Impact of the Liberalization of Fertility Policy on the Female Labor Market Under Different Educational Backgrounds: Empirical Analysis Based on CFPS Data

Hao WU, Ying GAO[1]
School of Business, Sichuan University, Chengdu, China
1291556974@qq.com

Abstract. Fertility policy is an important public policy to promote population structure optimization and economic and social development in China. Based on CFPS data from 2016, 2018 and 2020, this paper evaluates the impact of universal two-child policy and three-child policy on female labor market in different educational backgrounds by using the method of differential and differential analysis. The research shows that the liberalization of the policy will reduce the employment rate of female labor. Under the policy, the older labor force and the lower education will suffer more discrimination in employment. In addition, compared with highly educated women, women with low education have a higher willingness to have multiple children, indicating that the liberalization of the birth policy has a more significant impact on the employment of women with low education. In contrast, the phenomenon of low fertility level and fertility rate in highly educated families may further rise, and further aggravate the imbalance of fertility rate in China. The research in this paper provides empirical evidence for evaluating the impact of the implementation of the fertility policy on the female labor market.

Keywords. Fertility policy; Educational background; Female workforce; Employment discrimination

1. Introduction

Since 2000, the proportion of population over 65 years old in the total population has reached 7% of the international standard of aging, indicating that China has officially entered aging society. In this context, from 2013 to 2021, The Chinese government has introduced the universal two-child policy and the three-child policy [1].

The relaxation of fertility policy may increase the natural attachment cost of female labor force, as employers take into consideration the potential cost of female labor force in terms of childbirth. This undoubtedly further increases the possibility of gender discrimination in the workplace against female labor force. As the main subjects of childbirth, a proportion of female labor force with lower education levels may choose to

---

[1] Corresponding Author: Ying GAO, E-mail: 1291556974@qq.com.

have multiple births and leave the labor market due to lower opportunity costs of childbirth. On the other hand, female labor force with higher education backgrounds always holds important positions in companies, and in order to ensure the stability of their career development, they may have a lower willingness to have multiple births. Based on this, this study wants to explore whether the relaxation of the fertility policy further exacerbates gender discrimination against female labor force, and whether education level plays a moderating role in the impact of fertility policy on female labor force participation rate.

2.   Literature Review and Hypothetical Inference

2.1 Fertility Policy and Female Labor Employment

The discussion about the impact of fertility policy on female labor market can be traced back to the study of labor market. As early as 1976, Becker theoretically demonstrated the correlation between wages and working hours in his book Economic Analysis of Human Behavior [2], which was subsequently empirically tested by more articles [3,4]. At the same time, some scholars tried to study the influencing factors of labor supply or labor participation rate, and found that the number of children, social policies, spouse income and so on are all part of it, and these topics are still popular today [5-8]. Zhang used the labor market supply and demand model to empirically test that under different GDP growth conditions, the "universal two-child" policy can significantly improve China's labor supply and demand relationship and supply structure [9]. When the degree of population aging is relatively serious, the "universal two-child" policy will also increase the total output and working hours. As the main decision-maker of having a second child, the supply of female labor force has gradually received research attention. However, different from the total social labor supply, research shows that the two-child policy may reduce women's labor supply through aggravating family responsibilities and employer discrimination, and the increase in the number of children will also significantly reduce the labor supply, time input and wage level of urban married women [10,11]. Based on the changes in the internal structure of population development, China needs to optimize its fertility policy to alleviate aging. Compared with men, women, as the main body of childbearing, will be the first to take a hit on their employment under the background of fertility policy liberalization. Based on this, we propose that:

H1: The liberalization of fertility policy has a negative impact on the female labor participation rate

2.2 Educational Background and Female Labor Force Employment

A number of studies on the influencing factors of fertility intention show that factors such as the educational background of both parents, family resources, and the gender of the child have a significant impact on the family's intention to have a second or third child [12].Mandal et al. analyzed the fertility intention of Shanghai registered couples who have had a second child from the micro-cost-utility perspective and concluded that families with higher education and income, rich family resources, and a girl as their first child are more willing to have a second child, which coincides with the influencing factors of fertility intention [13]. The research shows that the liberalization of the fertility

policy may reduce the labor supply of women through increasing family responsibilities and employer discrimination, and the increase in the number of children will also significantly reduce the labor supply, time input and wage level of urban married women [14]. At the same time, the positive promoting effect of education level on labor supply has been proved for many times [15]. This study believes Highly educated women may be less willing to have multiple children in order to maintain career stability. Women with lower levels of education are more likely to choose to leave the labor market because of their lower childbearing costs. Based on this, we propose that:

H2a: The liberalization of the fertility policy has no significant negative effect on the labor force participation rate of women with high educational background.
H2b: The liberalization of the fertility policy has a significant negative impact on the labor force participation rate of women with low educational background.

