

Study on the influence of housing price on fertility intention in the new development stage

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Abstract

In recent years, in order to adapt to the economic and social development and constantly adjust the fertility policy, the improvement of residents' fertility willingness has not reached the ideal level. The reason is that housing is necessary for life. The housing price, as the cost of living and the cost of raising children, has a very significant impact on the current residents' willingness to have children. According to the relevant literature, it can be seen that the influence of housing price on fertility intention is mostly analyzed from two aspects: crowding out effect and wealth effect. Therefore, this study relies on the micro-data of families in recent years to study the influence mechanism of housing prices on the fertility willingness of urban and rural residents. The results show that the housing price has a crowding out effect on the fertility willingness of urban and rural residents, that is, the higher the housing price, the lower the residents' fertility willingness, and other variables also have an impact on the fertility intention, such as gender, annual family income, etc. The housing price also has a wealth effect on the fertility willingness, that is, the higher the housing price, the higher the residents' willingness to reproduce. However, the wealth effect is less than the crowding out effect, so in general, in the new stage of development, the higher the housing price in China, the lower the residents' willingness to have children.

Keywords

Housing price, fertility willingness, influence mechanism.

1. Research background

In order to cope with the aging population and the steady economic growth, China has continuously introduced the birth policy to adapt to the economic situation in recent years, and recently implemented the "three-child" policy in 2021. However, according to the relevant data, the government's fertility policy has no significant effect on improving the fertility rate in China. As of 2021, the birth rate was only 7.52 per thousand, which is the lowest fertility rate in recent years.

According to domestic and foreign literature, there are many factors affecting fertility intention and behavior, which are summarized as economic and social factors, such as fertility policy, gender preference and education level, child subsidies, etc. With the change of social customs, the continuous improvement of residents' income and the gradual improvement of social pension mechanism, the concept of more birth and more care has gradually transformed into healthy birth and postnatal care. In the current new era background, the motivation of residents' fertility intention turns to be more economic factors. Since the reform of the related housing system in China in the late 20th century, the housing prices have risen steadily, which has a profound impact on the willingness and behavior of residents to have children. This paper will use the tracking survey data of Chinese families to study the impact of housing prices on the fertility willingness of urban and rural residents, which will play an important role in the

constructive housing policy adapted to the society, and is also conducive to reducing the economic burden and living pressure of the masses.

2. Literature review

As an economic factor, housing price plays a very important role in influencing residents' fertility intention, and its influence can be studied from the perspectives of crowding out effect and wealth effect. The crowding out effect indicates that the rise of housing price will play a negative role on the fertility intention, the wealth effect indicates that the rise of housing price has a positive effect on the fertility intention, and the two have opposite effects on the fertility intention.

2.1. The crowding out effect of housing prices on the fertility will

As for the relevant domestic research, Li Yonggang used the panel data of 31 provinces (municipalities and autonomous regions) from 1999 to 2010, and concluded that the holiday housing price had a significant negative impact on the birth rate. Yi took Hong Kong as an example, and used the co-integration analysis to conclude that the Hong Kong housing price index rose by 1% on average and the total fertility rate would fall by 0.45%. It can be concluded that this study shows that the increase of housing prices will also restrain the growth of fertility rate.

In foreign literature, Borsch once conducted data research on several economically developed urban housing areas in China, and then studied it on the basis of the collected data, and finally summarized that the increase of housing prices will reduce the residents' fertility willingness, showing a negative impact. Becker We believe that rising housing prices will reduce residents' willingness to have children and reduce their demand for children. In general, housing prices on the crowding out effect.

2.2. The wealth effect of the housing price on the fertility intention

As for the domestic research, Ni Yunsong used the data of China Family finance survey. The research results show that the increase of housing price has no impact on the fertility rate without obvious effect, but there is a possibility of wealth effect. He Haiyun used the sample data of Chinese family tracking survey in recent years, and finally came to the conclusion that the effect of rising housing prices on family reproductive wealth is relatively small, even less than the crowding out effect.

