

Demographic, Economic, and Motivational Determinants of University Students' Fertility Intention in Sichuan, China

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Abstract

Background: China faces major demographic shifts due to falling birth rates and an aging population. University students will soon enter marriage and parenthood, yet little is known about their childbearing plans. Objective: This research explores what drives university students' childbearing plans in Sichuan, China, focusing on three domains: demographic background, perceived economic conditions, and motivational attitudes. Methods: We conducted a cross-sectional survey of 420 students using stratified sampling. Data came from a structured questionnaire. Analytical methods included descriptive statistics, Pearson correlations, and hierarchical multiple regression. Results: The final regression model accounted for 58.9% of the variation in childbearing intentions. The strongest positive influence was fertility attitude ($\beta = 0.566$, $p < .001$). Among economic variables, expected childrearing cost exerted a consistent negative effect ($\beta = -0.343$, $p < .001$). Female students reported significantly lower intentions than males ($\beta = -1.187$, $p < .01$). Conclusion: University students' childbearing intentions arise from an interplay of demographic, economic, and attitudinal factors. Policies should combine psychological support with relief from financial burdens.

Keywords: Fertility intention; Demographic factors; Economic constraints; Motivational attitudes;
University students

Introduction

In recent decades, many societies have experienced persistent fertility declines and accelerated population aging. Several East Asian and European countries have entered a phase known as lowest low fertility, where total fertility rates drop below 1.3, far under the replacement level of 2.1 (Kohler et al., 2002). The Second Demographic Transition framework suggests that a shift in values toward individual autonomy, later marriage, and postponed childbearing has further reinforced these demographic trends (Lesthaeghe, 2010). Such developments raise serious concerns about shrinking labor forces, fiscal sustainability, and long-term socioeconomic well-being.

China faces persistently low fertility alongside rapid population aging. Despite the introduction of the universal two-child policy in 2016, the three-child policy in 2021, and supportive measures such as tax reductions, childcare subsidies, and extended parental leave (Xinhua News Agency, 2021), fertility has remained low. China recorded only 9.02 million births in 2023, with the total fertility rate declining to approximately 1.0 (National Bureau of Statistics of China, 2024; World Bank, 2025). University students represent an important population because they are approaching marriage and childbearing ages, and their current fertility intentions may shape future fertility trends and policy effectiveness (Miller, 2011). Previous studies show that fertility intentions vary by age, gender, family background, and partnership status (Becker, 1991; Bongaarts, 2001; Testa, 2014). In China, only-child status and cultural values may further shape childbearing preferences (Cameron et al., 2013; Whyte et al., 2015). However, research has largely focused on married women of reproductive age or macro-level responses to fertility policies, with less attention to unmarried university students whose fertility intentions are still developing (Basten & Jiang, 2014; Zeng & Hesketh, 2016).

To address this research gap, we examine university students' childbearing intentions in Sichuan Province. Sichuan ranks among China's most populous provinces and shows considerable internal variation in economic growth, urbanization, and cultural practices. This setting provides a valuable opportunity to explore differences in fertility-related attitudes. We integrate Becker's cost-benefit theory of fertility with Miller's Traits Desires Intentions Behavior framework to create an analytical model that incorporates demographic background, economic perceptions, and motivational attitudes. By concentrating on unmarried university students who are still forming their reproductive

plans and by examining heterogeneity across different student subgroups, we aim to offer a fuller picture of childbearing intentions. The findings are likely to generate policy-relevant implications for designing tailored fertility support measures in low fertility settings.

Research Objectives

1. to examine the influence of demographic factors on university students' childbearing intentions
2. to assess the influence of perceived economic conditions on university students' childbearing intentions
3. to evaluate the relative contribution of motivational attitudes, compared with demographic and economic factors, in explaining university students' childbearing intentions.

Research Methodology

Population and Sample

We conducted this study in Sichuan Province, southwestern China. To capture diversity across institution types and regional development levels, we used a stratified multi-stage sampling approach. The target population consisted of all full-time undergraduates enrolled in Sichuan's higher education institutions during 2024, roughly 2.268 million students, the most recent official data available at the time of sampling. Sample size was calculated using Yamane's formula (1973) with 95% confidence ($\alpha = 0.05$) and a 5% margin of error ($e = 0.05$), giving a minimum of about 400 respondents. Allowing for stratified sampling efficiency and possible incomplete questionnaires, we set the final target at 420 (Siramaneerat et al., 2022; Hair et al., 2019; Tabachnick & Fidell, 2019).

