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Abstract: Using a series of survey and census/mini-census data, this paper explores the trends of women’s labor force participation (WLFP) and estimates the key factors affecting women’s labor supply in urban China between 1990 and 2010. Our results show that WLFP in urban China had changed dramatically from 1990 to 2010. The rates of WLFP had dropped drastically during the 1990s and early 2000s. In 2003, WLFP showed a steady trend of increase. Since 2003, WLFP had become more and more responsive to incomes from other family members. Specifically, women from poorer families have been more likely to join the labor force over time. We argue that Chinese women’s labor supply had been driven by different social or economic forces in different historical stages. From 1990 to 2003, the sharp decline of WLFP may have been caused by institutional transformation (market transition) starting from early 1980s and the radical layoff policy of publicly-owned enterprises (POEs) in the late 1990s. The steady increase of WLFP since 2003 may have been driven by the surge of living costs (e.g., housing, education, and healthcare) in urban China.

Introduction

Women’s labor force participation (WLFP) has been drawing much attention from social scientists and policy makers because it is often considered as the prime indicator of women’s socioeconomic status. According

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to Goldin (1990), among the various measures of market activities, the rate of WLFP is the most frequently used indicator of economic function and is the most convenient and informative single statistics summarizing the economic role of women. Moreover, WLFP is closely related to gender equality, family values, and even children’s wellbeing. First, WLFP is important for gender equality in the labor market because it affects the levels of labor market experience of women, which is a key factor of the gender wage gap according to Mincer and Polachek (1974). Second, WLFP also contributes to gender equality within families. Family bargaining models suggest that WLFP and women’s earning level is highly relevant to the distribution of resources within marriage and even allocation of domestic work (Heer 1963; Manser and Brown 1980; Brines 1994; Anderson and Esvaran 2009). Previous studies found that employed wives have a greater say in household decision making than nonemployed wives (England and Farkas 1986). Third, increasing WLFP may contribute to erode the traditional gender norms or ideology and gender discrimination in the labor market (Goldin 1990). Finally, women’s employment has positive effects on survival rates and educational attainment for their children (Gleason 2003; Kalwij 2003; Alfano, Arulampalam, and Kambhampati 2010). Therefore, it is of great importance to study the trends and underlying mechanisms of WLFP, in particular in China, a country that has been undergoing significant societal changes in recent decades.

In most western societies, rates of WLFP have been increasing steadily for the past several decades (Goldin 1990; Cotter, Hermsen, and Vanneman 2004; Vlasblom and Schippers 2004). However, in China, since the beginning of market reform in the early 1980s, rates of WLFP have been consistently decreasing (Cai and Wang 2004; Yao and Tan 2005; Renchuan 2008; Wu 2010b; Shen, Yuan, and Ping 2012). With regard to causes, some researchers contend that the decline of women’s labor supply can be attributed to the process of market reform that allows women to leave labor market freely (Parish and Busse 2000) or creates incentive (for employers) for discrimination based on gender (Zhang, Hannum, and Wang 2008). In a recent study, Shen, Yuan, and Ping (2012) reveal a connection between family structure and WLFP in urban China, arguing that the decline in intergenerational co-residence in the past two decades could contribute to the rapid decrease in female labor force participation (LFP) in China.

Although previous studies, using various data sources and different approaches, have reached a similar conclusion that WLFP in urban China has been decreasing monotonically over time since the early 1980s, we should still be cautious to treat the existing results and explanations as conclusive for two reasons. First, the data used in most of the previous studies were collected before 2005. We still know little about what happened in the post-2005 era during which Chinese economy and labor market have
continuously undergone dramatic transformations. According to official documents, the radical layoff policy of POEs in urban China ended in 2003 (see Li 2008). Since then, the number of involuntary unemployment ceased to increase in urban China (Wu 2010a). Moreover, since the late 1990s and early 2000s, the Chinese government carried out a series of reforms in education, housing, and healthcare that may have had substantial impact on urban labor market in the late 2000s (since the social consequences of new policies always take years to appear). Therefore, the structure of the labor market in the post-2003 era may be different than the pre-2003 era and deserves careful attention. Second, when explaining the trend, most past studies attribute the drop of WLFP to macro-level factors, such as institutional transformation (market reform) and labor policies (e.g., layoff policy for employees in state-owned enterprises [SOEs]), while paying less attention to micro-level factors that may have direct effects on women’s labor supply and how the effects of these factors change over time.

