

The Impact of Chinese Women's Marriage Age and Maternity on the Income: A Heterogeneity Analysis

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Abstract: With the construction of China's modern economy and the progress of talented laborers, the development of women's labor in the workplace has become vital in labor markets. Therefore, the impact of marriage and childbirth on income has gradually attracted widespread attention from society. This paper uses the data of the 2021 China General Social Survey (CGSS) to discuss the impact of marriage and childbearing on women's income using a multiple regression linear model and explore the linkage effect of factors such as education level, HUKOU nature, marital and childbearing age, and work status on the income of women who marry and have children. This study found that women's income will vastly increase due to increased marriage and childbearing age. Conversely, the earlier the marriage and childbearing age, the lower the income, and the more significantly the marriage and childbearing age affect the overall income level of women.

Keywords: Labor Markets, Maternity, Marriage Age, Income gap.

1. Introduction

Women's marriage and childbearing history are often accompanied by different degrees of adverse physiological reactions, which lead to income discrimination and job discrimination against female workers by employers in the current society. In the 2021 China Women's Labor Market Survey Report, nearly 60% of women were asked about their marital status by employees. Women are requested twice as often as men for the same question[1]. Female job seekers are more likely to be asked about marital and maternity status than male job seekers. Maternity and marital status are barriers to career advancement for the female workforce. In some poverty-stricken areas, a small number of women participate in family work and childbirth at an early age due to a lack of job opportunities and vocational skills training, resulting in intergenerational poverty. In a 2014 study of reputation and wage rates, women's wages fell by about 7 percent for every child born[2].

In human capital theory, investment in education, health, and training experience are the three main components of human capital[3]. Women may be discriminated against for non-economic factors in terms of human capital investment from family perspectives. Not only does the fertility rate lead to a decline in women's income levels, but women's fertility is not protected by the family. Procreation is considered a manifestation of family politics. The impact of childbirth on women is not limited to reduced income and career development restrictions but also includes multiple inequalities at the family and social levels. Women often have to take on more family responsibilities after childbirth, resulting in unequal family status for women, which leads to marital political conflicts

within the family in traditional patriarchal societies. Women's fertility is seen as an output tool of universal human capital. Childbearing at the right age is considered a default in the traditional mindset[4]. To some extent, this phenomenon reflects society's undervaluation of women's labor and reveals women's subordinate position in the traditional patriarchal family.

Women's rights have been significantly improved since the founding of the People's Republic of China. Regarding economic development, the awareness of property rights and the establishment of a property rights system have protected women's personal property rights. However, the impact of childbearing on women remains an important issue. Women take on more family responsibilities after marriage and childbearing, resulting in limited financial independence and fewer opportunities for career advancement. This situation, in turn, affects the economic crisis of the whole family and the children's educational opportunities. In areas where universal education and sex education are conservative, modern infrastructure such as health care, compulsory education, and economic development have not helped women change their living standards and educational environment but have instead lost the opportunity and ability to change their social status due to traditional family structures[5].

Paying attention to women's reproductive age and income is essential to China's economic development and the liberation of productive forces. The return of childbearing women to the labor market can significantly increase the labor market participation rate and improve society's overall productivity level. Increasing women's economic independence would promote greater household consumption and investment capacity and stimulate economic growth and occupational diversity in rural areas. Protecting women's labor might potentially prevent the growth issues of the next generation. In particular, the left-behind children's problems because of the lack of parenthood in rural China.

Studying rural women's marriage, childbearing, and income is crucial to China's comprehensive modernization process and the goal of entering upper and middle-income countries. By improving rural women's opportunities after marriage and childbearing and providing paths to career development, the income gap between urban and rural areas can be narrowed, and the national per capita income level can be raised. At the same time, encouraging women's active participation in education, health care, science and technology, and other fields will bring new economic growth points and social progress and improve women's reproductive happiness and burden[6]. To achieve the comprehensive development of rural women, the improvement and reform of fertility policies is an essential guarantee for achieving the goal of high-quality development and shared prosperity. Through social and policy support, social progress can be achieved by improving women's fertility and income, as well as the declining fertility desire and inefficient labor market mobility due to income problems and traditional marital and childbearing pressures, as well as the low fertility rate of modern women[7]. For example, in the case of informal employment, access to informal occupations has increased married women's willingness to work[8].

