

# Currency Oversupply, Land Fiscal Policy and House Price Volatility-Research from the Perspective of Real Options

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**Abstract:** *Commodity housing has both residential and investment attributes, and future price changes are uncertain, so this paper estimates the expected house price volatility based on the real option perspective, using time series data from 2001 to 2018, mainly from investment attributes to study land finance and The impact of currency over promotion on house price fluctuations.*

**Keywords:** Commercial housing; House price volatility; Currency oversold; Land Finance

## 1. Introduction

The 2016 Central Political Work Conference first proposed that "houses are used for housing, not for speculation". Since then, "housing and housing are not speculation" has been running through the real estate regulation in recent years. At the end of 2019, national housing construction and urban and rural work At the meeting, Minister of Housing and Urban-Rural Development Menghui Wang pointed out that under the strong leadership of the Party Central Committee with Comrade President Xi at the core, the Ministry of Housing and Urban-Rural Development proposed that 2020 should focus on stabilizing land prices and stabilizing housing price expectations, maintaining steady and healthy development of the real estate market, and persisting "Rooms do not speculate" positioning.

From a macro perspective, real estate is the mother of the cycle, with ten crises and nine real estates. Both developed and developing countries, real estate plays a vital role in the macro economy (Zhai Naisen, 2019). Each economic boom is mostly related to consumer investment driven by the real estate market. The real estate market can significantly promote economic growth (Wen Jun, 2007, Chen Zhongnuan, 2015), and Shen Yanbing (2016) uses China's provincial panel data from 1998 to 2013 It was found that the impact of real estate investment fluctuations on macroeconomic fluctuations was positive. The fluctuations in real estate investment exacerbated macroeconomic fluctuations. The greater the fluctuations in real estate investment, the greater the impact on macroeconomic fluctuations.

From a meso level, the real estate industry, as a capital-intensive industry, derives its funds mainly from bank credit. The participation and support of the financial market have boosted the prosperity of the real estate market. At the same time, the prosperity of the real estate market has also promoted the development of the financial market. In recent years, the development of the real estate market has made the real estate market a reservoir of currency. Increased, its volatility will also have an increasing impact on the stability

of financial markets (Wu Linlin, 2010).

According to the Survey Group of the Urban Resident Household Asset and Liability Survey Division of the Survey and Statistics Department, the 2019 Urban Resident Household Asset and Liability Survey of China, the average household asset of urban residents is as high as 3.179 million yuan, of which housing accounts for nearly 70%, and the debt ratio is as high as 56.5 %. Mortgage is the main component of household debt, accounting for 75.9%. Therefore, the volatility of house prices not only has a great impact on social and macroeconomic stability and systemic risks, but also on the assets and liabilities of residents. As well as all aspects of life. This article attempts to analyze the impact of currency over-promotion and local land finance on housing price volatility based on China's tax reform .

## 2. Estimation of Volatility

According to the above analysis, real estate has dual attributes of investment and consumption, and real estate prices have certain uncertainties in the future. In order to take this uncertainty into consideration, this article studies the influencing factors of real estate price fluctuations from the perspective of real options.

Definition of real option variables

| Variable name | Real options                            | Variable definitions  |
|---------------|---|---|
| $S(t)$        | Expected price of the underlying asset  | Expected average sales price of residential commercial housing                              |
| $K$           | Execution price of the underlying asset | Average sales price of residential commercial housing                                       |
| $r$           | Risk-free rate                          | One-year fixed deposit benchmark interest rate of the People's Bank of China (Central Bank) |
| $T-t$         | Option Time                             | Option Time   |
| $P$           | Option price                            | Option premiums paid during the period  |

Based on the Python language, the Newton iteration method (first set an initial volatility of 20%, and then establish an iterative relationship: if the option price obtained from the

initial volatility value is higher than the market price, then the initial volatility is reduced by a certain amount ( Because the option price is directly proportional to the volatility), and vice versa, iterates like this; until the calculated option price is getting closer to the real market price, a threshold can be set (for example, if the absolute value of the difference between the two is less than 0.01, they are considered equal) To calculate the volatility in the option pricing formula.