In this paper, we reexamine the trend of women’s involvement in the labor market in urban China between 1990 and 2010 using the latest available data. We argue that WLFP in urban China may not be a monotonic decreasing trend, mainly because the structure of the labor market and the factors that shape women’s labor force supply have changed dramatically in the past two decades, especially since the late 1990s and early 2000s when the Chinese government launched a series of fundamental reforms in housing, education, and healthcare. The reforms of these spheres resulted in the skyrocketing cost of living for the urban residents, which may have promoted female labor supply (especially for women from low-income families) due to household economic needs. Therefore, we expected an increasing trend of WLFP in urban China since the mid-2000s when the Chinese government ceased the radical layoff policy. And, on an individual level, we expect that women’s labor force attachment may become more and more responsive to the economic situations of their families. By addressing these issues, this study extends the body of literature on WLFP in transitional China and contributes to understanding the changing structure of the Chinese labor market.

In section II, we will review the theoretical views accounting for WLFP. We will then provide, in section III, a summary of the policies that may have impacts on WLFP in urban China. Other than the labor market policies (e.g., market transition and layoff policy of POEs), which may have direct effect on the rate of WLFP, we will highlight the policies in other spheres (e.g., education, housing, and healthcare) that may affect female labor supply indirectly. We will discuss the social consequences of these policies and their implications on female labor force attachment. In section IV, we will introduce the data sources employed in the empirical analyses and explain briefly our research procedure. Empirical findings are demonstrated and interpreted in section V, followed by a brief conclusion and discussion in section VI.
Explaining Women’s Labor Force Participation

The explanations that account for the changes of WLFP can be divided into two broad groups: (1) the macro-level factors (e.g., economic and social structure, institutional arrangement, and social norms or culture) that may affect labor demand for female labor or women’s labor supply; and (2) the micro-level factors (e.g., women’s educational attainment, household responsibility, and household economic need) that shape women’s labor supply.

Macro-Level Factors

To explain the upward shift of WLFP in western societies, some researchers attribute the growth of women’s employment to the expanding demand for female labor in the labor market. The transformation of economic structure from a predominantly goods-producing to a service-oriented economy leads to the tremendous growth of the service sector, and as a result, an increase in job opportunities for females (Oppenheimer 1970; Norwood 1982; Glass, Tienda, and Smith 1988). Oppenheimer (1970) pointed out that during the postwar period in the United States, for decades jobs that had been labeled “female sex-typed” showed greater labor demand growth, and accordingly, helped drive women into the labor market.

Some researchers suggest that shifts of demographic structure may also contribute to the changes of WLFP. For example, in most western societies, the median age for marriage has increased, more women are having children at an older age, the divorce rate has increased, and there has been a long decline in the rate of fertility (Mandelson 1996). Since marriage and having young kids are negatively associated with WLFP, all these factors may increase women’s labor force involvement. Quite a few researchers believe that fertility has a negative causal effect on the labor market participation of women (e.g., England and Farkas 1986; Goldin 1990; Bianchi 1995; Blau 1998).

Another factor that influences WLFP is the change in culture, social norms, and ideology. As Goldin (1983, 709) put it, “although economic change need not have altered ideology, prevailing social norms may still have been a critical force in defining and containing the economic role of women.” For example, in the United States, before World War II, most women left the labor market when they got married because substantial discriminatory “marriage barriers” to employment of married women existed in America before 1950 (see Goldin 1990: Ch. 6). In recent decades, with the process of industrialization and modernization, overt gender discrimination has become illegal, and attitudes or public opinions on gender roles have been becoming more and more liberal. Shifts of social norms and culture encourage women to get a job, leading to the upward trend of WLFP.
Another factor that affects WLFP, which is mainly applied to transitional societies (post-socialist countries, such as Russia, countries in Eastern Europe, and China), is the change of ideology related to political or institutional transformation (from socialism to market-based economy). During the socialist period, due to the communist ideology, nearly everyone (in the potential working population) in those countries was employed full-time until retirement age. After the market transition, the “full employment” ideology and its related policies have been gradually replaced by market-based norms and rules. This may eventually lead to the decline in WLFP since people are allowed to withdraw from the labor force voluntarily. Empirical findings from China and most other post-socialist countries in East Europe had confirmed this notion (Cai and Wang 2004; Yao and Tan 2005; Wu 2010b; van der Lippe and Fodor 1998).

Micro-Level Factors

The micro-level factors that shape women’s labor market decisions mainly include human capital (usually measured by educational attainment) and economic need (usually measured by the financial situation of other family members). According to the human capital theory of neoclassical economics, in an ideal competitive labor market, workers’ economic rewards and the occupations they choose are determined by their investments in human capital (see Becker 1975; Mincer 1962; Polachek 1978, 1979). That is, the higher the education, the higher the economic rewards expected in the labor market, the greater the incentive to work. Put another way, the opportunity cost of nonemployment is higher for women with a higher potential wage. Therefore, on an individual level, women with higher educational attainment are more likely to join the paid labor force. In the aggregate level, the rising educational attainment of women in most societies has also been proposed as a factor in their increasing rates of labor market participation (Mandelson 1996; Blau 1998).