2. Literature Reviews

Human productivity is closely related to career development. In Becker's human capital theory, health and training are significant investments for labor productivity development[3]. Women's labor marriage and childbearing status might be the primary reasons for gender discrimination on the job in China. Because childbearing and marriage represent a decline in productivity in a patriarchal society. Although some reports point to a gradual decrease in the pay gap between women and men in the Chinese labor markets, labor markets ignore that some women are no longer rejoining the labor market because of childbirth[1]. Men are given more social expectations of career and financial responsibility, while women are expected to take on more family responsibilities[9]. In the last

century, the American women in the heterosexual family cannot get improvement in the family[4]. Childbearing is also relegated to a woman's obligation in today's traditional Chinese family.

During the childbearing age, women experience a common career interruption after childbirth. After giving birth, they cannot return to their original jobs or are excluded from the labor market[10][11]. The gender division of labor mentioned above leads to women's contribution to family responsibilities, and there is a significant contrast between women's wealth accumulation and women who delay childbearing. In the current labor market, there needs to be more protective policies for women, which also leads to the lack of support from employers for some women after childbirth. Career development: In the workplace, there will be severe income discrimination due to maternity issues, and women with high labor force participation often deliberately postpone the childbearing age to ensure their competitiveness and liquidity in the capital market[12].

In China's rural areas, women need more investment in education and training. More emphasis is placed on the impact of family and peer competitions from rural family[13]. The early childbearing age will exacerbate the decline of the total family income level, and early childbearing will limit the opportunities for women to join the social labor force from the traditional family structure, thus exacerbating the problem of lower income. As a result, women are at a disadvantage in terms of education, and Chinese women are more damaged than men in terms of income levels after marriage and childbirth[14].

Woman's reproductive age might significantly affect a woman's income level. The main factor is that female childbearing is considered a family marriage obligation in modern society. The adverse physiological and economic effects of childbirth lead to the passive interruption of women's career development, while the childcare obligations and responsibilities after childbirth limit women's division of labor and abilities outside the family.

Due to economic, cultural, and regional differences, some rural women enter agricultural production after giving birth. Women are responsible for all the internal pressures of the family and bear some financial responsibilities outside the family. As a result, different types of HUKOU(户口—A population management system in China) and local policies can also lead to varying levels of women's participation in the labor market. In 2020, the percentage of informal employment (working without protection by Labor Law or rural area workers) was 56.23% [15].

In some rural and impoverished areas, fertility is seen as a way out of poverty. Parents may want to achieve social status and development through their children. In some regional cultures, early childbearing might be promoted through the potential reward of status within the family. Therefore, there is a need for more comprehensive research on the relationship between women's childbearing age and income.

On the other hand, the degree of participation and understanding of women in marriage and childbirth in social security can also directly reflect the knowledge and consciousness of labor's rights in modern women's labor. In the current study, women who marry and have children participate in social welfare and basic security, which can reflect women's social status and income level in marriage and childbearing. Women who participate in social welfare and are involved in marriage and childbearing often have more opportunities to access social resources and be aware of obtaining social benefits. Therefore, this paper will focus on the factors of Chinese *Social Security* (社保—A social welfare system in China) that are also considered.

Social Security is a public and private insurance provided by government organizations and private organizations (private insurance companies). This system belongs to the social welfare system, but others with the traditional welfare system. To get into Social Security, labors should pay various amounts based on different types of insurance. In most formal jobs, employers usually provide social security fees for employees as company welfare. Some informal jobs generally pay social security

fees by laborers themselves. In 2021, the population participating in unemployment insurance (Social Security sections) was nearly 230 million[16].