In foreign literature, Becker shows from the perspective of property owners that the income effect or wealth effect generated by the increase of housing prices will promote residents' fertility behavior and improve residents' fertility willingness. Lovenheim And others study deeply based on the data of the US Income Dynamic Group, and the conclusion shows that the increase of wealth income representative of housing prices has the possibility to increase the fertility rate.

According to the data of the seventh National Population census, the total fertility rate of women of childbearing age in China in 2020 is at the threshold of "low fertility trap", indicating that the promulgation and implementation of the fertility policy since 2016 have no significant effect on the improvement of residents' fertility willingness, and the residents' fertility willingness is still at a low level. Accordingly, this paper proposes two hypotheses:

Hypothesis 1: China's housing price has both crowding out effect and wealth effect on the fertility willingness of urban and rural residents.

Hypothesis 2: In the new development stage, the crowding out effect is greater than the wealth effect, and the increase of housing price has a negative impact on the fertility intention.

3. Data description and model setting

3.1. Data specification

Variables on fertility willingness and other factors influencing fertility intention used data from China Family Tracking Survey (CFPS) in 2018, and 23,063 valid samples were obtained after excluding missing values. The housing price variable is 2018, and the 2018 urban consumer price index in the 2019 Statistical Yearbook of China is used as the variable reflecting the price changes, and the urban consumer price index of each region (2017 =100).

3.2. Description of the variables and the descriptive statistics

Interpreted variable: fertility intention of the residents. This paper describes the number of children in the questionnaire to accept.

Core explanatory variable: home price. In this paper, the actual house price of the housing price converted through the urban consumer price index is taken as the core explanatory variable.

Control variables: shown in Table 1. Furthermore, province fixed effects were controlled in order to control for the influence of regional heterogeneity factors.

3.3. Model specification

Based on the purpose of the study, the following Logit benchmark regression model is constructed:

Table 1: Descriptive statistics of the variables

	Variable name	Variable definition	Mean value	Standard Deviation	Minimum	Maximum
Explained variable	Fertility willingness	Desired number of children	1.840	0.685	0	10
Core explanatory variables	Home price	The natural logarithm of house prices	9.060	0.490	8.48	10.55
	sex	Male =1, female =0 discrete variables	0.570	0.495	0	1
	Age		38.320	10.793	20	60
	Marital status	In marriage (with spouse) =1, other =0	0.678	0.467	0	1
Control variables	Domicile status	Agricultural =0, non-agricultural =1	0.580	0.447	0	1
	Education	Assigned according to academic system	0.930	6.060	0	9
	CPC members	Yes =1, no =0	0.020	0.140	0	1
	Maternity Insurance	Yes =1, no =0	0.230	0.422	0	1
	Health status	Healthy =1, unhealthy =0	0.910	0.285	0	1
	Annual household income	The natural logarithm of annual household income	10.300	0.926	0	13.641
	Parental Financial Help	Feet =1; No =0	0.100	0.302	0	1

Note: The variable of years of education corresponds to the educational level of respondents, 0 is illiterate / semi-illiterate, 3 means primary school, 4 means middle school, 5 means high school / technical school / technical school / vocational school, 6 means junior college, 7 means undergraduate, 8 means master's, 9 is doctor

$$\text{Logit}(\text{Willingness}_{ik}) = \beta_0 + \beta_1 \ln \text{price}_{ik} + \beta_2 \text{family}_i + \phi_k + \mu_{ik} \quad (1)$$

Willingness_{ik} The fertility intention of provincial (municipal, autonomous region) k, lnprice_{ik} For the log value of the actual housing price k in the province (city, autonomous region) where the resident i is located, β 1 indicates the influence of the housing price on the fertility willingness of urban and rural residents of childbearing age, person_i、 family_i Individual and family factors affecting fertility intention, β₂、 β₃ They are the influence of personal factors and family factors on the fertility willingness of urban and rural residents of childbearing age, and φ_k For the province fixed effect, μ_{ik} Is a random disturbance term.

