



A Study on the Factors Influencing the Fertility Intention of the Population in Sichuan Province, China

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Received 29/09/2023

Revised 06/10/2023

Accepted 08/10/2023

Abstract

Background and Aim: In response to the increasing population and changing social environment in China, a comprehensive policy of permitting two children or three children per family has been introduced to increase the birth rate. However, despite these efforts, the birth rate has continued to decline in recent years, as evidenced by statistics from 2018 to 2021. The research aim of this study was to investigate and analyze the factors that impact fertility intention in Sichuan Province.

Materials and Methods: The population of Sichuan Province was selected as the study sample. By reviewing existing research results, a hypothesis was proposed to determine the factors that affect the birth rate. A random sampling survey method was used, and an existing data analysis software was used to analyze the collected samples using methods such as reliability, validity, and linear regression.

Results: The analysis reveals that rearing costs, social welfare, career development, and social concepts significantly influence fertility intention. Among these factors, career development, social beliefs, and social welfare emerge as important predictors of fertility intention with the highest value of descriptive statistics. The study conducted a survey to analyze the hypothetical factors that may influence fertility intention among the population in Sichuan Province, China.

Conclusion: The findings indicate that there is a significant relationship between rearing cost, social welfare, career development, social concept, and fertility intention, thus achieving the research objectives. The results can be used as a reference for the government to develop public policies aimed at improving fertility intention and provide a research foundation for future studies.

Keywords: Fertility Intention; Influencing Factors; Fertility Policy

Introduction

In recent decades, (Guobao, 2017) China's population policy has undergone significant changes, transitioning from a strict "one-child policy" to a "restricted two-child policy" to a "comprehensive two-child policy", and to a "universal three-child policy". National Bureau of Statistics of the People's Republic of China 2021, according to seventh national population census data in China, the family planning rate in China remained at a relatively low level from 2016 to 2021. Moreover, because the implementation of the comprehensive two-child policy didn't meet expectations, the impact of family planning has gradually weakened, with a decrease of 18% in 2020. From 2018 to this year, the overall size of the country's newborn population has decreased from 9.81 million to 5.93 million.

The data from the Sichuan Statistical Yearbook 2021 released by the Sichuan Provincial Bureau of Statistics shows that the birth rate began to rise in 2014, reaching a peak of 11.3 ‰ in 2017. However, Sichuan's birth rate has been decreasing year by year since then. From 2017 to 2020, the birth rate in Sichuan was 11.3 ‰, 11.1 ‰, 10.7 ‰, and 7.6 ‰, respectively. It is worth noting that the 7.6 ‰ in 2020 was the lowest since data records began in 1952.

The birth rate in Sichuan Province has been on a downward trend in recent years, which is consistent with the continuous decline in China's birth rate. In recent years, the birth rate has continuously decreased, indicating the need to study the factors that affect fertility intention. Sichuan Province in China has a relatively large population and research is universal. There are some studies related to the sustainable development of agriculture in Sichuan Province. Sichuan Province is a significant grain production and reserve base in western China, and its sustainable development in agriculture is an important foundation for the healthy development of the regional agricultural economy and food security (Vinh et al., 2020). The differences in regional economic development in Sichuan Province were proposed to provide a reference for promoting the coordinated and healthy development of the regional economy in Sichuan Province, and





have certain reference significance for related research in other provinces (Cao & Sun, 2021). Moreover, one major factor is the rising costs of raising children, coupled with a lack of welfare provisions (Yu, 2023). Additionally, the one-child policy implemented in China from 1979 to 2015 has also contributed to a cultural shift away from large families (Bram, 2023). Some young Chinese people also express concerns about the impact of overpopulation on the environment and the economy (Yip, 2021).

Overall, it seems that economic and cultural factors play a significant role in shaping Chinese people's fertility intentions. While the Chinese government has recently relaxed its birth control policies and encouraged couples to have more children (Yip, 2021), it remains to be seen whether these efforts will be successful in reversing the trend of declining birth rates.