Education and gender role attitudes are among the core influences in current research. At the same time, Shi's research pointed out that education and gender role attitudes are also the reasons for influencing income through regression models[17] These aspects will be further validated in this study. Gender role attitudes are incorporated into traditional marriage and childbearing values, and the changes in women's income and social attitudes in 2021 are considered from multiple dimensions.

In summary, three critical variables are involved in this paper's study: age at marriage and childbearing, traditional mindsets on family duties, and social security. Current studies lack an explanation for the relationship between age at marriage and childbearing and income. Especially in rural China, where the economy is gradually developing, the age of marriage and childbearing for women remains early. Early participation in traditional families and childcare responsibilities deprives women of some social and sexual competence and opportunities to engage in non-farm occupations. **Therefore, this paper explores whether women's marriage and childbearing age significantly impact their annual occupational income.**

3. Data & Research

3.1. Data Sources

3.1.1. Data collection

The data in this article is based on the 2021 China General Social Survey data. The China General Social Survey (CGSS) is China's earliest national, comprehensive, and coherent survey project[18]. The survey data reflects the current trend of social change in China and is based on extensive scientific research. The impact of fertility on women's earnings can be studied in several ways. Although the CGSS does not directly give relevant privacy data, such as fertility status, it is still possible to observe the impact of marriage and childbirth on women's income through other conditions. In this study, we used CGSS 2021 statistics to quantify the indicators in CGSS 2021 years through three methods: categorical, numerical, and ordinal. After screening, the total sample size of this paper was 3280. Table 1 shows the names of indicators and their quantification types.

Table 1: Data description statistics from CGSS 2021

Indicator Name	Variable Methods/Patterns	Mean Value	Sample size
Educational level	Ordinal variables	secondary school	1005
Social Security Participation	Numeric variables	6	2081
Nature of Account	Categorical variables	Agricultural HUKOU	1652
Marital status	Categorical variables	Cohabitation/marital status	3178
revenue	Numeric variables	30000	208
Parenting and Family Social Responsibility Attitude Scores	Numeric variables	18	453
Age of marriage and childbearing	Numeric variables	23	386
Working status	Categorical variables	For passive reasons	1376
Spouse work	Categorical variables	Agricultural work	357

3.1.2. Construction of social attitude index system

The data is based on the degree of recognition of social attitudes of female respondents in CGSS2021 about family and childcare responsibilities. The ordinal variable assignment of the degree of recognition of different social attitudes ranges from 0 to 5, and the higher the score, the higher the degree of recognition for the traditional family function allocation. The higher the level, the higher the level of recognition of conventional domestic work by the participating women. 1 strongly disagrees, 2 disagree, 3 disagree and does not disagree, 4 is agreed, and 5 strongly agree. Don't know and refuse to answer as 0. Fewer social attitudes are unknown and must be answered in the currently known data. However, for the sake of the accuracy and completeness of the data in this paper, the answer is unknown, and the rejection is assigned a value of 0.

Suppose the score of social attitudes is S , then the influencing factor is $(x_1+x_2+x_3+\dots+x_6)$, then its expression is

$$S = x_1 + x_2 + \dots + x_5 + x_6 \quad (1)$$

S is the final social attitude score. $x_1, x_2, x_3, x_4, x_5, x_6$ are the degree of recognition of the family's social attitudes. The following table illustrates the social attitude evaluation index system.