Sample selection

Stage 1: Selection of study areas, Three cities in Sichuan Province; Zigong, Yibin, and Deyang were purposively selected to capture variation in socioeconomic and regional contexts. Zigong represents a traditional industrial transformation area, Yibin an emerging regional economic center, and Deyang a major strategic industrial hub.

Stage 2: Selection of universities, One public undergraduate university was selected from each city to represent different institutional characteristics: Sichuan University of Science & Engineering in Zigong, Yibin University in Yibin, and the Civil Aviation Flight University of China in Deyang.

These institutions included a comprehensive university, an application-oriented university, and an industry-specific university, respectively.

Stage 3: Within each university, we used systematic sampling based on official student rosters. In total, 420 valid questionnaires were collected, proportionally allocated as 91, 179, and 150 across the three universities – meeting requirements for multivariate analysis (Cochran, 1977). All participants gave written informed consent. Those who were unavailable during the survey period or declined to take part were excluded.

Research instrument and variables

A structured, self-administered online questionnaire was used to collect data. The questionnaire comprised four sections. The first collected demographic characteristics, including gender, age, academic discipline, household income, regional location, relationship status, only-child status, and religious affiliation. Categorical variables were coded according to predefined response categories. The second section assessed four perceived economic factors related to childbearing decisions: financial capability, childrearing costs, work-family conflict, and housing pressure, using 20 items rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The third section measured TPB-based motivational factors, including attitudes toward childbearing and subjective norms, using 10 items on the same scale. The final section assessed fertility intentions using six items addressing intended number of children and preferred timing of childbirth. Two items were reverse-coded before composite scores were calculated. Content validity was assessed by three experts in demography, public management, and sociology using the Item-Objective Congruence (IOC) method. Item-level IOC values ranged from 0.67 to 1.00, with an overall IOC of 0.975, exceeding the acceptable threshold of 0.50. Internal consistency was satisfactory, with an overall Cronbach's α of 0.895 and coefficients above 0.70 for all dimensions.

Data Collection

We collected the data from December 2025 to February 2026. Most questionnaires were distributed on-site with help from university coordinators; we also used online tools when needed.

Data Analysis

All statistical computations were performed with R version 4.3.2 running under RStudio 2023.12.1. We first ran descriptive analyses to profile participants' background traits. Next, we used Pearson correlations to examine bivariate relationships. Finally, we estimated hierarchical regression models with ordinary least squares to assess the unique contribution of demographic, economic, and motivational variables on childbearing intentions. Two-tailed tests with $\alpha = 0.05$ defined statistical significance.

Ethical Approval

The study followed institutional ethical guidelines for social science research. All participants provided informed consent and participated voluntarily. Responses were anonymous and confidential, with no personally identifiable information collected. Data were used solely for academic research purposes.

Research Results

The study included 420 university students (Table 1), of whom 65.5% were female. Most participants were aged 18–20 years (63.3%), and 58.8% were enrolled in other academic disciplines. Household incomes were predominantly below 100,000 yuan, with 36.2% reporting less than 50,000 yuan and 36.0% reporting 50,000–100,000 yuan. Approximately half (50.7%) lived in rural areas. Regarding relationship status, 46.2% had never been in a romantic relationship, while 23.6% were currently in one. Only children accounted for 29.0% of the sample, and 73.8% reported no religious affiliation. Gender was included as a covariate in the regression models to account for the unequal gender distribution.

Table 1 Demographic characteristics of participants (n=420)

Variable	n (%)
Gender	
Male	145(34.5)
Female	275(65.5)
Age	
Under 18	5(1.2)
18–20	266(63.3)
21–23	122(29)
24–25	14(3.3)
Over 25	13(3.2)
Discipline	
Humanities & Social Sciences	68(16.2)
Agriculture	28(6.7)
Arts	15(3.6)
Medical Sciences	5(1.2)
Other	247(58.8)
STEM	57(13.5)
Household income	
<= ¥50,000	152(36.2)
¥50,001–¥100,000	151(36)
¥100,001–¥200,000	74(17.6)
¥200,001–¥300,000	28(6.7)
> ¥300,000	15(3.5)
Regional	
Chengdu	48(11.5)
Other Cities	137(32.6)
Rural	213(50.7)
Ethnic minority area	22(5.2)

Variable	n (%)
Relationship status	
Never been in a romantic relationship	194(46.2)
Previously in a romantic relationship (currently single)	127(30.2)
Currently in a romantic relationship	99(23.6)
Only child	
Yes	122(29)
No	298(71)
Religion	
No religion	310(73.8)
Buddhism	40(9.5)
Christianity	9(2.1)
Taoism	7(1.7)
Other religion	54(12.9)
Total	420(100.0)