2.3 Employment Discrimination and Female Labor Employment

Influenced by the traditional idea that women take the lead in the home and men take the lead in the outside, women are generally believed to devote themselves to taking care of the family. For women's career, if the interruption of childbearing career is too long, they may lose their pre-childbearing career status and lead to downward occupational mobility. Employers are often more willing to recruit male employees under the same conditions when recruiting. This is objectively due to the fact that enterprises bear the maternity insurance for women, and the recruitment of female employees under the same conditions will increase the employment cost of enterprises. The liberalization of the fertility policy has worsened the employment environment for women. Women will spend more time at home than before, and employers will no doubt shun women even more. Therefore, although the employer does not make gender discrimination clauses contrary to the relevant policy on the surface, it actually reduces the possibility of recruiting female employees by raising the entry threshold for women. [16] It can be found that in this social environment, even if women are willing to give up childbearing, they may not be treated fairly in the workplace. Because the high career entry threshold makes women lose the same career development opportunities as men in the beginning. Based on this, this paper proposes:

H3: The liberalization of the fertility policy has a positive impact on the employment discrimination of female labor force.
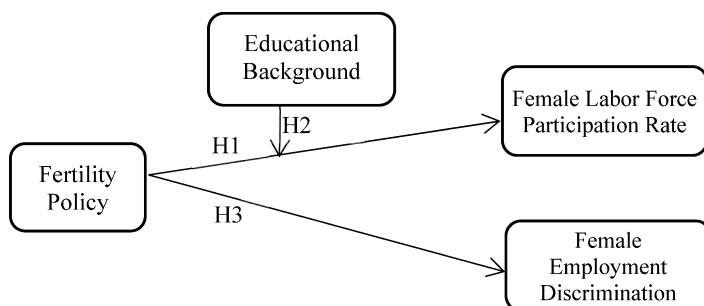

Figure 1. Research Model

3.   Data Sample and Model

3.1 Data Sample

The sample data in this paper are from the China Household Tracking Survey Project (CFPS) implemented by the China Social Science Survey Center of Peking University, and the relevant data of three periods in 2016, 2018 and 2020 are selected. Table 1 shows the descriptive statistics of each variable.

From the descriptive statistics, the mean value of the current working status is 0.757, indicating that 75.7% of the people in the sample are currently employed. The mean for gender is 0.481, indicating that 48.1% of people in the sample are women. The age of the sample women is concentrated between 20 and 45 years old, accounting for 44.85% of the total sample. The mean of the highest academic qualifications of the individuals in the sample is 2.66.

Table 1. Descriptive statistics

	N	Mean	Std. Dev.	min	Median	max
employ	40171	757.	429.	0	1	1
finc	40171	54604.23	55329.19	542	40000	300000
post	40171	663.	473.	0	1	1
gender	40171	481.	. 5	0	0	1
postgender	40171	319.	466.	0	0	1
age	40171	31.90	14.82	20	32	45
kids	40171	1.39	1.01	0	1	6
marry	40171	907.	291.	0	1	1
selfdegree	40171	2.66	1.40	0	3	8
degree	40171	125.	331.	0	0	1

3.2 Model Design and Variable Description

In this paper, a difference-difference (DID) model is established to analyze the impact of the fertility liberalization policy on the female labor market. The following model is used to study the matched samples:

$$\text{Employ} = \beta_0 + \beta_1 \text{postgender} + \beta_2 \text{post} + \beta_3 \text{gender} + \beta_3 \text{control} + \varepsilon \qquad (1)$$

Employ in model (1) is the explained variable, representing the current working status, where 1 is employed and 0 is unemployed; postgender is the cross term of post and gender, and post is the policy dummy variable, which is 0 before and 1 after the birth policy is released; gender was used to control the treatment group and the control group, where 1 was the treatment group and 0 was the control group.

