

Analysis of the Influence of Chinese Female Fertility on Their Income

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Abstract

In recent years, china has vigorously promoted the two-child policy in response to the phenomenon of population aging. The liberalization of the fertility policy will increase the total fertility rate of the population, which makes the study of the impact of fertility on female labor supply has practical policy significance. This article uses the 2015 China Comprehensive Social Survey (CGSS) data to estimate the impact of married women's fertility on their income by using the least square method and the instrumental variable method. The analysis results show that there is still a preference for boys in Chinese families. When the first child is a girl, it has a positive effect on the increase in the number of children. The increase in the number of children will greatly reduce the income of married women. Compared with women in rural areas, urban women's income has fallen even more.

Keywords

Married women; Fertility behavior; Female income.

1. INTRODUCTION

In the traditional Chinese family, women have always played the role of taking care of their husbands and children. The traditional family pattern makes women undertake a lot of tedious housework and parents' and children's care work, squeezing out women's working hours and opportunities. According to the data of the third survey on the social status of Chinese women, 63.2% of the mothers of children under 3 years old take on the main day care.

After the founding of New China, with the improvement of China's economic level, the improvement of medical and health conditions, the reduction of neonatal mortality and the increase of average life expectancy, the population is in a stage of rapid growth. A large population base and a large number of population growth brought negative social effects. China implemented the family planning policy in 1982 to control the excessively rapid population growth. The implementation of this policy has effectively controlled population growth, reduced female fertility rates, and provided objective conditions for women to enter the labor market. During the planned economy period, China implemented a unified employment distribution policy, advocated equality between men and women.

With the improvement of women's social status, a large number of women are pouring into the labor market. Before the reform of state-owned enterprises, many benefits were provided to families, such as free kindergartens, affiliated primary schools, etc.. Under the combined effect of the "iron rice bowl" system and the welfare of state-owned enterprises, many urban women have participated in the work, and the labor participation rate of women has increased. According to data from the National Bureau of Statistics, the labor participation rate of Chinese women is higher than that of developed countries in Europe and America. However, affected by

the traditional Chinese culture and the division of labor between men and women, women still play an important role in the family and bear the burden of caring for children.

In recent years, with the reform of China's economic system and the development of the market economy, the welfare of state-owned enterprises has gradually disappeared, which has increased the burden of mothers on childcare. In addition, because women get married and have children, they are discriminated against in the job market. Compared with men, women have disadvantages in employment. Various reasons have led to a decline in the labor participation rate of women, and the gap between the income of women and men has been widening. According to the third survey on the social status of Chinese women (2010), the employment rate of women is 71.1%, while that of men is 87.2%. The annual income of urban women is 67.3% of that of men, while that of rural women is only 56% of that of men.

On the one hand, with the deepening of economic reform in China in recent years, the demographic dividend has gradually weakened, and the contradiction between labor supply and demand has gradually become prominent. On the other hand, in response to an aging population, China has introduced a two-child policy, which will have a huge impact on women's labor supply and income. Studying the impact of fertility on women's income is conducive to increasing female labor participation rates and alleviating social conflicts. The increase in female labor participation rate is conducive to increasing women's status and decision-making ability in family negotiations, and further enhancing women's social status and personal value, which has extensive and far-reaching significance to the family and society. Therefore, studying the impact of fertility on the income of Chinese women can provide suggestions for formulating relevant policies, which is of practical significance.

2. LITERATURE REVIEW

Regarding the impact of fertility on women's income, there have been a lot of empirical studies in Western countries, and the results of the research are roughly divided into two categories. The first type of scholars believe that fertility has a negative impact on women's labor participation rate and income. Becker (1985) believes that mothers will take more care of children due to their love and responsibility for children, thus reducing working hours. Fathers have more working hours, which increases the accumulation of human capital. Because the remuneration of human capital is gradually increasing, it leads to a more professional division of labor in the family, which further increases the time women spend in the family and reduces the supply of labor time [1].