### 3. Empirical analysis

#### 3.1 Empirical model

In this paper, the empirical analysis model of factors influencing real estate price fluctuations is set as follows:

$$\sigma_t = \beta_0 + \beta_1 RM2_t + \beta_2 land_t + \beta_3 RINC_t + \beta_4 RURB_t + \varepsilon_t$$

Among them, RM2 and land are independent variables, RRM2 is the degree of currency over-promotion, and the absolute growth rate of M2 minus the annual growth rate of GDP Value, land is land finance.

#### 3.2 Outcome of Practice

In order to verify the impact of currency over-promotion and land finance on housing price fluctuations, this paper uses OLS regression to estimate the model. The regression results are shown in the table

Outcome of Practice

| $\sigma$            | Land              | RM2              | RINC             | RURB                 | C                  | R2    |
|---------------------|-------------------|------------------|------------------|----------------------|--------------------|-------|
| 0.2318***<br>(5.26) | 0.479**<br>(2.46) | 0.635*<br>(1.96) | 0.635*<br>(1.96) | -0.0337**<br>(-2.71) | 0.163***<br>(4.48) | 0.807 |

Incorporating urban per capital disposable income and urbanization housing needs into the estimation results of the model, the degree of currency over-promotion and the market demanders' attention coefficients are 0.2318 and 0.497 respectively, which is also in line with the conclusion that currency over-promotion has a great influence. Among the control variables, the impact of urban per capital disposable income on house price volatility is significantly positive, and it passed the 10% significance level test, indicating that the greater the change in disposable income, the greater the house price volatility. The second reason is that the increase in urban per capital disposable income and the increase in residents' purchasing power have increased demand for the real estate market, which in turn has an impact on housing price volatility. In terms of urban population, the regression coefficient is -0.0366, and the 5% significance level test is passed, indicating that urbanization has a significant inhibitory effect on housing price fluctuations. It can be understood that with the increase in the urban population, some of them have the demand for house purchases, and the other is the demand for rentals. At the same time, a large number of people with empty house prices have a restraining effect on house price fluctuations.

### 4. Conclusions and Recommendations

The urban per capital disposable income and urbanization and other residential needs are included in the estimation results of the model. At this time, the degree of currency

over-promotion and market demanders' attention coefficients are 0.2318 and 0.497, respectively, which is also in line with the conclusion that the degree of currency over-promotion is large. Among the control variables, the impact of urban per capital disposable income on house price volatility is significantly positive, and it passed the 10% significance level test, indicating that the greater the change in disposable income, the greater the house price volatility. The second reason is that the increase in urban per capital disposable income and the increase in residents' purchasing power have increased demand for the real estate market, which in turn has an impact on housing price volatility. In terms of urban population, the regression coefficient is -0.0366, and the 5% significance level test is passed, indicating that urbanization has a significant inhibitory effect on housing price fluctuations. It can be understood that with the increase in the urban population, some of them have the demand for house purchases, and the other is the demand for rentals. At the same time, a large number of people with empty house prices have a restraining effect on house price fluctuations. Conclusions and recommendations

The explanation of currency oversupply and land supply monopoly (speculative demand, financial attributes) can explain the fluctuation of house prices in the past 20 years. The degree of currency oversupply will significantly affect asset prices. As a high-quality asset that maintains value and increases in value, the real estate market is a capital pool that absorbs oversupply currency. As a result, the local government, as a monopolist in the land market, used its dominant position to obtain most of the "income" of the real estate industry by designing the land finance system. Therefore, land finance also affects housing price volatility. In this regard, this article makes the following recommendations:

First, Maintain financial policy stability. In terms of residential loans, a long-term and stable housing credit financial policy should be implemented to stabilize the expectations of home buyers, support the demand for rigid and improved housing purchases, and curb speculative demand. Second, Monetary policy is sound, maintaining stable house prices. Germany has implemented a stable monetary policy since the beginning of the 21st century. In the past two decades, prices have remained stable, and the growth rate of house prices has been relatively stable. Learn German experience, implement a sound monetary policy, and maintain stable house prices. Third, Control real estate financing and avoid large amounts of capital flowing into the real estate market. Excessive funds chasing real estate will form an asset bubble, control the inflow of funds, and keep house prices stable. Last, Change the housing supply structure and enrich the supply body. In the future, the main body of supply will change from being the main developer to the government, developers, leasing intermediary companies, long-term rental companies, etc.; the form of supply will also be shifted from commercial housing to commercial housing, rental housing, shared property housing and other categories.

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