Another main factor, on an individual level, that affects women’s labor force activity is family economic need. Some scholars found that women whose husbands (or other members of their families such as parents and adult children) earn less are more likely to enter into the workforce to make ends meet (Goldin 1990; Juhn and Murphy 1997). For instance, in the United States after World War II, the sharp increase in the cost of living (mainly, housing prices and college costs) contributed greatly to the upward shift of WLFP because most families needed paychecks from their wives to maintain the household economy (Myers 1985; Wetz 1995). While Goldin (1990) shows that women’s labor market participation has become less responsive to their husbands’ earnings over time in the United States, other income (including husband’s income for married women) has continued to be a significant factor that depress women’s labor supply from
the late 1970s to the late 1990s, other things being equal (Cohen and Bianchi 1999).

Market Reform, Policies, and Women’s Labor Supply in Urban China

In sum, our review of literature above in the studies in most western societies show that, factors, such as the increase of women’s educational attainment, drop of fertility rate, and expansion of the service sector could all lead to the increase of women’s employment. However, this pattern has not happened in urban China. First, since the 1980s, China’s education expanded rapidly, which resulted in a dramatic increase of educational attainment for the Chinese people and the decrease of the gender gap in education (Wu and Zhang 2010). Second, since the late 1970s, China adopted the rigorous “one child” policy, meaning, nearly all couples in urban areas can only have one child (except for very special situations such as disability of the current child). This policy decreased women’s fertility rate. The fertility rate in urban China has been very low (the Total Fertility Rate has been even lower than 1.5) for more than ten years (Wu, Ye, and He 2014). Third, in urban China, especially since the market reform in the late 1970s and early 1980s, the share of the tertiary (service) sector increased steadily over time. However, according to previous studies, since the early 1980s, we do not see an upward trend in women’s labor force attachment. On the contrary, the rate of WLFP had been declining over time (Cai and Wang 2004; Yao and Tan 2005; Renchuan 2008; Wu 2010b; Shen, Yuan, and Ping 2012).

Therefore, as mentioned above, researchers provide alternative explanations that account for the decreasing trend of WLFP in urban China. One popular notion attributes the downward shift of women’s employment to the institutional transformations associated with the transition to a market economy (Parish and Busse 2000; Zhang, Hannum, and Wang 2008). A key factor, according to this notion, is that the reform of the urban labor market in China ceased the compulsory employment system under state socialism in which all people are required to work as an expression of egalitarian ideology. Therefore, women gained the right to withdraw from the labor market due to family responsibility or other reasons after the reform, and, in this view, as a result, women’s employment dropped (Parish and Busse 2000). On the other hand, during the pre-reform (state socialism) period, Chinese women were protected by the gender equality ideology (communism). The market reform, especially the process of decentralization and privatization, could create incentives for discrimination based on gender. Moreover, the post-reform era has witnessed the decline of gender equality and resurgence of traditional gender norms (Zuo 2003; Zuo and Bian 2005; Pimentel 2006). Such discrimination and value shift contribute to the decline trend of WLFP and may lead to larger gender gap in employment (He and Wu 2014). In a recent study, Shen, Yuan, and Ping (2012) reveal
a connection between family structure and women’s employment status, arguing that decline in intergenerational co-residence in the past two decades could contribute to the rapid decrease in female LFP in urban China.

Another key factor that leads to the decline of women’s labor supply, according to existing literature, is the radical changes of the labor market policy. Since the market reform, especially since the mid-1990s, the Chinese government introduced radical labor market policies to deal with the challenge of economic situation, especially the predicament of SOEs and collective-owned enterprises (COEs). In 1993, many workers in SOEs and COEs, who were considered as surplus, had been laid off or forced to retire earlier than the legal retirement age, and as a result, the unemployment rate in urban China had increased greatly (Cai, Du, and Wang 2005; Zhang and Wu 2005). According to government statistics, between 1993 and 2003, approximately 28.14 million workers had been laid off in urban China (National Bureau of Statistics 2006). We expected these layoffs to affect both men’s and women’s employment, but if marketization or privatization had also increased discrimination, it would affect women more than men, especially women with lower education and lower skills.

A third factor, which is ignored by earlier studies but may have great impact on women’s labor supply, is the changes of policies in other spheres, such as housing, education, and healthcare. In 1998, the Chinese government launched the reform in housing and ceased to provide free public housing for all residents. Since then, China, especially in urban areas, has experienced the unprecedented housing development and marketization. Direct consequences of the housing reform and the boom of the housing market include the skyrocketing housing prices and increase in housing inequality (Fu and Lin 2013; Yi and Huang 2014; Zhu, Fu, and Ren 2014). According to governmental statistics (National Bureau of Statistics 1999–2011), the national average residential housing price (per square meter) has risen from RMB1,857 (1 U.S. dollar = RMB6.2) in 1999 to about RMB4,725 in 2010. More important, in terms of average individual annual gross income, the housing price has exceeded the affordability for many urban residents (Mak, Choy, and Ho 2007). That is, the increase in housing prices may lead to great economic pressure for many urban families, in particular low-income families.

