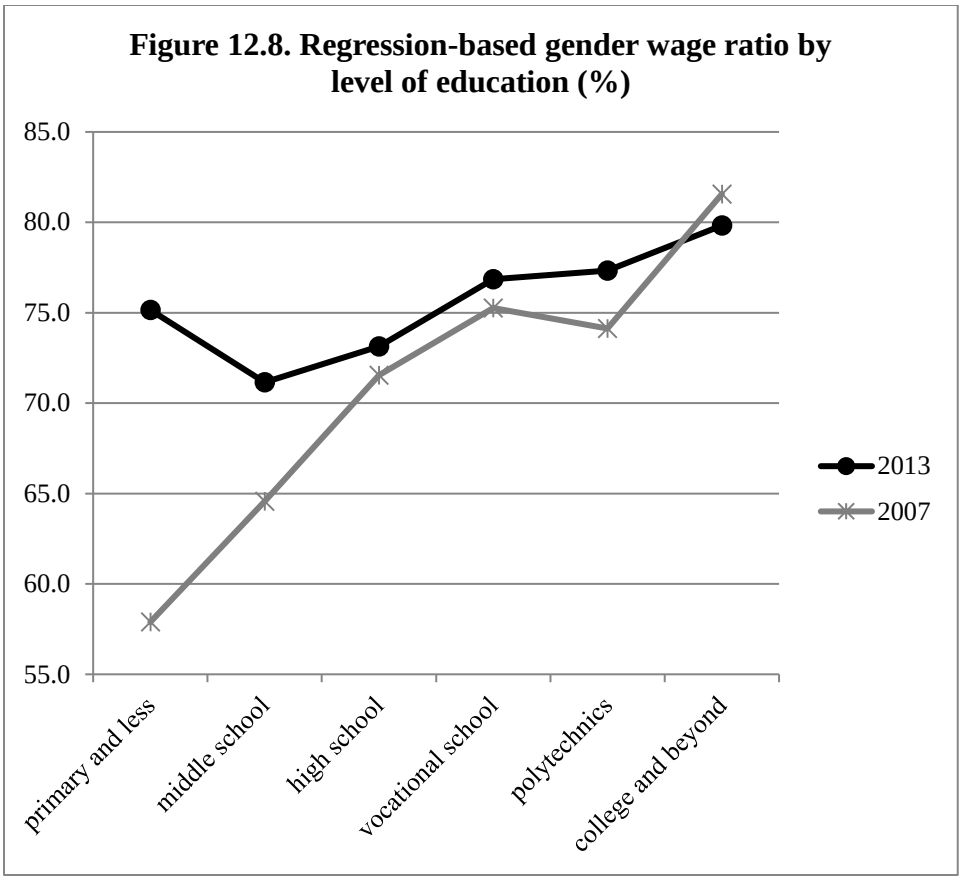


Notes: Earnings are the predicted wages by age group, which are calculated using the estimated coefficients from the separate female and male wage regressions without sector and occupation controls. All characteristics except age are set at the respective female and male means. Estimates with sector/occupation controls yield similar results. 2007 wages are expressed in 2013 prices based on the NBS national urban consumer price index.

Notes: Calculated using the predicted wages shown in Figure 12.5. See the note to Figure 12.5.



Notes: Earnings are the predicted wages by age group, which are calculated using the estimated coefficients from the separate female and male wage regressions without sector and occupation controls. All characteristics except education are set at the respective female and male means. Estimates with sector/occupation controls yield similar results. 2007 wages are expressed in 2013 prices based on the NBS national urban consumer price index.



Notes: Calculated using the predicted wages shown in Figure 12.7. See the note to Figure 12.7.