Descriptive Statistics, Reliability and Correlations Among Economic Perceptions, Motivational Factors, and Fertility Intention

Table 2 presents the descriptive statistics, reliability coefficients, and bivariate correlations among the key study variables. All constructs demonstrated acceptable internal consistency, with Cronbach's α ranging from .711 to .876. Expected childrearing cost had the highest mean ($M = 4.042$, $SD = 0.733$), followed by expected work–family conflict ($M = 3.948$, $SD = 0.738$) and housing pressure ($M = 3.806$, $SD = 0.753$). Fertility intention was positively correlated with perceived financial capability ($r = .284$, $p < .001$), attitude toward childbearing ($r = .637$, $p < .001$), and subjective norms ($r = .476$, $p < .001$). In contrast, expected childrearing cost ($r = -.275$, $p < .001$) and expected work–family conflict ($r = -.223$, $p < .001$) were negatively correlated with fertility intention. Housing pressure was not significantly associated with fertility intention ($r = -.054$, $p > .05$). Among the examined factors, attitude toward childbearing showed the strongest correlation with fertility intention.

Table 2. Descriptive Statistics, Reliability, and Correlations Among Key Study Variables

	Cronbach's α	Mean	SD	(PF)	(EC)	(WFC)	(HP)	(AC)	(SN)	(FI)
Perceived Financial Capability (PF)	0.745	3.280	0.700	1						
Expected Childrearing Cost (EC)	0.808	4.042	0.733	0.328***	1					
Expected Work–Family Conflict (WFC)	0.876	3.948	0.738	0.313***	0.74***	1				
Housing Pressure (HP)	0.806	3.806	0.753	0.423***	0.654***	0.708***	1			
Attitude toward Childbearing (AC)	0.835	3.160	0.835	0.429***	0.1*	0.104*	0.248**	1		
Subjective Norms (SN)	0.755	3.278	0.694	0.403***	0.173***	0.216***	0.286**	0.701***	1	
Fertility Intention (FI)	0.711	2.544	0.794	0.284***	–0.275***	–0.223***	–0.054	0.637***	0.476***	1
* p<0.05, ** p<0.01, *** p<0.001										

Hierarchical Multivariate Analysis of Factors Influencing Fertility Intention

Table 3 presents the results of the hierarchical regression analysis. Model 1, including demographic characteristics only, explained 26.4% of the variance in fertility intention ($R^2 = 0.264$). Female students reported significantly lower fertility intentions than males ($\beta = -3.663$, $p < .001$), while students in agriculture, arts, and STEM fields reported higher intentions than those in humanities and social sciences. Adding perceived economic factors in Model 2 increased the explained variance to 37.6% ($R^2 = 0.376$; $\Delta R^2 = 0.112$). Perceived financial capability was positively associated with fertility intention ($\beta = 0.446$, $p < .001$), whereas expected childrearing cost was negatively associated ($\beta = -0.354$, $p < .001$). Work–family conflict and housing pressure were not significant. Model 3 added motivational factors and explained 58.9% of the variance ($R^2 = 0.589$; adjusted $R^2 = 0.557$; $\Delta R^2 = 0.213$). Attitude toward childbearing was the strongest positive predictor ($\beta = 0.566$, $p < .001$), followed by subjective norms ($\beta = 0.152$, $p < .05$). Childrearing cost remained negatively associated ($\beta = -0.343$, $p < .001$), while financial capability remained positively associated ($\beta = 0.167$, $p < .01$). Female students continued to report lower fertility intentions than males ($\beta = -1.187$, $p < .01$). Overall, motivational factors contributed the largest incremental explanatory power to the final model.

Table 3. Hierarchical Multiple Regression Analysis Predicting Fertility Intention (n=420)

Variable	Univariate (95% CI)	Model 1	Model 2	Model 3
Demographic factors				
Age				
Under 18	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
18–20	–4.034 (–8.214 to 0.147)	–4.356 (–8.226 to –0.486)*	–2.625 (–6.252 to 1.001)	–1.393 (–4.349 to 1.563)
21–23	–3.836 (–8.062 to 0.390)	–5.284 (–9.219 to –1.349)**	–3.331 (–7.031 to 0.369)	–2.140 (–5.155 to 0.875)
24–25	–1.214 (–6.039 to 3.611)	–5.124 (–9.659 to –0.590)*	–3.274 (–7.538 to 0.989)	–1.922 (–5.397 to 1.552)
Over 25	–0.923 (–5.797 to 3.951)	–3.597 (–8.114 to 0.919)	–3.200 (–7.385 to 0.986)	–1.916 (–5.327 to 1.495)
Gender				
Male	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
Female	–3.782 (–4.672 to –2.891)***	–3.663 (–4.606 to –2.721)***	–2.580 (–3.509 to –1.651)***	–1.187 (–1.968 to –0.407)**
Discipline				
Humanities & Social Sciences	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
Agriculture	5.252 (3.241 to 7.263)***	3.406 (1.390 to 5.421)***	3.199 (1.325 to 5.074)***	1.119 (–0.438 to 2.676)
Arts	5.957 (3.402 to 8.512)***	3.024 (0.424 to 5.624)*	3.029 (0.616 to 5.441)*	2.133 (0.163 to 4.103)*
Medical Sciences	4.024 (–0.126 to 8.173)	2.025 (–2.002 to 6.053)	3.246 (–0.508 to 7.000)	0.352 (–2.730 to 3.434)
Other	1.783 (0.557 to 3.009)**	1.565 (0.401 to 2.728)**	1.043 (–0.045 to 2.131)	0.427 (–0.463 to 1.318)