4. Empirical analysis

4.1. The crowding out effect verification of the housing price on the fertility intention

4.1.1. Benchmark regression.

Table 2 on the next page reports the benchmark regression results. Only the logarithmic variables of the actual house prices are retained in column (1), and in column (2) - (5), the control variables at the individual level, household level and provincial fixed effects are added successively. The coefficient of the actual housing price log variable is always negative at the significant level of 1% or 5%, indicating that the housing price has a significant negative impact on the fertility intention of both urban and rural residents. The results of column (5) show that after controlling individual and family variables and provincial fixed effects at the same time, the housing price still has a negative impact on the fertility intention of urban and rural residents, and the crowding out effect of the housing price on the fertility intention of urban and rural residents is verified.

Table 2: Benchmark regression results

	(1)	(2)	(3)	(4)	(5)
Room rates	0.510 *** (0.107)	0.409 *** (0.113)	0.581 ** (0.156)	0.469 *** (0.153)	0.752 *** (0.286)
Gender		0.018 (0.116)	0.015 (0.117)	0.101 (0.177)	0.101 (0.179)
age		0.0108 ** (0.008)	0.016 ** (0.008)	0.028 ** (0.014)	0.022 (0.014)
Marital status		2.2 *** (0.127)	2.163 *** (0.129)	1.827 *** (0.194)	1.771 ** (0.196)
Canton status		0.715 *** (0.124)	0.497 *** (0.133)	0.977 *** (0.187)	0.775 *** (0.197)
Education		0.032 ** (0.015)	0.036 ** (0.015)	0.031 (0.024)	0.031 (0.025)
CPC members		0.186 (0.464)	0.203 (0.468)	1.112 (0.601)	0.099 (0.61)
Maternity insurance		0.367 ** (0.167)	0.347 ** (0.170)	0.316 (0.202)	0.312 * (0.205)
Health status		0.673 *** (0.156)	0.637 *** (0.158)	0.559 ** (0.266)	0.486 (0.271)
Annual household income				0.119 (0.095)	0.111-0.46 ** (0.100)
Parental financial help				0.512 ** (0.219)	(0.22)
Constant term	8.896 *** (0.078)	6.805 *** (0.068)	8.152 (0.108)	7.241 *** (0.168)	9.719 *** (0.288)
Province fixed effect	No control	No control	Controls	Do not control	Controls
Sample size	23 063	21043	20 995	10 391	10030
pseudo	0.006	0.123	0.145	0.108	0.139

Note: All the explained variables included in this table are fertility intention; robust standard error in brackets; ***, ** and * are significant at 1%, 5% and 10% respectively

For other control variables: the fertility intention of male residents is higher than female, which is consistent with the traditional Chinese concept of male inheritance; the fertility intention of older residents is lower than that of younger residents, mainly due to older children or related to their physical energy. The fertility intention of married people is higher than that of unmarried people, because the marriage relationship can form a stable family environment for raising children, and after the marriage relationship forms a family, the income can generally increase. Rural residents are significantly more willing to have children than non-rural residents, mainly because the traditional rural concept of multiple children and prosperity are

more popular. The fertility intention decreases with the improvement of residents' educational background, which is that residents with higher education are more susceptible to the concept of fewer children and better education. Party members are more willing to have children than non-members because their political consciousness enables them to respond to the country's call to increase fertility. Residents with maternity insurance have a higher willingness to have children. Maternity insurance eases the budget constraints of families, and childbearing women can also get holidays guaranteed by the policy. The willingness to have children increases with the increase of the annual family income, because the higher the annual family income, the more money will be invested in the birth of children. The economic help provided by parents has a negative effect on the fertility intention, this paper considers the following reasons: first, the traditional filial concept of Chinese people, people are not willing to support their parents; second, parents have poor economic support; third, modern people are more self-conscious than the previous generation, and the economic budget is more invested in self-enjoyment.

