

Real estate price forecasting based on fundamental analysis

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Abstract. Real estate economy is an important pillar of China's economy, where the real estate prices are the key factors influencing the economic development of real estate. Based on the analysis of real estate price changes, this study digs into the elements of real estate economic fluctuations and predict the factors of housing prices. Based on the evaluations, it will have a positive role for the government, enterprises, individuals to formulate regulation measures, adjust the investment strategy. According to the analysis, real estate prices have varying dramatically owing to various factors, e.g., policies, population and family size, consumer psychological needs, war, social and environmental factors. It is demonstrated by estimation that the prices of real estate can be controlled in a reasonable range by making scientific and reasonable real estate market regulation policy, so as to ensure the security of real estate finance. These results shed light on guiding further exploration of real estate regulation.

Keywords: real estate; policy; fundamental analysis; price forecast.

1. Introduction

Real estate is the main engine of China's economic growth, and the development of the real estate industry plays a key role in the stable development of the national economy [1]. For a family or personal investment, whether it is rigid demand, real estate is also in an irreplaceable position.

The development of real estate in China began in 1980. Before 1980, houses were distributed rather than bought and sold. In 1980, Deng Xiaoping proposed the idea of selling public housing, adjusting rent, and advocating individual building houses and buying houses. For the first time, the house was defined as commodities, and the reform of real estate began. In 1985, CCB first launched the employee purchase mortgage business and in 1990, Shanghai introduced the provident fund system. In early 1992, Deng Xiaoping made a speech on his southern tour, proposing to speed up the reform of the housing system. Since then, many real estate companies were established in Hainan, and the real estate bubble began to emerge. In 1993, Premier Zhu Rongji visited Hainan, and found that the real estate market in Hainan was out of control. He ordered the stop of bank loans, and began the macro-control. A large number of Hainan real estate market closed down. In 1994, the real estate market entered a downturn. Shenzhen rescue in 1995, 1996 Shanghai purchase blue hukou policy, stimulate the real estate market, in 1997 "urban real estate mortgage management measures" allow to purchase commercial housing mortgage.

In 1998 the State Council issued the notice on further deepening the reform of the urban housing system. After that, it speeds up the construction of housing notice clear requirements since the second half of 1998 to stop housing distribution, gradually implement the system of housing allocation monetization, welfare starting from this point, China into the housing commercialization stage in an all-round way. In 1999, the real estate market improved, in 2000, the intermediary sector developed rapidly, 2001 Wenzhou real estate across the country, in 2002 the bidding, provisions on the auction and listing of state-owned land use rights, higher land prices, rising too fast in 2003, the central bank launched a second suite for the first time down payment, interest rates to curb prices rising too fast, combined with the influence of SARS, prices cool. In 2004, the country reduced land supply, land prices further rose, housing prices rose, 2008 national 13, lower the second house down payment ratio, real estate regulation relaxed, the United States financial crisis, China 4 trillion rescue, capital into the real estate, real estate began to rise, in 2009, housing prices appeared to soar. In 2010, Wenzhou strictly managed the loan for the second house, and the down payment should not be less than 40%. The purchase restriction policy was effectively implemented. In 2011, the loan for the third house

was suspended. In 2013, the Chinese government continued to implement the policies of purchase restrictions and loan restrictions, and the ups and downs coexist.

Housing prices in first-tier cities soared and soared, and "ghost cities" and "ghost buildings" were frequently seen in third-tier and fourth-tier cities. Restricted in 2014, open two-child policy in 2015, house prices rose, 2016 continue to push to inventory policy, many restricted cities reduce down payment ratio, housing subsidies, countries continue to implement loose monetary policy, 2017 regulation upgrade, restrictions on loans gradually upgrade, restricted into the main means, urban differentiation, three- or four-line city growth obviously, a second-tier cities growth. In 2018 and 2019, adhere to the housing not speculation, rent and main tone, credit funds tightened sharply, real estate sales decline, affected by the epidemic in 2020. With the three red line policy, bigger to the impact on the real estate market, the government tone "housing not speculation", "stable prices" and other regulations, urban housing market differentiation is obvious, rise and fall.

