Evaluation of Beijing Low-Income Housing Security Policy: An Analysis of the Public Policy

Jianfang Chen, Dingchang Wu*

School of Government, Beijing Normal University, Beijing, China
Email: *wdc@mail.bnu.edu.cn

Abstract

The low-income housing security policy is one important part of the current housing security policy, which is an important measure to satisfy the demand of the social low-income people. The academia and society have different evaluations on the policy. Scholars with the idea that low-income housing security policy can promote the overall supply of residential area think that the low-income housing security policy is effective, which can meet the needs of the society; however, the others think that the effect of the policy should be discussed. In order to evaluate the effect of Beijing low-income housing security policy, this paper attempts to make an empirical analysis with statistical approach. The conclusion of the empirical analysis shows that Beijing low-income housing security policy rather not affects the supply of residential area, but does reduce the price. The significance of this result is positive.

1. Introduction

In 2013 The Third Plenary Session of the eighteenth CPC Central Committee studied the major issues of the reform and passed the decision of the Central Committee of CPC on the major issues of the reform. It referred that the starting point and the foothold of reform are to promote social fairness and justice, and improve people's well-being. Everything we do about reform should be good for this goal. In 2015 the Fifth Plenary Session of the

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*Corresponding author.

of the eighteenth CPC Central Committee also proposed to guarantee the people's housing security, and promote social progress. Housing security is citizens' basic living rights. Housing security policy is an important aspect of the social reform and the social development.

Since 1980s China began to implement the reform of the housing policy system, gradually transferring the welfare housing distribution to the market supply housing. After more than thirty years of market-oriented reforms, the Chinese people' living conditions and the environment have been made great progress. The per capita living space increased more than 4 times, reaching 30 square meters. The market supply housing policy has played a decisive role in the allocation of resources, and effectively promoted the improvement of per capita living conditions. At the same time, market allocation housing policy also makes the polarization in housing distribution. Especially after entering the 21st century, along with the rapid development of the urbanization and the economy, the rapid rise in housing prices makes people have a big pressure to purchase a house. Housing security problems become an important social issue, which cannot be ignored.

Beijing, as the capital of China, has a significant representation on the housing security system and the construction of affordable housing. To implement the spirit of the State Council 23 and protect the housing rights of low-income groups, from 1998 Beijing began to build affordable housing. After more than ten years' development, the housing security system of Beijing has been formed which included the main economic housing, low rent fee housing, public rental housing and self used housing. During the period of the 11th National Economic and Social Development Five-Year Plan, Beijing constructed 485,000 sets of houses, including 129,000 sets of economic houses, 23,000 sets of low rent fee houses, and 26,000 sets of public rental houses. In 2013, Beijing spent 729.7 billion Yuan on affordable housing investment, with completing of 10.792 million square meters construction area and 9.649 million square meters new construction area, which make Beijing have a leading position. The research on the housing security policy system in Beijing is representative, and through the empirical analysis we can observe and evaluate the effect and efficiency of the housing security policy in Beijing.

2. Previous Studies

There are two main view points on current housing security policy research, one is that the housing security policy effectively compensate for the unfair distribution of housing market, and protect housing rights of the low-income people. After analysis the housing security policy of the Chinese government, Junqing Gu [1] pointed out that the policy is effective for the national macroeconomic regulation, and promote the development of China's urbanization development. Jie Chen [2] analyzed the Chinese affordable housing supply and financing, and pointed out that since 2008 with the rapid rise in prices, the efforts that governments continued to increase affordable housing supply was good for curbing the rising of housing prices and improving the welfare of the residents. Through empirical research Lizhong Chen [3] found that low-cost housing approval system was more scientific and reasonable.

The others think that the current housing security policy is not effect. Yingying Qian [4] thought that the policy applicable groups were too large to have a negative impact on the commercial housing market, and income proof "distortion", audit "failure" phenomenon exacerbated the efficiency loss. Yuanbin He [5] suggested that the current China's affordable housing construction investment was serious shortage, small coverage, object positioning fuzzy, imperfect supporting policies, combined with insufficient enforcement of the local government, which made the policy affectless. Guanghong Ma [6] put forward that due to the lack of a systematic and reasonable system design, such as inadequate investment funds and unreasonable planning, made the policy affectless. Based on real income Gao Feng [7] estimated that current policy made the low-income people barely have ability to pay for housing prices.