Since 1977, Chinese education policies have been changing substantially. The most important changes can be summed up as expansion, decentralization, and marketization of the education costs. In 1999, the government launched the marketization (also called chanyehua) policy in the education sector. One of the consequences of the marketization of education is the rapid growth of educational costs for Chinese residents, especially the costs of higher education. College tuition evolved gradually from zero (totally free) to being wholly paid for by the students’ families. Between 1994–2004, fees went from RMB400 per student per year to about RMB5,000 (Yang
When added to the constantly rising cost of boarding, living expenses, and miscellaneous charges, these costs made higher education a heavy burden for many families, especially those low-income families (Yang 2008).

Since early 1990s, another important policy change that happened in China was the reform of the healthcare system, namely the marketization and privatization of the medical system. After the reform, the share of governmental expenses on healthcare in China’s total healthcare had dropped drastically, while the share of healthcare expenses paid by individuals had increased dramatically over time (Ministry of Health 2012). Another consequence of the market-oriented reform of the healthcare system was the increase in the cost of medicine and medical care (Bao 2008, also see Yang 2013). Therefore, the marketization of the healthcare system in China, accompanied by the low coverage rate of the social security system, resulted in rising inequality in the distribution of healthcare resources and created great economic burden for the Chinese people, especially those from low-income families (Ma, Lu, and Quan 2008; Yang 2013).

Based on the information above, we expected that, during the pre-2003 era, WLFP in urban China may have showed a quick decline due to market reform and the radical layoff policy of the POEs, which led to a huge number of unemployment in urban China. However, in 2003, when the layoff policy ended, the rapid increase in housing expenses, education, and healthcare created great economic need for most Chinese families, and consequently affected women’s (especially women from low-income families) labor supply. That is, for most families, in particular low-income families, earnings from wives or other female family members (such as daughters, sisters, mother-in-laws, etc.) would become necessary to support the constantly rising cost of living. Therefore, we expected in 2003, that WLFP would show an increasing trend. Moreover, if the increase was driven partly by family economic needs, we expected that, on an individual level, WLFP would become more and more responsive to the financial situation of their family (or income from other family members) over time. On the other hand, because of educational homogamy of marriages, women with lower human capital (measured by education) were more likely to be married to men with lower education and lower earnings. Therefore, if women (usually lower educated women because education inflates income) in lower income families were truly more likely to join the labor force over time, then we also expected a declining trend of the predicting power of education on WLFP.

Data and Research Procedure

The data employed in the current study are from micro-sample data from the Chinese population censuses of 1990 and 2000 (1 percent sample from the 1990 census and 0.1 percent from the 2000 census), Chinese population
mini-census of 2005, “Life History and Social Change in Contemporary China” (LHSCC, conducted in 1996) (Treiman 1998), and five waves of Chinese General Social Survey (CGSS 2003, 2005, 2006, 2008, and 2010). The LHSCC and all waves of CGSS are national representative samples. We restrict the sample to women in the prime working ages of 21–50 and with urban (nonagricultural) registration status (Hukou). Those women who enrolled in school or the military during the survey time are also excluded.

In the current study, the concept of LFP indicates the proportion of the population employed or seeking employment at the time when the censuses or survey data were collected.

The data analyses in the current study include two main tasks. First, we conduct a descriptive analysis, elaborating the trends in women’s labor market attachment during the period examined. We present overall trend of WLFP, as well as the trends of WLFP by their marital status, educational level, age cohort, and income level of their families. Second, we provide a multivariate analysis to estimate and compare the effects of some individual and demographic factors (mainly human capital and family economic status) on WLFP year by year, testing the hypotheses that WLFP in urban China becomes more and more responsive to the financial situation of their families and that the predicting power of human capital has declined over time since 2003.

Results

Descriptive Trends of WLFP in Urban China, 1990–2010

General Pattern of WLFP Between 1990 and 2010

Figure 1 gives the general trends of LFP for Chinese urban women ages 21–50 from 1990 to 2010. As expected, the change of WLFP is not a linear pattern. Figure 1 depicts a V-shape. Specifically, as can be seen clearly, WLFP shows a steep downward shift from 1990 to 2003 (the rate of WLFP had dropped drastically from 89.4 percent in 1990 to 62.3 percent in 2003). The trend of WLFP in this period is consistent with findings of previous studies. However, we see a reverse trend after 2003: an obvious and steady increase of WLFP. In more detail, the rate of WLFP has climbed to 63.5 percent in 2005, 68.8 percent in 2006, 71.6 percent in 2008, and 75.5 percent in 2010. The findings in Figure 1 meet our expectation that, since 2003 (when the radical layoff policy ended), WLFP in urban China started to increase over time.