STEM	3.139 (1.531 to 4.748)***	2.148 (0.605 to 3.692)**	1.948 (0.516 to 3.379)**	1.251 (0.083 to 2.420)*
Household				
Income				
< ¥50,000	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
¥50,000– ¥100,000	1.049 (–0.014 to 2.113)	0.822 (–0.159 to 1.803)	0.403 (–0.514 to 1.320)	–0.239 (–0.990 to 0.513)
¥100,000– ¥200,000	1.175 (–0.138 to 2.487)	0.950 (–0.276 to 2.175)	0.223 (–0.930 to 1.375)	–0.107 (–1.046 to 0.832)
¥200,000– ¥300,000	3.254 (1.350 to 5.158)***	1.588 (–0.344 to 3.520)	0.169 (–1.663 to 2.001)	–0.083 (–1.574 to 1.409)
> ¥300,000	0.006 (–2.499 to 2.512)	–2.476 (–4.979 to 0.028)	–2.372 (–4.697 to –0.047)*	–2.388 (–4.283 to –0.493)*
Region				
Chengdu	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
Other Cities	–0.201 (–1.766 to 1.364)	–0.202 (–1.675 to 1.271)	–0.035 (–1.399 to 1.329)	–0.388 (–1.500 to 0.723)
Rural	–0.538 (–2.029 to 0.953)	0.459 (–1.096 to 2.014)	0.628 (–0.814 to 2.070)	–0.160 (–1.338 to 1.018)
Ethnic minority area	1.909 (–0.494 to 4.312)	1.495 (–0.779 to 3.769)	1.140 (–0.967 to 3.246)	–0.648 (–2.381 to 1.085)
Relationship				
Status				
Never been in a romantic relationship	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
Previously in a relationship (currently single)	0.379 (–0.683 to 1.442)	0.446 (–0.519 to 1.410)	0.134 (–0.762 to 1.031)	0.438 (–0.293 to 1.169)

Currently in a romantic relationship	1.499 (0.349 to 2.649)*	1.245 (0.171 to 2.320)*	0.808 (-0.196 to 1.811)	0.538 (-0.280 to 1.356)
Only Child				
Yes	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
No	-0.890 (-1.894 to 0.113)	-0.236 (-1.231 to 0.759)	-0.096 (-1.018 to 0.825)	-0.042 (-0.792 to 0.708)
Religion				
No religion	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
Buddhism	1.402 (-0.158 to 2.963)	1.445 (-0.004 to 2.895)	0.967 (-0.381 to 2.314)	0.941 (-0.156 to 2.038)
Christianity	2.777 (-0.363 to 5.918)	2.769 (-0.249 to 5.787)	2.067 (-0.757 to 4.891)	1.334 (-0.966 to 3.634)
Taoism	-2.651 (-6.201 to 0.898)	-2.206 (-5.425 to 1.013)	-2.141 (-5.123 to 0.841)	-2.727 (-5.162 to -0.293)*
Other religion	-0.852 (-2.222 to 0.517)	-0.454 (-1.708 to 0.800)	-0.589 (-1.752 to 0.573)	0.253 (-0.701 to 1.207)
Economic factors				
Perceived Financial Capability	0.386 (0.260 to 0.511)***		0.446 (0.319 to 0.574)***	0.167 (0.056 to 0.277)**
Expected Childrearing Cost	-0.357 (-0.477 to -0.237)***		-0.354 (-0.520 to -0.188)***	-0.343 (-0.478 to -0.208)***
Expected Work-Family Conflict	-0.288 (-0.409 to -0.167)***		-0.120 (-0.293 to 0.054)	-0.126 (-0.269 to 0.016)
Housing Pressure	-0.068 (-0.190 to 0.053)		0.067 (-0.091 to 0.224)	-0.022 (-0.151 to 0.106)