Waldfoegel, Jane (1997) found that women will suffer from wage punishment when they have children, and this kind of "family punishment" will not disappear when the actual employment experience is added as the control variable. The impact on family status may vary with race and education level [2]. Korenman and Neumark (1992) found that the birth of children will have a negative impact on the mother's wage level through empirical research, and both mixed multiple regression model and first-order differential regression model underestimated this negative effect [3]. The second type of scholars believe that the impact of fertility on income is non-negative. Hongbin Li et al. (2015) used twin families and non-twin families as the control group to investigate the impact of childbirth on family structure and parents' labor supply in China. They found that although women leave the labor market temporarily during childbirth, in the long run, there is no significant impact on women's labor supply [4].

In recent years, some domestic scholars have gradually increased their research in this area. Kai Luo (2011) used mixed multiple regression model and panel model to analyze the impact of children's gender preference on rural family income. The results show that the birth of children has an incentive effect on parents' work, which will increase parents' efforts, and then increase the annual family income. The incentive effect of the first child's gender being a girl is

greater than that of the first child's gender being a boy. The annual income of those families whose second child is a boy is higher than that of those whose second child is a girl. This may be due to the traditional idea of son preference in rural areas [5].

Chuanchuan Zhang (2011) used the instrumental variable method and the Heckman two-step method and found that for every increase in the number of children, the labor participation rate of urban women would drop by 35.7%, and the wage level of urban women would drop by about 76%. The increase in the number of children has no significant effect on the labor participation rate and wage level of rural women, but it will increase their investment in family caring for their children. [6] Jia Nan et al. (2013) used the data of China's sixth census and found that in the year when women give birth, women's wages will be reduced by 16.7%. Women can postpone childbirth arrangements in a planned way when their working status is unstable. When the income is higher, childbearing has no significant effect on wages [7]. Jia yu and Yu xie (2014) used tracing data to analyze the impact of childbirth on women's wage rates and found that women need to invest a lot of time and energy to take care of their children after giving birth. Each increase in the number of children will reduce the wage rate of women by approximately 7%, with the increase in the number of children, this negative impact gradually increases. And found that the impact of childbirth on women's wage rates varies among different groups. Women with a higher education level are more negatively affected, and women whose occupations are managers or professional technicians are more negatively affected. But this study did not consider the issue of endogeneity [8].

In summary, the research on the impact of female fertility on their income has some shortcomings. First, there are differences in the results of Western empirical research on whether childbearing reduces women's wages and whether the impact on women's wages has a long-term effect or only during the childbearing age. Second, the data used by domestic research institutes is relatively old. China's economy has been developing rapidly, women's social status is constantly improving, and the concept of fertility and career choices are gradually changing. The previous research results are not suitable for analyzing the current situation in China. The third is that domestic research has neglected rural women without formal occupations in the selection of samples. Due to the obvious urban-rural differences in China, the income of rural women is divided into labor income, wage income from formal work and other sources of income. When measuring the impact of fertility on rural women's income, selecting only women with formal jobs will result in a sample bias.

This article analyzes the impact of fertility on the income of married women in urban and rural areas based on China's special national conditions with urban-rural differences. The article selects the relevant survey data of the CGSS in 2015, and uses the least square method and the instrumental variable method to estimate the econometric equations. This paper mainly introduces the literature review of fertility rate and female labor supply, the theoretical analysis of the impact of female fertility on their income, the setting of variables and models, and the empirical analysis. Finally, it makes conclusions and gives policy recommendations.

3. THEORETICAL ANALYSIS OF THE IMPACT OF FEMALE FERTILITY ON INCOME

From the perspective of the influence of the number of children on women's labor supply, we can explain the influence of childbearing on married women's occupational labor income.

3.1. From the Perspective of Family Division of Labor based on Comparative Advantage

In the traditional division of labor in the family, women often bear the main responsibility for family care. After the founding of New China, with the continuous popularization of the concept of equality between men and women, Married women have gradually broken the traditional

spiritual shackles, and the labor participation rate has gradually increased. The reasons for the increase in the income of married women include not only the increase in social average wages with economic development, but also a series of reasons such as women's education level, improvement in social status, and personal professional value recognition. The increased income of married women raises the opportunity cost of the time they spend on childcare and other family activities. However, the increase in opportunity cost does not mean that the traditional household division of labor is broken. According to the survey of women's social status in China, although women's social status continues to improve, the income gap between the sexes still exists objectively. Men's income is higher and their comparative advantages have encouraged women to provide more childcare time. Women still bear the main responsibility for family activities.