WLFP by Marital Status, 1990–2010

Marriage, as an indicator of different levels of family responsibility and financial support from husbands, is an important determinant of whether or not women participate in the labor market. That is, getting married
may be a factor that deters WLFP. On the other hand, never-married or ever-married women (divorced, separated, and widowed), especially single mothers, may be more likely to join the labor force because of the economic needs of supporting themselves and their dependent children. Therefore, depicting women’s employment by their marital status may help to get a better understanding about the trends of WLFP in the past two decades. Figure 2 shows the patterns of WLFP by marital status (we divide women into two groups: married and nonmarried) from 1990 to 2010.

According to Figure 2, there is a large gap of LFP between married-women and nonmarried (including never-married, divorced, separated, and widowed) women, indicating married-women’s LFP have been much lower than that of nonmarried women during the period of 1990–2010. On the other hand, between 1990 and 2003, the trends of LFP for women of the two marital statuses are similar, both of which show decreasing patterns. After 2003, the trends of LFP for the two groups differ. Married-women’s LFP presents a steady and rapid upward trend, while LFP for nonmarried women fluctuates dramatically over time between 2003 and 2010.
Nearly all previous studies show that, in China, the likelihood of WLFP increases with their education (e.g., Cai and Wang 2004; Yao and Tan 2005; Renchuan 2008; Wu 2010b; Shen, Yuan, and Ping 2012). The results shown in Figure 3 illustrate a well-known strong positive association between educational attainment and labor force attachment during the period under study.

As expected, education has a positive effect on WLFP in urban China. According to Figure 3, for all years covered, women who obtained college or higher education had the highest rates of LFP, followed by women with senior high school (or technical school) degree, junior high school, and elementary school or lower. On the other hand, as Figure 3 presents trends of LFP for women with different levels of schooling were different, especially during the period of 2003–2010. From 1990 to 2003, we see decreasing trends of LFP for women with all levels of schooling, but the declining rates are different for the four groups: women with higher educational attainment had lower rates of dropping, meaning that highly educated women had been

**Figure 2. Rates of WLFP by marital status, 1990–2010. Sources: Authors’ tabulations from 1990 census (1% micro-data), 2000 census (0.1% micro-data), 2005 mini census, LHSCC (1996); CGSS 2003, 2006, 2008, and 2010.**

Notes: Sample for each year includes Chinese women (ages 21–50) with nonagricultural Hukou status. All the survey data (other than the three waves of census data) are weighted.

**WLFP by Educational Attainment, 1990–2010**

Nearly all previous studies show that, in China, the likelihood of WLFP increases with their education (e.g., Cai and Wang 2004; Yao and Tan 2005; Renchuan 2008; Wu 2010b; Shen, Yuan, and Ping 2012). The results shown in Figure 3 illustrate a well-known strong positive association between educational attainment and labor force attachment during the period under study.

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less affected by the institutional transformation and layoff policy during the 1990s and early 2000s. The situation had changed after 2003. As seen in Figure 3, LFP of women with a senior high school degree and college or higher degree had been continuously declining, although the rates of dropping are modest. While for women with degrees lower than senior high school, rates of LFP showed obvious and rapid increase trends since 2003, meaning that more and more less educated women had entered or stayed in the labor market.

**WLFP by Age Group, 1990–2010**

Figure 4 presents the patterns of WLFP by birth cohort. Obviously, women’s labor force attachment varies by birth cohort over time: younger women had higher rates of LFP. During the period of 1990–2003, women of all ages showed decreasing trends of LFP. We saw a different pattern since 2005 during which the youngest (21–25 years old) cohort still presented...
a declining trend while other cohorts showed increasing trends, especially for the oldest cohort (aged 46–50) who had the highest rate of increase.

WLFP by Family Income Level, 1996–2010

As we mentioned in the previous sections, women’s employment may vary with the economic situation of their families. That is, women with more economic needs (or less financial resources from other family members) may be more likely to join the labor market to make ends meet. Figure 5 presents the patterns of WLFP by the income levels from their family members from 1996 to 2010.12

Interestingly, Figure 5 doesn’t tell an “economic needs” story about WLFP at first sight. That is, we do not see women from low-income families having higher rates of LFP as we do in high-income families. But if we look carefully, Figure 5 does show an interesting picture. On the one hand, the changing patterns of LFP for women from families whose income are above median (third and fourth quartile) are highly accordant. Between 1996 and
2005, rates of LFP for women of these two groups showed a modest downward shift; since 2005, their LFP presented a modest upward trend. On the other hand, the patterns of LFP for women from the first and second quartile are also highly accordant. Their rates of LFP had dropped very drastically during 1996 and 2003, while after 2003, the situation had been totally reversed: the LFP of these two groups had greatly increased over the years, even exceeded those women from upper-median income families. This finding meets our expectation that women from low-income families are more and more likely to join the paid workforce due to rising living expenses.