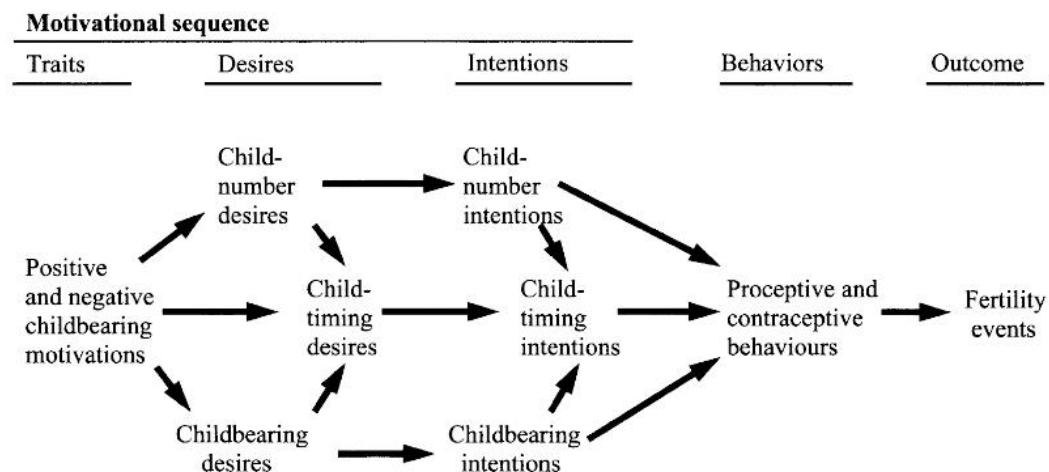
Although the "restricted two-child policy" and "comprehensive three-child policy" have driven a certain upward trend in current fertility intentions, an increasing number of families are unwilling to have a second or third child. With the advancement of globalization, the costs of childbirth, upbringing, and education are constantly increasing, leading to increasing social pressure and causing many families to have the idea of "not daring or unwilling to have children". To increase China's birth rate, we need to solve this problem. In this dissertation, we will focus on studying the costs of rearing children, social welfare, career development, and social attitudes to find ways to improve the fertility intention of the population in Sichuan Province, China, and provide a basis for the government to formulate public policies on fertility.

Objectives

To investigate the impact of rearing cost, social welfare, career development, and social concepts on fertility intention.

Literature review

In the article, *Low Fertility Intention under China's Three-child Policy and Its Policy Implications*, Jun & Guangzhou (2022) analyze the problem from the macro level of total fertility rate indicator to the micro level of fertility intention of women or couples of childbearing ages. Xiaotian (2017) believes that most measures of fertility intention in China currently use the ideal number of children. How to define fertility intention? Miller (2011) proposed a TDIB model from intention to behavior.



Note: Adapted from Miller (1994)

Figure 1 TDIB model (Miller,2011)

Miller (2011) improved the measurement method of fertility intention, modeled after the measurement method of fertility intention, and also used a scale to measure fertility intention (the number of desired children). The TDIB model proposed by Miller expands fertility intention to a motivational sequence of "



fertility intention and fertility plan", which broadens the traditional methods for measuring and researching fertility intention and is worthy of serious reference.

According to the TDIB model, the occurrence sequence from fertility intention to behavior follows the sequence of "motivations --desires --intentions--intermediary behavior - reproductive outcomes ". Among them, Fertility Intention, and fertility plan are the two stages of motivational sequence.

In the context of the implementation of the "comprehensive two-child, three-child policy", Jinju (2020) found that the fertility cost of urban women in China is lower in developed regions. Pei & Hongwei (2020) found that the rise in housing prices leads to delayed childbirth and a decrease in birth rate.

Longjian, Jianwei & Yanchao (2013) used the GMM estimation method to study whether government education expenditure has an impact on the birth rate. The results showed that in specific circumstances, government education expenditure may lead to a decrease in the birth rate of the population. Songchen & Shiyong (2008) analyzed the data from 31 provinces and found that population composition and income level are important factors affecting the birth rate. Jianwei (2014) explored the impact of three different factors on the birth rate and fertility rate, namely: economic status, social welfare level, and upbringing costs, all of which hurt the birth rate.

Conceptual Framework

Based on Miller's TDIB model, four aspects of studying fertility intention were proposed.