The difference in salary and income of the same job can reflect the discrimination of employers. Refer to the study by Dong [17], use salary and income to measure the degree of discrimination, and the following regression model is established:

$$\text{lnfinc} = \beta_0 + \beta_1 \text{postgender} + \beta_2 \text{post} + \beta_3 \text{gender} + \beta_4 \text{control} + \varepsilon \qquad (2)$$

In model (2), lnfinc is the explained variable, representing salary income; postgender is the cross term of post and gender, and post is the policy dummy variable, which is 0 before the implementation of the "universal two-child policy" and 1 after the implementation. gender was used to control treatment group and control group, where 1 was treatment group and 0 was control group; control is the control variable. See Table 3-2 for the specific Settings of the variables.

Table 2. Variable description table

Variable Symbols	Variable description
employ	Current employment status, with 1 being employed and 0 being unemployed
lnfinc	Lnfinc 2 Take the logarithm of an individual's annual income
fincome1	Annual income
postgender	post's interaction with gender
post	Policy dummy variable, 0 before the implementation of the "universal two-child" policy and 1 after implementation
gender	1 for women and 0 for men
age	Sample age
kids	Number of existing children
marry	Individual marital status, married as 1, unmarried as 0
selfdegree	Individual's highest degree, with a maximum of 8 and a minimum of 1
degree	A person's highest degree is 1 if it is greater than 4, and 0 if it is less

4.   Data Analysis

4.1 The Regression Results of the Influence of Policy Liberalization on Female Employment

M1 is the regression result of employ as explained variable, adding gender, age, marry and kids. The results show that gender and employ are significantly negatively correlated at the level of 1% with a correlation coefficient of -0.164, indicating that the employment rate of females is lower than that of males. M2 is the regression result estimated by using the differential differential model. Specifically, post and the cross-multiplication term between post and gender are added to M1. The result shows that gender coefficient is negative, indicating that the employment rate of female labor force has decreased after the implementation of the policy, which is lower than that of male labor force. H1 is supported.

Table 3. Regression results of the impact of birth policy on female employment

	M1	M2
	employ	employ
postgender		-0.019 **
post		-0.013 **
gender	-0.164 ***	-0.176 ***
age	-0.004 ***	-0.004 ***
kids	0.036 ***	0.036 ***
marry	0.182 ***	0.181 ***
selfdegree	-0.005 ***	-0.005 ***
cons	0.793 ***	0.799 ***
N	40171	40171
adj. R^2	0.096	0.096

t-value in parentheses; * $p < 0.1$,** $p < 0.05$,*** $p < 0.01$

4.2 Test Results of the Influence of Educational Background on Female Labor Market

In order to study the heterogeneity of education level, this paper mainly divides educational background into two groups, with college background as the critical point, which is divided into samples of college education and above and samples of college education and below. Then, the heterogeneity of education level of the two groups was analyzed respectively. The regression results are shown in Table4. M3 is the regression result of the highly educated population. The data show that the coefficient of postgender is positive and the correlation coefficient is 0.080, indicating that the liberalization of the birth policy has no negative impact on the labor participation of highly educated women. M4 is the regression result of people with low education background. The data shows that the coefficient of postgender is significantly negative and the correlation coefficient is -0.017, indicating that the liberalization of the fertility policy will have a negative effect on the employment of women with low education background. As analyzed above, the higher the education background, the higher the value brought to the enterprise. Therefore, women with lower education background are not valued by enterprises in the job market, plus the potential employment costs brought by having multiple children. Therefore, the liberalization of the fertility policy will make it more difficult for these women with lower education background to find employment. H2a and H2b are supported.

4.3. The Impact of Employment Discrimination on Female Labor Market

Table 5 shows the regression results estimated for model (2). M5 is based on lnfinc as the explained variable and the regression results of gender, age, marry and kids are added. The results show that gender and fincome1 are significantly negatively correlated at the level of 1% and the correlation coefficient is -0.132, indicating that women's income in the labor market is significantly lower than that of men. M6 is a regression result obtained by adding post and the cross-multiplicative term between post and gender on the basis of M5. The result shows that the coefficient of postgender is significantly negatively correlated at the level of 1% and the correlation coefficient is -0.061, indicating that the liberalization of the fertility policy has a greater impact on women and women suffer more serious employment discrimination.H3 is supported.