Table 2: Social attitudes towards childbearing, parenting, and family (C2) indicator system

Letter	Meaning	Values
x_1	The degree of recognition that fathers should devote themselves entirely to their careers rather than family functions	1-5
x_2	The degree of recognition that motherhood is the proudest thing for women	1-5
x_3	The degree of recognition that parents should buy a house for their children	1-5
x_4	The degree of recognition that the child is the ultimate person in the family	1-5
x_5	The degree of recognition that having a house is the only way to have children	1-5
x_6	Whether I want to have a child or not, only if the parents want it, we should meet the parent's wishes to have children	1-5

3.1.3. Construction and explanation of the evaluation system of the Social Security Participation Index

This paper constructs a social security participation index system, and the variables are derived from the data collection of female respondents in CGSS, 2021 on the degree of social security participation. The data will assess the social security risk index by quantifying the social security participation level of female respondents, i.e., assigning different social security values and adding them together to obtain a numerical total score to obtain the social security risk index. The higher the social security risk index, the less likely they are to receive social security and the weaker their ability to resist risks. On the contrary, the lower the social security risk index, the more they can obtain social security and support, and the stronger their ability to resist risks.

For the different social security transitions to the categorical variables, participation was 1, no participation was 2, no participation was 2, and not knowing and refusing answers were 0. The final social security risk index is obtained by adding the variables of the degree of participation of each type of insurance. Finally, the simple regression model calculation included it as a numerical variable.

The sum of the categorical variables' values gives the Social Security Risk Index formula. Assuming that R is the social security risk index, **t₁, t₂, t₃, and t₄ represent the participation in the four types of insurance. Then, a basic algebraic model can be built.**

$$R = t_1 + t_2 + t_3 + t_4 \quad (2)$$

R is the degree of social security participation after the calculation.

Table 3: Social Security Risk Index

Social Security Index	Meaning	Valid values
t ₁	Participation in urban basic medical insurance/new rural cooperative medical insurance/public insurance	0-2
t ₂	Degree of participation in urban/rural basic pension insurance	0-2
t ₃	Degree of participation in commercial health insurance	0-2
t ₄	The degree of participation in commercial pension insurance	0-2

3.1.4. Explanation of the calculation of the age of marriage and childbearing

The CGSS2021 does not directly give a specific age for the first marriage, but the respondents' birth year, first marriage, and childbearing year are given in the questionnaire. Thus, the age of first marriage can be inferred from the date of birth and the year of first marriage.

Suppose the age of marriage and childbearing is M. Then the year of birth is r₀ and the year of marriage and childbirth is r₁, then its expression is

$$M = r_1 - r_0 \quad (3)$$

In this formula, M refers to the age of marriage and childbearing of the individual.

3.2. Empirical Interpretation

3.2.1. Description of the independent variable

3.2.1.1. Description of core explanatory variables

The Social Attitude Score indicates women's attitudes towards traditional family marriages. It is a vital core variable for this study, reflecting women's autonomy over traditional family and reproductive intentions.

Social Security Participation Score: The social security system participation score is one of the core independent variables in this study. It is an essential social welfare system that directly reflects the relationship between income and social welfare participation by quantifying the degree of involvement in social welfare.

Female marital and childbearing age: Female marital and childbearing age is the core research direction in this study. It represents the age at which you first married and the expected childbearing age for women. This indicator can positively reflect the relationship between income and age at marriage and childbearing.

3.2.1.2. Control explanatory variable description

Educational Attainment: Educational attainment is reflected in an individual's ability to affect income. Different academic qualifications can expose one to other social aspects and social resources.

Spouse HUKOU status: This indicator is to understand the HUKOU of married women in different regions through the HUKOU status of the spouse and judge the relationship between HUKOU and income

Reason for not working last time: Not working is to determine whether married and childbearing women actively or passively lose their jobs and income.

Spouse's work history: The spouse's work status and experience may affect the assignment of family and career tasks for married and childbearing women.

Marital status: This variable reflects married women's income with and without matrimonial partners.

3.2.2. Description of the dependent variable

This dependent variable is the annual income level of individual female workers in their occupations over the past year.