Results of Multivariate Analysis

In the last section, we showed the descriptive trends of WLFP between 1990 and 2010. We found that, since 2003, WLFP in urban China had increased steadily. Moreover, lower educated women and women from low-income families had higher rates of increase than those of their counterparts during 2003–2010. To explain these trends, we suggest that, since 2003, with the rapid increase of the cost of living in urban China, women’s labor force

Figure 5. Rates of WLFP by family income, 1996–2010. Sources: Authors’ tabulations from LHSCEC (1996); CGSS2003, 2005, 2006, 2008, and 2010. Note: Sample for each year includes Chinese women (ages 21–50) with non-agricultural Hukou status. All the survey data (other than the three waves of census data) are weighted.
attachment may be more likely to be driven by family economic needs, and the predicting power of education may show a decreasing trend. To test these notions, we estimate the net effects of human capital and family economic status upon WLFP in each year of 2003, 2005, 2006, 2008, and 2010, using multivariate methods.

Data, Variables, and Models

The importance of this part of the analysis is to estimate the effects of some individual factors, mainly human capital and family financial situation, on women’s labor force attachment. The data we use in this section are from LHSCC (1996) and the five waves of CGSS data, namely, CGSS 2003, 2005, 2006, 2008, and 2010. As in the previous section, samples for each year include Chinese women (ages 21–50) with nonagricultural Hukou status. Those women who enrolled in school or military during the survey time are also excluded. In each year, the dependent variable is whether or not the respondent in the labor market (currently employed or looking for jobs). It is a dichotomous variable, which is coded 1 if the individual is in the labor market and 0 otherwise.

We have two key explanatory variables, human capital and family economic situation. Following previous studies, human capital is measured as years of schooling indicating the number of years that the respondent has completed in formal (regular) school. Family economic situation is measured as income of other family members, meaning the amount of income from other members in the household.

As we mentioned in the previous section, women’s labor supply may differ by age. We thereby include age group as control variable (we divide women into six groups, ages 21–25, 26–30, 31–35, 36–40, 41–45, and 46–50, with 46–50 as the reference category). Moreover, according to previous studies, women’s labor force activities are sensitive to women’s marital status and parental status. Therefore, we control marital status and parental status in the regression models. Marital status is captured with a dummy variable (married = 1, nonmarried = 0). Parental status is measured by two dummy variables: “whether or not one has children under 6 years of age” (yes = 1, no = 0) and “whether or not one has children between ages 6 and 18” (yes = 1, no = 0). On the other hand, in the Chinese context, the living arrangement of multiple generational families may affect women’s labor force attachment. For instance, living with parents or in-laws could help women free themselves from childcare and domestic work and, as a result, promote women’s employment. Therefore we add “whether or not living with parents or in-laws” (yes = 1, no = 0) to the equation as a control variable. Other control variables include province (since economic development and labor market structure differ greatly across provinces in China) and a binary variable indicating women’s party membership (party member = 1, otherwise = 0). Table 1 presents the descriptive statistics for all the above variables.
Since the dependent variable, LFP, is a binary variable indicating whether or not the respondent is in the labor market, we use the binary logistic regression model to predict the factors that shape WLPF. The

Table 1
Descriptive Statistics for Variables Included in the Logistic Regression Models, 1996–2010

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<td>LFP</td>
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<td>Age Group</td>
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<td>or in-laws</td>
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Notes: Sample for each year includes Chinese women (ages 21–50) with nonagricultural Hukou status. All data are weighted. Numbers in parentheses are standard deviations.
equation for this model is:

$$\log\left(\frac{p}{1-p}\right) = \alpha + \beta X + \epsilon$$

In the above equation, $p$ refers to the probability of joining the labor force; $\alpha$ refers to the constant; $X$ refers to the vector of all independent variables, including years of schooling, income from other family members, and all the control variables; $\beta$ refers to the vector of the coefficients of $X$ (all independent variables); $\epsilon$ refers to the error term.

**Results**

Table 2 shows the coefficients of binary logistic regressions for women’s labor force attachment for the factors mentioned above in each year.

Overall, as indicated in Table 2, women who are Chinese Communist Party (CCP) members are more likely to join the labor force. In all years, coefficients of “CCP members” are positive. Marital status and parental status are related to women’s labor force attachment. Being married and having young children under 6 years old depress women’s labor supply because, as indicated in Table 2, the coefficients of being married and with kids under 6 are negative in all years covered. But we cannot see a clear pattern for the effects of older kids (with kids between 6 and 18) on WLFP. During 2005–2006, the coefficients of this variable are positive and statistically significant, indicating that having kids between 6 and 18 year old encourages women into the labor market. While in 2008, the coefficient of this variable was negative and significant, meaning that having 6–18 year old kids deters women’s employment. During 1996, 2003, 2006, and 2010, this variable showed no effect on WLFP, other things being equal. We expect that multiple generation living arrangements (living with parents or in-laws) may have a positive effect on WLFP. However, according to Table 2, there is no evidence to support this judgment. Living with parents or in-laws does not affect women’s labor force attachment for all years under study. The only exception is the year of 2003, in which living with parents or in-laws has a negative effect on WLFP.