3.2. Impact Analysis based on Human Capital Theory

According to the theory of human capital, the reward of human capital is increasing, and more human capital can improve production efficiency and bring greater benefits to employers. The work experience and on-the-job training belong to the accumulation of human capital. Compared with non-mothers, mothers will reduce the accumulation of work experience and on-the-job training due to childbirth. First, mothers may temporarily withdraw from the labor force due to childbearing behaviors and take care of the children, thereby stopping the accumulation of human capital. Secondly, even if they work again, mothers may spend less time at work than non-mothers, and their productivity is lower. According to Backer's "New Family Economics" (1991), after women become wives and mothers, they contribute more to the family and take on more housework and parenting responsibilities. However, personal energy is limited. The child needs the mother to spend more time taking care of it, which consumes more energy of the mother, and then leaves less energy for paid work. In addition, mothers may worry about their children during work and cannot concentrate on work. Therefore, after mothers have children, due to the reduction of rest time, the boredom of housework and the distraction of children, their productivity at work decreases. Finally, if mothers stop updating the knowledge and skills required for their work, especially professional knowledge and skills, the work experience accumulated before the birth of the child may be devalued. As human capital has an increasing income, the loss of human capital may have an impact on later wages.

3.3. Impact Analysis based on the Theory of Compensation Wage Differential

According to neoclassical economic theory, the hypothesis of "compensating wage differential" means that although the wages of certain jobs are lower than other jobs, sometimes the reduced wages can be offset by non-technical advantages, such as lower skill requirements and more comfort Work requirements or working conditions, higher starting salary or lower risk of depreciation. After giving birth to children, mothers may seek "mother-friendly" jobs with higher compensatory wage differentials in order to obtain more child care time, such as flexible working hours, more vacations and fewer overtime requirements. Since jobs that are "suitable for mothers" have fewer professional requirements, their wages are usually lower than those for normal jobs. When young women are preparing to have children, they may consider the financial and non-technical advantages of work. As long as they think that the utility of non-salary is enough to offset the lower wages, they can choose jobs that are more compatible with the role of mother.

3.4. Analysis of Influence based on the Perspective of Discrimination Against Mothers

"Statistical discrimination" and "taste discrimination" are two major sources of discrimination against mothers by employers. Statistical discrimination is related to what economists call incomplete information about worker productivity. This theory holds that it is expensive and difficult for employers to measure the productivity of each job applicant, and that

predicting individuals can save money by relying on indicators of different groups of people. According to this economic theory, the wage gap between mothers and non-mothers reflects their average productivity difference, so employers will give mothers a lower wage.

Another kind of employer discrimination is "taste discrimination", because motherhood gives women different treatment. "Taste discrimination" is completely different from gender discrimination. This discrimination is based on the assumption that most women are or will be mothers. Gender discrimination creates a pay gap, but there is no gap between mothers and other women, so this is not gender discrimination. In "taste discrimination," employers do not assume that mothers' productivity is low, but find that they are not suitable for hiring women. It may be because the employer does not like working with women, or because their customers do not like women.

4. EMPIRICAL ANALYSIS OF THE IMPACT OF CHINESE FEMALE FERTILITY ON INCOME

4.1. Data Source and Processing

The data used in this article comes from the 2015 China Comprehensive Social Survey (CGSS). The Chinese Social Survey started in 2003 and is the earliest academic survey project in China. At present, 8 issues of 2003, 2005, 2008, 2010, 2011, 2012, 2013 and 2015 have been publicly released. The survey is conducted through rigorous scientific sampling every year, surveying more than 10,000 households in various provinces and autonomous regions in mainland China. The survey data covers all aspects of family, culture, health, education, employment, energy, etc., which better represent the overall situation of China. The group we analyzed is married women aged 60 and under. The reason for limiting the age to 60 is that the retirement age of urban women has been postponed to 60, and rural women will also lose part of the labor force above 60. We excluded divorced and widowed women. On the one hand, this group of women is relatively special, which is not conducive to our control over the characteristics of the spouse, and on the other hand, because this part of the group accounts for a small proportion of the sample. We also exclude women who have not had children, they may have completely different labor supply behaviors. The key variables used in this article are the number of children, the annual occupational labor income and the gender of the first child. After excluding the samples with missing key variables, we have a total of 1371 urban samples and 840 rural samples.