4.1.2. Robustness test

The number of wishes to have boys, was used as a proxy variable for fertility intentions. As shown in Table 3, whether the control variables are controlled, housing prices still squeeze out the fertility wishes of urban and rural residents.

Table 3: Robustness test of the extrusion effect

	(1)	(2)
Room rates	0.681 * (0.394)	0.735 ** (0.546)
Constant term	9.16 ** (0.709)	8.402 ** (0.704)
Control variables	No controls	Controls
Province fixed effect	Control	Controls
Sample size	18,856	18 184
pseudo	0.088	0.110

Note: Both samples have added control variables and controlled province fixed effects. Other comments are the same as those shown in Table 2

4.2. The verification of the wealth effect of the housing price on the fertility intention

4.2.1. Benchmark regression

According to the answer of the questionnaire "whether there is property except the current housing" to determine whether residents have two or more houses, the sample with two or more houses and less than two houses was returned in groups.

As shown in Table 4 on the following page, the log variable coefficient of the actual house price is still negative, but the weakening effect of the house price to have two or more houses is less than two houses, which proves hypothesis 2.

Table 4: Shows the regression results by grouped housing numbers

	There are less than two apartments	There are two or more houses
Room rates	0.743 *** (0.193)	0.420 *** (0.133)
Constant term	11.040 *** (0.083)	8.093 * (0.227)
Sample size	4992	17 644
pseudo	0.006	0.003

Note: Both samples have added control variables and controlled province fixed effects. Other comments are the same as those shown in Table 2

4.2.2. Robustness test

Using the "number of wishes to bear boys" as the proxy variable of fertility intention, the results obtained by the benchmark regression were still robust, as shown in Table 5.

Table 5: Robustness test of the wealth effect

	There are less than two apartments	There are two or more houses
Room rates	0.702 *** (0.100)	0.606 *** (0.054)
Constant term	8.801 ** (0.709)	8.749 *** (0.704)
Sample size	4334	15 503
pseudo	0.019	0.015

Note: Both groups of samples have added the control variable and the fixed effect of the province. All the explained variables in this table are the number of boys willing to have children. Other comments are the same as those shown in Table 2

5. Conclusion and suggestion

Based on the relevant data, this paper studies the influence mechanism of housing price as an important economic factor on fertility willingness. The conclusion of the study is summarized as follows: First, the housing price has a significant crowding out effect on the fertility intention. The higher the housing price, the lower the fertility intention, it shows a restraining effect. Other related variables will also play a negative role on the fertility intention, such as gender, age, etc. Second, the housing price has a wealth effect on the residents' fertility intention. The higher the housing price, the higher the fertility intention, it will play a helping effect. However, generally speaking, the wealth effect is less than the crowding out effect, so in the modern and contemporary development stage, China's housing price shows a restraining effect on the residents' fertility intention.

Based on the research conclusions, make the following constructive suggestions. First, with the continuous expansion of economic and social marketization, housing, as a symbol of wealth, has seen its marketization degree deepening continuously. Housing is a necessity of life to a certain

extent. The rise of housing prices will increase the cost of raising their children, increase the living pressure of residents, thus inhibiting the fertility willingness of urban and rural residents. Therefore, stabilizing the housing price in the real estate market, avoiding the sustained and significant growth of housing prices, and reducing the cost of raising people are conducive to improving the fertility rate. Second, due to the huge explicit and implicit costs incurred for women to have children, both physically and mentally will suffer from certain pressure, and their work will also be affected to a certain extent. Therefore, the society to strengthen the care of women and strengthen the protection of the rights and interests of women of childbearing age is conducive to improving women's childbearing will. Third, the marriage relationship also plays a significant role in the fertility intention, and the stable marriage relationship has a positive effect on the fertility intention, so the formation of a harmonious and stable family relationship is conducive to improving the residents' fertility will.

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