As can be seen in Table 2, human capital (years of schooling) has significantly ($p < 0.001$) positive effects on women’s labor supply for all years covered, other things being equal. More importantly, we can see that, coefficients of this variable have decreased over time between 2003 and 2010, indicating the declining predicting power of human capital on WLFP. As shown in Figure 6a, the odds ratios of years of schooling have dropped consistently from 1.23 in 2003 to 1.18 in 2010. The results met our expectation that the share of low educated women in the labor force is getting larger and larger over time.
Table 2


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Notes: Sample for each year includes Chinese women (ages 21–50) with nonagricultural Hukou status. aProvince dummies have been controlled, but coefficients haven’t been shown; bages 46–50 is the reference group. Standard errors in parentheses; +$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. 
Findings in Table 2 show that, in 1996, 2003, and 2005, we could not see any significant association between income from other family members and WLFP. In 2003, we even saw a positive (but not significant) effect of this variable, meaning that women with a better economic situation were more likely to join the paid workforce in this year. In 2005, the association between this variable and WLFP became negative (meaning that women with a poor family financial situation were more likely to join the labor force), but still not statistically significant. Since 2006, the coefficients of this variable were negative and statistically significant, meaning that women with less financial resources were truly more likely to join the labor force. In 2010, other things being equal, a RMB10,000 increase of income from other family members depresses the odds of WLFP by about 7 percent (1−e^{-0.07} = .068, p < 0.001).

And more importantly, as shown in Figure 6b, the odds ratio of this variable declined over time between 2003 and 2010. This finding confirms our judgment that economic needs had become more and more important in predicting WLFP since 2003. To put it another way, during the first decade of the twenty-first century, women in low-income families were more and more likely to join the labor force due to the rapid increase of the cost of living (housing, education, and healthcare.).

Summary, Conclusion, and Discussion


Figure 6. Odds ratios of “years of schooling” and “income from other family members” predicting WLFP in Urban China, 2003–2010.
collected in 1996), and Chinese General Social Survey (CGSS 2003, 2005, 2006, 2008, and 2010), this paper explores the trends of WLFP in urban China and estimates the effects of human capital and family financial situations on women’s labor supply in urban China between 1990 and 2010. We find that:

First, women’s labor market in urban China had changed dramatically from 1990 to 2010 in general. During the 1990s and early 2000s, the rates of WLFP had dropped drastically. This is consistent with the findings of the previous studies. Since 2003, WLFP showed a steady trend of increase. Moreover, if we look at it in detail, we find that women with lower educational attainment, women of older cohorts, and women in low-income families had higher rates of increase, compared to their counterparts.

Second, educational attainment promotes women’s likelihood to participate in the labor force. During the period under examination, women with higher educational attainment had higher rates of LFP. However, according to the results of multivariate analyses, the positive effects of education on WLFP had been declining steadily over time between 2003 and 2010, indicating the predicting power of human capital on WLFP had dropped, or to put it another way, the share of low educated women in the labor force had increased over time.

Third, since 2003, WLFP in urban China had become more and more sensitive to family financial situations (incomes from other family members). Specifically, over time, women with less other financial resources were more likely to join the labor market. The results show that Chinese urban women’s labor supply was in part driven by family economic needs since the early 2000s.

Based on the findings, we argue that Chinese women’s labor force attachment had been affected by different social or economic forces in different historical stages. We adopt the views of previous studies (van der Lippe and Fodor 1998; Parish and Busse 2000; Cai and Wang 2004; Zhang, Hannum, and Wang 2008), arguing that the drop of WLFP during 1990 and 2003 may be due to institutional transformation (market-based reform of the labor market) that ceased the compulsory employment system and allowed women to withdraw freely from the labor force, and the radical labor policy (e.g., the layoff policy of POEs) that created a huge number of unemployed in urban China. We also contend that the market reform may lead to value shift. For example, staying at home woman (mother) becomes more acceptable over time in urban China. Although we cannot test these notions directly due to data limitation, we tend to believe that these views, which have been confirmed by many previous empirical studies, provide convincing accounts for the downward shift of WLFP during the pre-2003 period.

As to the post-2003 period, we argue that the steady increase of WLFP may be driven by the economic needs of the urban Chinese families.
The market-based reforms in the spheres of housing, education, and healthcare have inflated the cost of living for most urban families, and consequently, have driven more and more women, especially those in low-income families, to enter the paid workforce. Evidence from individual level datasets employed by the current study confirm this point, showing that WLFP in urban China had become more and more sensitive to household financial situations (income from other family members) over time.