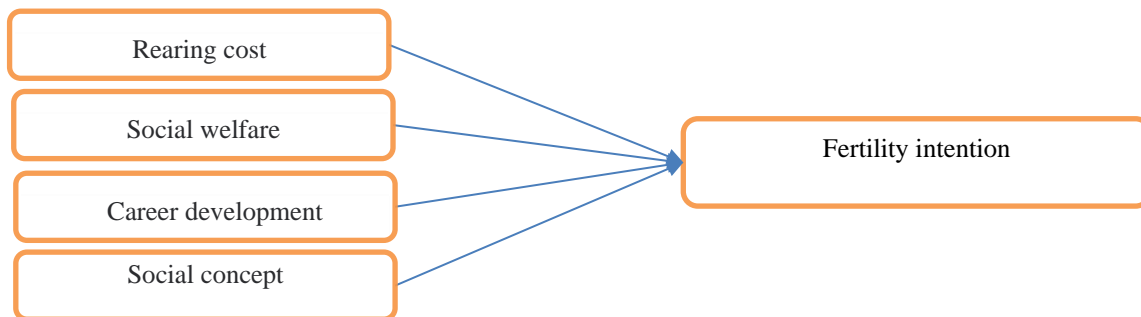


Figure 2. Research Framework

Research Hypothesis

- H1: Rearing cost has a significant influence on fertility intention.
- H2: Social welfare has a significant influence on fertility intention.
- H3: Career development has a significant influence on fertility intention.
- H4: Social concept has a significant influence on fertility intention.

Methodology

According to the results of the 7th National Population Census, the population of Sichuan Province was 8.37 million. According to the statistical requirements of the survey sample in Table 1 adapted from (Krejcie & Morgan, 1970), the sample size for this survey was determined to be 384. A total of 411 survey samples were collected through the Questionnaire Star website. The analysis through data analysis software demonstrated that the reliability coefficient value is 0.77 and the KMO value is 0.88. Simple linear regression was calculated to test based on the rearing cost, social welfare, career development, and social concept, the overall regression was statistically significant. Due to the large population in Sichuan Province, this study used stratified random and a simple random sampling method.



Results

Based on a population survey of 21 cities in Sichuan Province, a total of 411 valid samples were collected using a random sampling method.

According to the data collected by the survey, 53.77% of the respondents were male, 22.87% were over the age of 40, 60.10% were urban participants, 70.07% had undergraduate education, 31.87% had annual income of 12602-21004 USD, 47.93% were enterprise employees, and 70.32% were married. The respondents who are the only child in a family accounted for 29.68%. Unmarried respondents accounted for 29.68%. 53.04% of respondents gave birth to their first child at the age of 26 to 30. The respondents whose first child was a boy accounted for 41.68%. The cost of birth and rearing accounted for 21% - 40% of 48.18%. and the cost of 1120-1680 USD during pregnancy accounted for 27.49%, the annual expenses of children between 1- and 5 years old account for 24.57% of 1120-1680 USD.

Table 1 Descriptive Statistics of Factors

Factors	Mean	Std. Deviation
Y (fertility intention)	4.01	0.55
X1 (rearing cost)	3.53	0.68
X2 (social welfare)	4.62	0.56
X3 (career development)	4.53	0.63
X4 (social concept)	3.22	0.85

Based on the mean and standard deviation values presented in Table 1, it can be concluded that, on average, participants in the study have a relatively strong intention to have children ($Y = 4.01$). Furthermore, the mean values for the independent variables suggest that participants place a relatively high value on social welfare ($X2 = 4.62$) and career development ($X3 = 4.53$), while placing a lower value on rearing cost ($X1 = 3.53$) and social concept ($X4 = 3.22$).

The standard deviation values indicate that there is some variability in participants' responses for each variable, with the highest variability observed for social concepts ($X4 = 0.85$). This suggests that participants have more diverse opinions and attitudes toward social concepts compared to the other variables.

Based on the research objectives, the analysis results are as follows:

1) Research results on the hypothesis of influencing factors.

Table 2 includes the coefficients of the model, along with their standard errors, t-values, and p-values. The table also includes the Collinearity Tolerance and VIF values for each independent variable, which can be used to check for multicollinearity.

Table 2 Coefficients analysis of fertility intention

Model	B	Std. Error	Beta	t	Sig.	Collinearity Tolerance	VIF
(Constant)	1.29	0.22		5.91	0.00		
rearing cost	0.02	0.04	0.03	0.59	0.55	0.84	1.20
social welfare	0.12	0.05	0.12	2.32	0.02**	0.63	1.59
career development	0.31	0.04	0.36	7.07	0.00**	0.63	1.58
social concept	0.21	0.03	0.33	7.49	0.00**	0.87	1.15

a. Dependent Variable: Fertility intention

$R=0.57^a$ $R^2=0.32$ $\text{Adj.}R^2=0.32$ $\Delta R^2=0.32$, $F=47.87$

The dependent variable in this model is "Fertility intention", and the independent variables are rearing cost, social welfare, career development, and social concept. The coefficients of the independent variables suggest that career development has the strongest positive relationship with the dependent variable,



followed by social concept and then social welfare. The coefficient of rearing cost is not statistically significant.