3.3. Modeling

This paper assumes a linear relationship between income and influencing factors. Because there is a multiple linear relationship, a multiple linear regression model is built. It is assumed that Y is the income and the influencing factors ($\theta_0, \theta_1, \dots$) are linear relationships, as shown in the formula.

$$Y = \theta_0 + \theta_1 + \dots + \varepsilon \quad (4)$$

θ_0 is the core independent variable, θ_1 is the control variable, the error value is ε

3.4. Interpretation of Results

Table 4: Interpretation of the results of the multiple regression linear model

variable	coefficient	P-value
Age of marriage and childbearing	0.0556	0.032
Social Security System Participation Score	-0.4262	0.000*
Social Attitude Evaluation Score	0.0124	0.697
Level of education	0.4606	0.000*
Spouse's account status	0.7801	0.000*
Not working reason	-3.9928	0.000*
Spouse's work history	-1.3900	0.000*
Marital status	-0.1391	0.835
$R^2=0.302$		

3.5. Explanation of conclusions

In terms of the coefficients, the multiple linear regression equation can explain the relationship between marriage and income and explain the significant impact of different variables on income. The coefficient of judgment in this paper is 0.302, indicating that the result is meaningful based on the regression model.

In the data of specific core independent variables, there is a positive correlation between marital age and income, age of marriage, and childbearing age. According to Prob value, the age of marriage and childbearing have a more significant impact on income. Among the other two core variables, the

social security participation score is negatively correlated with income, meaning that an increase in the score decreases income. Social security system variables have a more significant impact on income. However, as the core variable, the social attitude evaluation score had little effect on income.

The data also gives significant results among the control variables. There was a positive correlation between education level, spouse HUKOU status, and income. The impact of the reason for not working and the spouse's work experience on income is also significant and negatively correlated.

4. Conclusions and Recommendations

Most of the hypotheses were further validated based on the data of the multiple linear regression model. There is a strong correlation between the age of marriage and childbearing and women's income. Increasing the age of marriage and childbearing can significantly increase women's income, while lowering the age of marriage and childbearing will decrease women's economic income.

Participation in Social Security also has a significant impact on women's earnings. The higher the social security participation score, the less protection women receive. The negative correlation with income proves that social security is significant to women who marry and have children and significantly impacts women's income. With a lack of understanding and protection of social security, women will have substantial income risks in marriage and childbirth. The social attitude evaluation score does not have a significant effect, which may indicate that with the development and progress of the times, the traditional family group and social concept maintain the mainstream position. However, actual marriage and childbearing may have different influences. Especially with the progress of the times, more and more women refuse to marry because of the impact of marriage and childbirth on income.

From the data of control variables, it can be found that women lack income autonomy and economic independence in marriage. In both data sets, the spouse's job and the last time the reason for work, the spouse's job will affect one's employment choice and career development opportunities to a certain extent.

Therefore, more and more women might choose to delay the age of marriage and childbearing and give priority to career development paths because of the problems caused by income discrimination. Therefore, it is necessary to protect women's willingness to marry and have children and their autonomy in economic development through targeted policies.

Statistically, participation in social security and increased levels of education are two significant variables that can drive women's incomes higher. The improvement of the social security system and the awareness of participation in the social security system are fundamental educational directions. In the future, especially for women with agricultural household registration, it is necessary to increase the awareness of participation in social security and encourage women's participation in the social security system. On the other hand, it is the cultivation of women's education level. Statistically, education allows women to exercise more economic autonomy in marriage rather than favoring the traditional distribution of family labor.

Through the promotion of macro education policies, more women with marriage and childbirth will be encouraged to join the social security system, and women with marriage and childbirth will be encouraged to return to the labor market. Therefore, this paper argues that two specific policies are needed to alleviate the problem of low fertility and the issue of declining marriage and childbearing rates in modern times. On the one hand, a long-term policy is needed to increase and maintain the ability and awareness of women with rural and remote household registrations to access education, and on the other hand, to promote more social security benefits or non-profit products to boost women's income. To slow down the pervasiveness of the impact of marriage and childbearing on women's income.