The current study extends the body of literature on WLFP in transitional China by using updated data from multiple sources. However, limitations of the analyses should be acknowledged. Although the pooled cross-sectional data used in the current study could facilitate our understanding of the trends of WLFP in urban China in the aggregate level, we still have limited knowledge, on an individual level, about how women’s labor force activities vary with different stages of their life courses without event history or longitudinal data. Moreover, because of the data limitation, we could not directly test the link between women’s labor supply and the changes of social policies on housing, education, and healthcare in China, which obviously deserves further investigation by future work.

Notes

1. Since the early 1990s, the Chinese government had carried out the reform of publicly-owned enterprises (POEs), including the state-owned enterprises (SOEs) and collective-owned enterprises (COE). One of the most influential policies is the layoff policy, which is about the retrenchment of millions of workers who had been considered as surplus. As a result, a huge number of urban workers had been laid off or forced to retire earlier than the legal retirement age.

2. According to Naughton (2007), between 1993 and 2003, about 30 million SOE workers were laid off, 38 percent of the entire labor force, and almost 50 million urban workers of all kinds including workers of collective owned enterprises.

3. See Wu and Zhang (2010) and Yeung (2013) for reviews of the background and consequences of the reform of education (especially higher education).

4. See Ma, Lu, and Quan (2008) and Zhang and Kanbur (2005) for detailed information about the China’s healthcare reforms.

5. The layoff policy ended in 2003 for most provinces in China. According to a previous study, the nationwide rate of labor force participation (LFP) reached the lowest level in 2003, and in 2004, showed a trend of increase (Cai 2008).

6. Other factors may also contribute to the decreasing effect of education on employment over time. For example, China has witnessed a dramatic expansion in higher education during the late 1990s and early 2000s. As a possible consequence of the expansion, the supply of highly educated labor may surplus the demand, which could lead to the predicament of employment for college graduates (this happened in recent years).

7. See Wu and He (2015) for detailed information about 1990 and 2000 Chinese census data.

8. The Chinese General Social Survey (CGSS) data was collected jointly by the Survey Research Center of Hong Kong University of Science and Technology and the National Survey Research Center at Renmin University of China. See Bian
and Li (2012) for the research agenda, sample design, and other information from this project.

9. We followed the previous study (Wu 2010b) to make the age restriction, considering this range as the prime working ages for women in urban China.

10. In this section, we presented figures to demonstrate the trends of women’s labor force participation (WLFP). Please refer to Appendix 1 for specific numbers in each year.

11. The continuous decrease of LFP for women with a college degree may be partly due to the rapid expansion of higher education and the predicament of employment of recent college graduates.

12. We excluded the 1990 and 2000 census data from our analysis in this part because the Chinese Population Censuses in 1990 and 2000 had not collected personal or family income information.

13. According to Allison (1999), comparing logit coefficients across groups (datasets) may be problematic because the residual variances of the equations for different groups (datasets) may be different. Researchers propose various ways for dealing with these issues (Williams 2009; see also Hong 2014 for a review), but unfortunately the proposed ways have problems of their own (Williams 2009), and make the comparison process very complicated (Hong forthcoming). We use the linear probability model (LPM) as an alternative modeling strategy to check if the pattern still holds. Using the ordinary least squares (OLS) procedure, LPM assumes that the probability of LFP is linear. We find that the LPM models produce the same pattern as that of the logistic models (results are not shown but are available from the authors on request). That is, the magnitude of human capital (years of schooling) decreases over time between 2003 and 2010. In the current study, we prefer logistic regression models to LPM because LPM violates the linear regression assumptions.

14. $e^{0.207} = .23$, meaning that, other things being equal, having one additional year of schooling increases the odds of entering the labor market by 23 percent.

15. The pattern still holds if we use LPM to do the estimation (coefficients of LPM models are not shown but are available from the authors on request).

Funding

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References


Ma, Jin, Mingshan Lu, and Hude Quan. 2008. “From a National, Centrally Planned Health System to a System Based on the Market: Lessons from China.” Health Affairs 27: 937–948. doi:10.1377/hlthaff.27.4.937


**About the Authors**

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Dongyang Zhou is a Ph.D. candidate in the Department of Sociology, School of Social and Behavioral Sciences at Nanjing University, Nanjing, China. His research interests include social stratification and inequality, with a focus on gender inequality in higher education in China.
Appendix 1:

Rates of women’s labor force participation in Urban China, 1990–2010

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<td>Age 21–25</td>
<td>94.6</td>
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(Continued)
## Appendix 1: Continued

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<tr>
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Notes: Sample for each year includes Chinese women (ages 21–50) with nonagricultural *Hukou* status. All the survey data (other than the three waves of census data) are weighted. “–” means that information is not available in the data.