3. Empirical Analysis

3.1. Some Instructions

Due to the different views on the current housing security policy, this paper attempts to use empirical way to analyze Beijing housing security policy. We will focus on studying how the policy affect Beijing's house price. We think the role on the housing security policy that the government plays can be explained by the affordable housing construction area. Now we propose the following hypothesis and we will use Beijing panel data to examine the hypothesis.

3.2. Constructing a Hypothesis

The hypothesis is that increasing the affordable housing construction area can add housing supply, thus contributing to reduce housing price. While the government supply more affordable housing construction area, the price of the house will reduce. If we analyze the different roles, we will understand what role they play and how they play the role. Based on the above we can get some conclusions and make some suggestions.

3.3. The Explanation for the Sample Data

We use 1999-2014 year's Beijing's data as sample, They are GDP for Per capita GDP of Beijing, UR for urbanization rate of Beijing, RSA for residential sales area of Beijing, AHSA for affordable housing sales area of Beijing, RASP for residential average selling price of Beijing. The unite of GDP, RASP is YUAN. The unite of RSA, AHSA is 10,000 Square meter. The data comes from "China Statistical Yearbook 1998-2014", "Beijing Statistical Yearbook 1998-2014" and other files released by the government. Since there is no standard statistical classification before 1998, we only use 1998-2014 data (Table 1). In order to get the objective and accurate results, we conduct a stationary test and standardization of the data.

The affordable housing sales area of Beijing reached to 4.705 million square meter in 2014, compared to 1.022 million square meter in 1999. The residential sales area and average selling prices in Beijing continued to rise up. The residential sales area reached to 14.834 million square meters in 2012, compared to 4.847 million square meters in 1999, which increased more than three times. At the same time the urbanization rate in Beijing increased from 76.06% to 86.20%. The residential average selling price in Beijing rose 4 times, which is bound to affect the improvement of residents' welfare. Beijing's per capita GDP is 99,995 in 2014, compared to 21,407 in 1999, which have a 4 times increasing after the removal of inflation. Taking the above factors into account, the per capita living space for improving and resident welfare improvement is bound to have a positive effect.

3.4. Constructing the Multiple Regression Model Equation

3.4.1. Model Explains

Our target is to tell the relationship between the affordable housing construction area and housing average selling prices, and how it happens. If the affordable housing construction area adds housing supply, thus contributing to reduce residential average selling price, then the policy is effective. At the same time, we must check whether increasing the affordable housing construction area will reduce the residential sales area. So we build two models. One is to tell the relationship between the affordable housing construction area and housing prices, the other to assure increasing the affordable housing construction area will not reduce the residential sales area. We define Beijing's residential average selling price and residential sales area to be the dependent variable, while the affordable housing sales area of Beijing to be the independent variable. The control variable contains other factors, such as per capita GDP and urbanization rate of Beijing, which may affect the residential average selling price and residential sales area.

Consistent with previous empirical researches, this article assumes the following model:

$$Y = A^{\beta 1} * B^{\beta 2} * M * N. \tag{1}$$

We transfer it in logarithmic form.

Table 1. The description of the main variables.

	N	Scale	Min	Max	Average	Standard error
Year	19	18	1996	2014	2005	5.627
GDP	19	85741	14254	99995	50177.68421	27810.56876
UR	19	0.1	0.76	0.86	0.8173	0.04046
RSA	19	2382.9	183.1	2566	1324.6632	689.53396
AHSH	16	431.1	39.4	470.5	172.6813	123.05717
RASP	19	21102	3869	24971	9923.7368	6763.75068

$$\lg Y = \lg(A^{\beta_1} * B^{\beta_2} * M * N). \tag{2}$$

The equation is set as follows:

$$\lg Y = \beta_1 \lg A + \beta_2 \lg B + \lg M + \lg N + \varepsilon. \tag{3}$$

Y represents the residential average selling price and residential sales area of Beijing. A represents the independent variable, which is the affordable housing sales area of Beijing. B, M and N represent the control variables, which are per capita GDP and urbanization rate of Beijing. ε represents the error term.

In summary, the specific equation is:

$$RASP = \beta_1 GDP + \beta_2 UR + \beta_3 AHSA + \varepsilon. \tag{4}$$

And

$$RSA = \beta_1 GDP + \beta_2 UR + \beta_3 AHSA + \varepsilon. \tag{5}$$

Among them, GDP is for Per capita GDP of Beijing, UR for urbanization rate of Beijing, AHSA for the affordable housing sales area of Beijing, RASP for residential average selling price of Beijing, RSA for residential sales area of Beijing.