References

- [1] ZhiLian Recruitment. “2021 Survey Report on the Current Situation of Chinese Women’s Workplace”. 2021
- [2] Xie, Y. (2014) “The Effect of Fertility on Women’s Wages in China” *Population Research* Vol. 38, No. 1. January 2014.
- [3] Becker, Gary S. *Human Capital: “A Theoretical and Empirical Analysis, with Special Reference to Education.”* 3rd ed. Chicago: University of Chicago Press, (1964) 1993.
- [4] Okin, Susan Moller. *Justice, Gender, and the Family*. New York: Basic Books, 1989. Chapter 7
- [5] Lei Xiangzhu. *An ethnographic study on early love and early marriage among junior high school students in Bunu Yao[D]*. Guangxi University for Nationalities, 2019. 2019.000002.
- [6] ZHOU De-shui, ZHU Hong-hui, WANG Hao-lin, ZHAN Qian-Qian, ZHANG Qing-qing, CHEN Yu-ru. *Facts, Experiences, and Future Directions of Maternal Support Policies in the New Era[J]*. *Journal of Xihua University (Philosophy & Social Sciences)*, 2023, 42(5): 59-67.
- [7] He Y, Tom Abdul Wahab NE, Muhamad H, Liu D (2024) *The marital and fertility sentiment orientation of Chinese women and its influencing factors – An analysis based on natural language processing*. *PLOS ONE* 19(2): e0296910.
- [8] Li, HY. (2022) “*Informal Employment’s Effect on Married Women’s Fertility Willingness Empirical Research Based on CHNS Data.*” *Collect Essay on Finance and Economics*. Zhejiang University of Finance and Economics. Vol. 38 issue(1):3-14
- [9] Butler, Judith. *Gender Trouble. Feminism and the Subversion of Identity*. New York: Routledge, 1990.
- [10] Shapiro, David, and Frank Mott. “*Long-term Employment and Earnings of Women in Relabout Employment Behavior Surrounding the First Birth.*” *Journal of Human Resources* 29, no. 2 1994: 248–275.
- [11] Jonathan Marc Bearak, Anna Popinchalk, Kristen Lagasse Burke, Selena Anjur-Dietrich; *Does the Impact of Motherhood on Women’s Employment and Wages Differ for Women Who Plan Their Transition Into Motherhood?* *Demography* 1 August 2021; 58 (4): 1301–1325.
- [12] Budig, Michelle J., and Melissa J. Hodges. “*Differences in Disadvantage: Variation in the Motherhood Penalty across White Women’s Earnings Distribution.*” *American Sociological Review* 75, no. 5 2010: 705–728.
- [13] Zhang Xianhao, Li ling, *Research on the Impact of “peer competition” on Women’s Educational Opportunities within Rural Families*. Sichuan Academy of Social Sciences, Chengdu. 2023
- [14] Zhang, Yuping, and Emily Hannum, ‘*Marriage, Parenthood, and Labor Outcomes for Women and Men,*’ in Douglas Besharov, and Karen Baehler (eds), *Chinese Social Policy in a Time of Transition, International Policy Exchange Series* (New York, 2013; online edn, Oxford Academic, 23 Jan. 2014)
- [15] Chen Jie (2022).*Number and structural distribution of workers in China[R]*.*Work Report of Housing and Urban-Rural Development Research Center, Shanghai Jiao Tong University*
- [16] Ministry of Human Resources and Social Security of the People’s Republic of China. *2021 Human Resources and Social Security Data Reports*. 2022
- [17] Qing, S. *Gender role attitudes and male-female income differences in China*. *J. Chin. Sociol.* 7, 12 (2020).
- [18] National Survey Research Center at Renmin University of China. (2021). *China General Social Survey (CGSS) 2021 [Data set]*. National Survey Research Center, Renmin University of China.