We constructed the main variables of this article based on the questionnaire about family members and income. These questions include (1) how many sons/daughters do you have; (2) the main family members and age; (3) the education level of the respondents and their spouses; (4) Nationality; (5) Age; (6) Annual occupation/labor income. Based on questions (1) and (2) constitute the instrumental variable of this article, the gender of the first child. Based on the problem (4) introduce dummy variables. Based on question (6), it constitutes the annual occupational labor income of urban and rural women. Due to the urban-rural differences in China, some rural women do not have formal jobs, and their income comes from farming. Therefore, the occupational labor income used in this article refers to the occupational income of women with formal jobs and the labor income of rural women without formal jobs.

4.2. Setting of Model and Variables

This article uses least squares method and instrumental variable method to analyze the impact of the number of children on the occupational labor income of married women, which can be expressed by the following equation:

$$\ln Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + u_1 \quad (1)$$

Among them, Y is the occupational labor income of married women, X_1 is the explanatory variable, the number of children, and X_2 is the relevant characteristics of married women, including age, square of age/100, education level, education level of spouse and dummy variables Ethnicity, u_1 is a random disturbance term.

We first use the least squares method to make a one-stage regression of the occupational labor income of married women. Although we added the relevant characteristics of women as control variables, the regression results are not necessarily one-way causal. The model may be endogenous. On the one hand, the occupational labor income of married women may be affected by the above-mentioned factors as well as other social environmental factors. Our model may have omitted other important variables. On the other hand, because the number of children affects the income of married women, the income of married women will in turn affect the number of children. As women's income increases, more attention will be paid to the quality of their children's education rather than the quantity.

Due to the endogeneity of the model, the estimator of least square regression is biased. We use the instrumental variable method to regress the model:

$$\ln Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + u_2 \quad (2)$$

$$X = \alpha_0 + \alpha_1 Z_1 + \alpha_2 X_2 + u_3 \quad (3)$$

Among them (2) and (3) are two-stage regression and one-stage regression respectively. Z_1 is an instrumental variable, that is, the gender of the first child. The first child is assigned a value of 0 for boys, and the first child is assigned a value of 1 for girls. Since parents may have preference for sons over daughters and balance their children's gender preferences, the gender of first-born children will affect the number of children, while the gender of first-born children is random and does not affect income exogenously, so choose Defined as an instrumental variable. u_2 and u_3 are random perturbations.

4.3. Metrological Analysis

Perform a one-stage regression to equation (3), and the results are shown in Table 1. Perform a one-stage regression to equation (3), and the results are shown in Table 1. In rural areas, if the first child is a girl, each family will have an average of 0.354 more children. In the city, if the first child is a girl, each family will have an average of 0.146 additional children. With the improvement of education level, it has a negative impact on the number of children. Being a girl has a positive effect on the number of children. It shows that there is still a preference for boys in Chinese families, which explains the reasons for the imbalance between men and women in our country.

Table 1. The impact of the gender of the first child on the number of children

variable	Rural area	city
The first child is a girl	0.354***	0.146***
Age	0.061 ***	0.069***
Age square/100	-0.060**	-0.079***
education level	-0.104***	-0.108***
Education level of spouse	-0.038 **	-0.036**
Nation	-0.403***	-0.354***
R2	0.156	0.146
Sample size	840	1371

Note: 1. *** indicates that the coefficient of variation is significant under the significance of 0.01

2. ** indicates that the coefficient of variation is significant at a significance of 0.05

3. * indicates that the coefficient of variation is significant under the significance of 0.1

Table 2 shows the results of least squares regression and instrumental variable regression on the samples. The OLS regression results show that whether in rural or urban areas, the increase in the number of children will reduce the occupational labor income of married women. On average, for every additional child born in rural households, the occupational labor income of married women will decrease by 22%, while for every additional child in urban families, the occupational labor income of women will decrease by 20.3%.