The model's R-squared value is 0.32, indicating that the independent variables explain 32% of the variance in the dependent variable. The adjusted R-squared value is also 0.32. The ΔR^2 value is 0.32, indicating that the addition of the independent variables significantly improved the model's fit. Finally, the ΔF value is 47.87, indicating that the model is statistically significant.

2) Multiple regression analysis results of influencing factors

From Table 3, it can be seen that different dimensions (rearing cost, social welfare, career development, and social concept) that affect fertility intention seem to be significant predictors of influencing factors (standard variables), with only three dimensions (career development, social concept, and social welfare) considered significant predictors of influencing factors ($F(4,406) = 47.87$, $p < 0.01$); moreover, considering the tolerance value, it can be concluded that career development, social concept, and social welfare have low levels of Multicollinearity (tolerance 0.63, 0.87 and 0.63). The multiple correlation of career development, social concept, and social welfare is $R = 0.57$, accounting for 32% of the influencing factor scores.

Table 3 Mode summary and ANOVA^a of fertility intention

Model	Std. Error of the Estimate	R Square Change	F Change	df	Sig. F Change	Sum of Squares
1	0.45	0.32	47.87***	4,406	0.00*	39.38

a. Predictors: (Constant): social concept, career development, rearing cost, social welfare

b. Dependent Variable: Fertility intention

From the standardization coefficient (β), it can be clearly seen that career development has predictive power on the influencing factors of fertility intention ($\beta = 0.36$; $P < 0.01$), with a contribution rate of approximately 19.2% to the influencing factors of fertility intention ($\Delta R^2 = 0.19$, $F(4,406) = 24.06$; $P < 0.01$). This indicates that career development affects fertility intention.

Social concept is the next important potential predictor of fertility intention ($\beta = 0.33$; $P < 0.01$), with a contribution rate of approximate 16.1% ($\Delta R^2 = 0.16$, $F(3,407) = 25.97$; $P < 0.01$). This means that when social awareness changes, it will affect fertility intention.

Similarly, social welfare further increases variance by 14%, leading to significant improvement in prediction ($\Delta R^2 = .14$, $F(4,406) = 16.08$; $P < 0.01$) and has a positive impact on the influencing factors of fertility intention ($\beta = 0.12$; $P < 0.01$). This means that good social welfare is beneficial for increasing fertility intention.

3) Linear regression model of fertility intention

Based on multiple linear regression analysis, the fertility willingness model is summarized as follows:

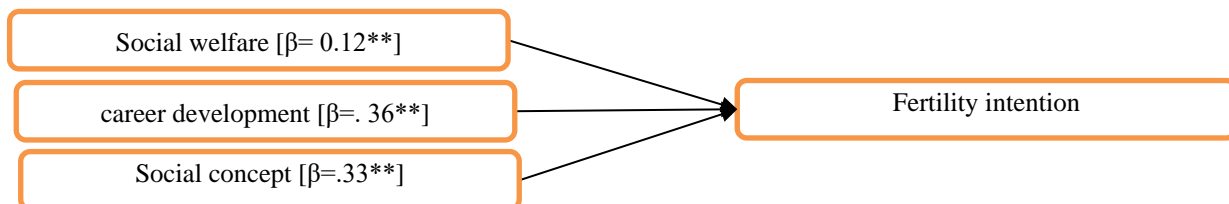


Figure 3 Linear regression model of fertility intention

** $p < 0.01$ * $p < 0.05$ $R^2 = 0.32$, Regression equation for fertility intention: Fertility intention = $1.29 + \text{social welfare} * 0.12 + \text{career development} * 0.36 + \text{social concept} * 0.33$



Discussion

The results presented suggest that participants in the study have a relatively strong intention to have children, with a mean value of 4.01 for fertility intention. This finding is consistent with previous research that has shown that most people desire to have children at some point in their lives (Bongaarts, 2001; Lesthaeghe & Surkyn, 2002).

The relatively high mean values for social welfare and career development suggest that participants place a high value on these factors when making decisions about childbearing. This finding is consistent with the theory of the second demographic transition (SDT), which suggests that as societies become more developed and affluent, individuals may prioritize personal fulfillment and self-actualization over traditional family values (Lesthaeghe, 2010).

The lower mean value for rearing costs may reflect the fact that participants in the study perceive the cost of raising children as less of a barrier to childbearing than other factors. However, it is important to note that the standard deviation for this variable is relatively high, indicating that there is some variability in participants' responses. Previous research has shown that the cost of raising children can be a significant barrier to childbearing, particularly in countries with high levels of economic inequality (Bongaarts, 2001; Lesthaeghe, 2010).