Motivational factors				
Attitude toward Childbearing	0.726 (0.641 to 0.810)***			0.566 (0.456 to 0.675)***
Subjective Norms	0.653 (0.537 to 0.769)***			0.152 (0.022 to 0.283)*
Model statistics				
R-square		0.264	0.376	0.589
Adjusted R- square		0.219	0.331	0.557

Note. CI = Confidence Interval. (Ref.) = Reference category.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

This study integrated demographic, economic, and motivational factors to explain fertility intentions among university students. The hierarchical regression showed that economic perceptions increased the explanatory power beyond demographic characteristics, while motivational factors contributed the largest additional variance. These findings suggest that fertility intentions reflect both socioeconomic circumstances and individual motivations. Gender remained an important predictor, with female students reporting lower fertility intentions than males, consistent with previous evidence of gender differences in fertility ideals and intentions (Testa, 2014). In China, women often bear a greater share of childcare and household responsibilities, potentially increasing concerns about parenthood and work-family balance (Yang, 2017). Although the gender effect decreased after economic and motivational factors were included, it remained significant, suggesting that additional gender-specific concerns may influence fertility intentions. These may include expectations surrounding motherhood, pregnancy and childbirth, bodily autonomy, and unequal domestic responsibilities. Future research should examine these factors more explicitly. Age effects also weakened after adjustment, indicating that age-related differences may partly reflect other demographic and socioeconomic characteristics.

Economic perceptions were also important. Household income showed mixed associations, suggesting that objective financial resources alone may not adequately reflect perceived readiness for parenthood. In contrast, perceived financial capability was positively associated with fertility intention, while expected childrearing cost remained a consistent negative predictor. These findings are consistent with the economic theory of fertility, which emphasizes the balance between anticipated costs and available resources in reproductive decision-making (Becker, 1991). High perceived childrearing costs may encourage individuals to delay or reconsider parenthood (Miller, 2011). In contemporary China, rising education, housing, and healthcare expenses may further intensify such concerns. Housing pressure and expected work-family conflict were not independently significant after adjustment, possibly because their effects overlapped with financial capability and childrearing costs. Housing may also represent a future rather than immediate constraint for university students. Motivational factors made the strongest contribution to fertility intentions. Both attitudes toward childbearing and subjective norms were positively associated with fertility intention, with attitude showing the strongest relationship. This finding supports the Theory of Planned Behavior (TPB), which proposes that behavioral intentions are shaped by attitudes and perceived social expectations (Ajzen, 1991). It is also consistent with Miller's Traits-Desires-Intentions-Behavior framework, which views fertility intentions as arising from individual motivations embedded within broader social contexts. The significant role of subjective norms further suggests that expectations from family, peers, and the wider social environment may influence young adults' reproductive plans. Notably, the effects of gender and perceived financial capability decreased after motivational factors were introduced. This pattern suggests that structural and economic conditions may operate partly through attitudes and perceived social expectations. However, because mediation was not formally tested, these findings should not be interpreted as evidence of mediation. Future studies could directly examine these pathways using mediation analysis or structural equation modeling. Theoretically, this study integrates economic and social-psychological perspectives, demonstrating that fertility intentions are shaped by demographic and economic circumstances as well as motivational processes. From a policy perspective, the findings suggest that financial incentives alone may be insufficient to influence fertility

intentions. Broader measures addressing childcare affordability, work–family compatibility, gender equality in caregiving, and supportive social environments may therefore be needed alongside economic support.

Suggestions

1. Suggestions from Research

The findings suggest several policy implications. Given the strong association between attitudes toward childbearing and fertility intentions, initiatives should promote informed and balanced perceptions of parenthood while addressing concerns about childrearing. Since expected childrearing costs were consistently associated with lower fertility intentions, targeted measures such as childcare subsidies, tax relief, and affordable early childhood services may help reduce perceived financial burdens. The persistent gender gap also highlights the importance of family–friendly employment policies, flexible work arrangements, and greater gender equality in childcare and domestic responsibilities.

2. Suggestions for Future Research

Future studies should improve the measurement of fertility timing preferences, as this subscale showed relatively low internal consistency. Research should also include more diverse populations and provinces with different socioeconomic and cultural contexts to improve generalizability. Additional factors, such as extended family support, media influence, gender–role expectations, and institutional policies, should be examined to extend the current model. Cross–national comparisons with other low–fertility Asian societies, such as Japan, South Korea, and Singapore, may provide further insights. Longitudinal and qualitative studies are also recommended to better understand how fertility intentions develop and change over time.

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