Table 4. Group test of female labor market and educational background

	M3	M4
	employ	employ
postgender	0.080 *	-0.017***
post	-0.059 ***	0.019 ***
gender	-0.061 ***	-0.186 ***
age	-0.002 ***	-0.004 ***
kids	-0.053 ***	0.051 ***
marry	0.149 ***	0.189 ***
selfdegree	-0.073 ***	-0.015 ***
_cons	1.249 ***	0.774 ***
N	5040	35131
adj. R^2	0.155	0.130

t-value in parentheses; * p < 0.1, ** p < 0.05, *** p < 0.01

Table 5. The impact of employment discrimination on female labor market

	M5	M6
	lnfinc	lnfinc
postgender		-0.061**
post		0.310***
gender	-0.132***	-0.090***
age	-0.013***	-0.013***
kids	0.077***	0.076***
marry	0.183***	0.184***
selfdegree	0.198***	0.198***
_cons	9.755***	9.738***
N	30407	30407
adj. R^2	0.209	0.209

t-value in parentheses; * p < 0.1, ** p < 0.05,*** p < 0.01

References

[1] Chang J., Huang C., Is the efficiency wage efficient when workers decide on the working time? [J]. Journal of Economics, 2002,77(3): 267-281.

[2] Becker. Economic analysis of human behavior [M]. Shanghai: Shanghai People's Publishing House,2015: 93-112.

[3] Siv S G, 1996.Women's labor force transitions in connection with childbirth: a panel data comparison between Germany, Sweden and Great Britain. Journal of Population Economics, Vol.9, No. 3 (Aug. 1996): 223 -246.

[4] Aly Y H, Quisi , I.A. Determinants of women labor force participation in Kuwait : a logit analyses, The Middle East Business and Economic Review, 1996, 8(2): 1-9:132-138.

[5] Chan Wengtong,Cheang Chonin. Navigating the demographic shift: an examination of China's new fertility policy and its implications [J]. Frontiers in Political Science,2023,5(5): 35-41.

[6]   Yang X Y, Wan X, Li R. Examining the Influence of fertility policy adjustments on gender equality in China during period of exceptionally slow population growth. [J]. China CDC weekly,2023,5(27): 9-16.

[7]   Wang J J, Yu X H. Birth policy changes and the sustainability of social medical insurance funds: implications for green growth[J]. Economic Change and Restructuring,2023,56(4): 32-43.

[8]   Ma'rifah A R, Khasanah U, Hartanti R D, Khasanah N N. Embracing the new two-child policy era: challenge and countermeasures of early care in China[J]. Education 3-13,2023,51(7): 68-76.

[9]   Mandal B, Wu W J. Examining the effects of a two-child policy in rural India[J]. Journal of Population Research,2019,40(3): 48-62.

[10] Cui M Y, Jiang T T, Liu J F. Research on the influencing factors of female teachers' fertility intention under the "three-child" policy based on grounded theory[J]. Social Security and Administration Management,2023,4(5): 109-121.

[11] Ning N, Tang J F, Huang Y Z, et, al. Fertility intention to have a third child in China following the three-child policy: a cross-sectional study[J]. International Journal of Environmental Research and Public Health,2022,19(22): 33-42.

[12] Ma'rifah A R, Khasanah U H, Khasanah N N. Embracing the new two-child policy era: challenge and countermeasures of early care and education in China[J]. Education 3-13,2023,51(7): 88-96.

[13] Mandal B, Wu W J. Examining the effects of a two-child policy in rural India[J]. Journal of Population Research,2023,40(3): 67-73.

[14] Wang W, Yang J H, Wu K, et, al. The influence of two-child policy on the birth and consumption of two-child families: An investigation based on CFPS data [J]. Journal of Economics and Economics, 2019,46(12): 79-93. (in Chinese).

[15] Zhao Q. The impact of two-child policy on female labor supply: from the perspective of life cycle theory model [J].   Labor Security World,2016(32): 7-8. (in Chinese).

[16] Zhang P. Impact of universal two-child policy on labor supply and demand in China [J]. Statistics and Information Forum,2019,34(04): 51-57 (in Chinese).

[17] Dong Y. Research on gender difference between employment opportunities and wage income [D]. Northeast Normal University,2018: 55-67 (in Chinese).