3.4.2. Regression Analysis of Data

We use the multiple linear regression models. In order to avoid the different variance and sequence characteristics on time series data, we use the new way-west method to process standard error. The regression results are shown in **Table 2**. Regression results show that all of the models are very significant.

However the impact that the urbanization rate have on the residential sales area and the residential average selling price in Beijing is not obvious, we take the step-wise regression model method to exclude the unnecessary influence variables (or co-linear variable). As **Table 3**, regression results are as follows.

3.4.3. The Regression Analysis Result

The regression equation is as follows:

$$RASP = 0.907GDP - 0.283AHSA + \varepsilon. \tag{6}$$

And

$$RSA = 0.098GDP + 0.574AHSA + \varepsilon. \tag{7}$$

Table 2. Effectiveness evaluation of Beijing's housing policy.

	Residential sales area	Residential average selling price
	Model one	Model one
GDP	0.032^{**} (0.011)	1.587^{***} (0.222)
UR	1.534^{***} (0.465)	-0.588^{**} (0.233)
AHSA	0.587^{***} (0.151)	-0.063^{***} (0.076)
F	6.590	65.480
R^2	0.528	0.928

Note: *Indicates at the 10% level statistical tests significant; **At the 5%; ***At 1%.

Table 3. Effectiveness evaluation of Beijing's housing policy.

	Residential sales area	Residential average selling price
	Model two	Model two
GDP	0.098^{***} (0.205)	0.907^{***} (0.063)
AHSA	0.574^{***} (0.084)	-0.283^{***} (0.041)
F	2.532	67.219
R^2	0.833	0.898

Note: *Indicates at the 10% level statistical tests significant; **At the 5%; ***At 1%.

First, there is a positive relationship between residential sales area and affordable housing sales area. The coefficient of AHSA is 0.574. It means that increasing 1 unit AHSA, residential sales area will raise 0.574 unit. So the low-income housing security policy doesn't reduce the supply of residential area.

Second, there are two main independences, which are GDP and affordable housing sales area. The coefficient of GDP is 0.907. It means that there is a positive relationship between residential average selling price and GDP. Increasing 1 unit investment of GDP, residential average selling price will raise 0.907 unit. However there is a negative relationship between residential average selling price and affordable housing sales area. Increasing 1 unit affordable housing sales area, residential sales price will reduce 0.283 unit.

Under the model, the independent variables both pass the 1% significance level test. That means dependent variable can be good explained by the independent variable. The model fits better.

After stepwise regression analysis, GDP in model 2 has a significant positive impact on the residential average selling price, which indicates that Beijing's economic development and the increase of income stimulates the increase of residential sales area and average selling price. However the affordable housing sales area have different effect, and once again it verify that the expanding supply of the affordable housing area will not only effectively reduce the residential average selling price, but also will not reduce the residential sales area. Therefore, the affordable housing policy can effectively curb the rise in house prices, and will not affect the steady increase of housing supply. The low-income housing security policy is effective.

4. Conclusions and Policy Recommendations

The empirical analysis shows that the growth of GDP per capita has a significant impact on the increase of housing supply and the housing average selling price. As the per capita GDP is a measure of the wealth of the country, the increase in income and economic development will inevitably bring about the increase in living space and the rise in housing price. The empirical results also show that the low-income housing security policy, which is represented by the affordable housing area, has a significant effect on the suppression of housing price increase in the long run. Statistical analysis of the data shows that the policy is efficient. The construction of affordable housing can increase the supply of residential area and inhibit the rapid rise in housing prices.

However, there are so many factors that may affect the result. This article just studies some of them. In order to explain it better, we also need to continue to increase the appropriate variables. This issue will be explored in future studies. There are some reasons.

First, compared to the growth of urban population in Beijing, which brought about the increase in demand for housing, as well as the rapid rise in the house price, the supply of the affordable housing construction is totally not enough. In Beijing each year there is nearly 500,000-population growth, which has brought a large demand for housing. Secondly, the low-income housing security policy is a welfare policy for vulnerable groups; so the welfare-oriented policy should further meet the low-income people. That means the affordable housing price should be lower. Finally, the affordable housing construction is a long-term project, and is an important part of social security policy. The implementation of the policy must be further strengthened and supervised.

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