The lower mean value for social concepts suggests that participants may place less emphasis on traditional family values and gender roles. This finding is consistent with research that has shown a shift away from traditional family structures and gender roles in many developed countries (Lesthaeghe & Surkyn, 2002).

The standard deviation values suggest that there is some variability in participants' responses for each variable, with the highest variability observed for social concepts. This suggests that participants have more diverse opinions and attitudes toward social concepts compared to the other variables.

Overall, these findings provide valuable insights into the factors that may influence fertility intentions among the study population and can inform the development of policies and interventions aimed at promoting or discouraging childbearing behaviors based on the identified factors.

Through linear regression analysis of samples, it is demonstrated that the hypothesis of four factors affecting fertility exists in the relationship between the problem of rearing costs, social welfare, career development, social concept, and fertility intention. The research results of this dissertation indicate that (Xianyu & Dangchen, 2019) under the context of the comprehensive two-child policy, family factors, female factors, and social factors are the main influencing factors for differences in fertility willingness and behavior.

Multiple regression analysis on the impact of fertility intention in Sichuan Province found that among the influencing factors, career development, social concept, and social welfare have regression effects. These three aspects can better explain the influencing factors, so the assumptions in these three aspects can better serve the second purpose of this study. This study further confirms the impact of (Yuye, 2021) family support on the fertility willingness of Sichuan women of childbearing age. Most women of childbearing age in Sichuan are unable to receive caregiving support from both parents. Based on this, this dissertation proposes that the government should actively promote a childcare service environment to alleviate the difficulties of family care. At the same time, the maternity leave system should be changed to increase the length of male paternity leave and promote spouse participation in family care. On the other hand, the government should implement a family childcare allowance system to alleviate economic pressure on families.

Conclusion

Through a survey and analysis of the hypothetical factors affecting the fertility intention of the population in Sichuan Province, China, it was found that there is a clear relationship between the issues assumed by rearing cost, social welfare, career development, and social concept and fertility intention. The



analysis results can also serve as a reference for the government to formulate public policies to improve fertility intention and provide a certain research foundation for other researchers.

The population issue has become an important issue of international concern and requires the joint attention of governments from all countries. The population issue is no longer just a matter of fertility policies but involves multiple policies of a country. This requires all countries to promptly introduce relevant policies in areas such as childbirth, elderly care, social welfare, education, and medical care, effectively controlling the population and ensuring population security for social development.

Recommendation

1. Policy recommendations

To encourage childbearing and increase the willingness of families to have children, it is important to reduce the financial burden of raising children. One way to achieve this is by increasing government funding subsidies for families with children and providing more assistance to help alleviate the costs associated with child-rearing.

To promote family security and well-being, several measures can be implemented. Firstly, the cost of prenatal testing and childbirth should be reduced or fully reimbursed to ensure the overall health of infants and reduce the financial burden on families. Secondly, it is important to improve access to quality education by providing more free educational opportunities and excellent educational resources, thereby reducing the financial investment required by families. Finally, regulating taxation on childbearing families and introducing tax reductions as a form of childbirth welfare can also be effective in promoting family welfare.

It is essential to enhance career development and provide comprehensive support for women who have given birth. This includes strengthening workplace rights protection for postpartum women, implementing policies that promote their career advancement, enhancing the professional status of women after childbirth, and ensuring employment security by providing additional guarantees. These measures aim to alleviate concerns and provide a worry-free environment for women who have given birth.

It is essential to enhance social awareness and advocate for fertility policies. In light of declining birth rates and the growing aging population, it is essential to raise public awareness that having children is no longer the sole means of supporting the elderly. Emphasizing the benefits of fertility, such as strengthening family relationships, and highlighting the improved social welfare support available can help alleviate concerns about the pressures associated with childbirth.

2. Implementation suggestions

This study focuses on fertility intentions within Sichuan Province, China. Future research can extend the scope of investigation to other regions to gain a more comprehensive understanding of population fertility. The factors identified in this study may have certain limitations, and additional research variables can be added to identify other factors that affect fertility intentions based on specific circumstances.

Acknowledgment

The author wishes to express gratitude to all professors for guiding their paper topic selection, survey questionnaire, and paper writing. Additionally, the author would like to thank colleagues for participating in the survey and assisting with data analysis. The author is also grateful to their workplace for providing the necessary environment and funding to support their paper writing efforts.

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