Using the gender of the first child as an instrumental variable and using the instrumental variable method to perform regression, it is found that the number of children has a significant increase in the negative impact of married women's occupational labor income. This may be because the model originally had endogeneity, and instrumental variable regression overcomes the endogeneity. The results of the IV regression show that for each increase in the number of children in rural families, the occupational labor income of married women decreases from 22% to 40.5%, and for each increase in the number of children in urban families, the occupational labor income of married women decreases from 20.3% to 60.4%. It can be seen that the degree of occupational labor income of urban married women decreases more than that of rural families. There is still a significant urban-rural difference. This may be due to the fact that rural married women are engaged in informal work, such as farming, which requires more flexible time. The impact on labor income is even smaller.

Table 2. The impact of the number of children on women's income

variable	Rural area		city	
	OLS	IV	OLS	IV
The first child is a girl	-0.22 *	-0.405 **	-0.203**	-0.604**
Age	0.865 ***	0.879 ***	1.109 ***	1.138***
Age square/100	-0.98***	-0.995***	-1.288***	-1.322***
education level	0.07*	0.051**	0.686***	0.643***
Education level of spouse	-0.007*	-0.012*	0.265**	0.251**
Nation	-0.54	-0.616	0.783*	0.639
R2	0.156	0.039	0.129	0.127
Sample size	840	840	1371	1371

Note: 1. *** indicates that the coefficient of variation is significant under the significance of 0.01

2. ** indicates that the coefficient of variation is significant at a significance of 0.05

3. * indicates that the coefficient of variation is significant under the significance of 0.1

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1. Conclusion

This article uses data from the 2015 China Comprehensive Social Survey to estimate the impact of the number of children on the occupational labor income of married women. First,

the data was estimated by least squares as a reference group, and then the instrumental variable method was used for estimation, which overcomes the endogeneity of the model. The analysis results show that there is still a preference for boys in Chinese families. When the first child is a girl, it has a positive effect on the increase in the number of children. The increase in the number of children will greatly reduce the occupational labor income of married women. This shows that the increase in women's income in China is partly due to the decline in fertility. The increase in women's income has increased women's voice and decision-making status at home, which is conducive to improving women's social status, promoting gender equality and social harmonious development. It is important to point out that in the data used in this article, there are many samples with missing gender of the first child, and there are few observation samples in rural and urban areas, which may cause inaccurate analysis results, which need to be further strengthened and corrected.

5.2. Policy Recommendations

As far as the government is concerned, more measures should be taken to reduce the cost of women's childbirth. On January 1, 2016, China further relaxed its family planning policy, adopted a universal two-child policy, and actively responded to the domestic aging trend. However, according to statistics from the National Bureau of Statistics, the second-child fertility rate in many provinces has not met expectations, and the fertility rate in some provinces has even declined. Some empirical studies have shown that even if the two-child policy is further relaxed to the three-child policy, it has little impact on reproductive choices. One of the deep-seated reasons is the high cost of childbirth for modern women. Due to the need to take maternity leave for childbirth, the cost of employers is increased, and the disadvantages of women in the labor market are further increased. Women who choose to have children need to bear more costs. Although China has introduced related insurance systems such as maternity allowances and maternity medical treatment, employers still have additional costs, such as finding new employees and the placement of new employees after maternity leave. Discrimination against mothers still exists in the labor market. The government should introduce more measures, such as raising maternity allowances and taking maternity leave for men, to further reduce the cost of women's childbirth. On the other hand, women face the interruption of human capital accumulation during childbirth. The state can encourage units to provide mothers with more vocational training, improve skills and increase human capital. On the social level, it can promote the development of tertiary industries such as housekeeping services, improve the basic education system such as kindergartens, and encourage men to care more about their families and take care of children. These measures can provide mothers with more help in caring for their children, reduce the double pressure of mothers working and caring for the family, and thereby reduce the negative impact of the number of children on women's income.

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