Real estate price is an important symbol of the trend of land industry and a vane of China's economic development. Forecasting and research on real estate price can help the government to play a macro-control role, so as to guide the sound development of China's economy. Meanwhile, predicting the real estate price is also an important link for enterprises to conduct feasibility analysis, investment and decision. On this basis, China's real estate development the national policies, monetary law and population growth, people's consumption habits, consumer psychology and so on the real estate prices plays a great role, at the same time, prices also affected by irresistible factors (natural disasters, war, etc.), historical factors, urban security conditions. At present, China's urbanization rate is only in 53.7% stage, distance to 75% of urban development maturity, there are still about 20 years development prospect [2]. In this case, the way to meet the demand of life, and avoid rising prices bubble excessive accumulation, ensure the steady development of real estate economy, to maintain China's financial system stability and security remains a critical issue.

This paper will analyze the factors affecting real estate prices, absorbing the experience of other countries, seize the key link, feasible policies, and measures to provide practical value. To be specific, this paper will start from the real estate price change law to study the transmission mechanism of real estate price change. The rest of this paper is organized as follows. The second stage will study the real estate market regulation policies, individual housing consumers, war, society, environment and other factors affecting the change of real estate prices. Later, this study will discuss the reason of German real estate market stability. Afterwards, the reasearch will discuss how to use various regulation policies to ensure the stable development of real estate price.

2. Real estate market regulation policies affect real estate prices

2.1 The impact of fiscal and tax policies on real estate prices

In 2022, China's real estate fiscal and tax policies will be divided into two aspects according to the different collection objects. It is the seller shall pay the taxes and fees, including the business tax, urban maintenance and construction tax, education to add, land value added tax, stamp tax, income tax, etc. The second is the tax paid by the buyer, mainly deed tax, stamp duty. The taxes of the real estate development company, the tax policy changes affect the development cost of the real estate enterprise, thus affecting the real estate price. The tax policy changes paid by the buyer will affect the consumer purchase cost, then affect the consumer purchase demand, and further affect the real estate price. In general, if the government adopt tight fiscal and tax policies, increase the real estate industry tax, consumer purchase costs increase, will greatly affect the consumer purchase enthusiasm, on the contrary, if the government adopt loose tax policies, reduce the real estate tax rates, which will reduce the development cost of real estate development enterprises, and the consumer purchase taxes, will increase the purchase demand, vice cetera. The transmission mechanism of fiscal and taxation policy on real estate prices as shown. 1.

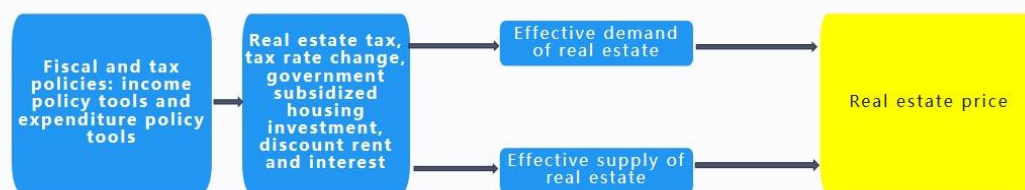


Fig. 1 Fiscal and tax policy revenue policy tools and expenditure policy tools

2.2 Monetary policy affects real estate prices

In the real estate development stage, real estate enterprises need a large amount of loans to buy land and development and construction. Accumulation fund of commercial Banks and institutions housing loan ratio and interest rate policy adjustment have bigger influence on the town residents' housing consumption capacity [3].

In regulating the real estate price of monetary policy tools including interest rates, money supply and the proportion of down payment. First of all, the interest rates affect real estate prices. On the one hand, changes in interest rates affect supply in the housing market. The change of interest rate policies and interest rate level, will affect the real estate development enterprise cost of capital, hence influencing the availability of real estate development companies. Real estate development costs grow with rising interest rates, which results in a reduction in the supply of available properties.

On the other hand, changes in interest rates will have an impact on the market's actual demand for properties. China's real estate market generally through the mortgage purchase housing individual consumers. The change of interest rate level will lead to the corresponding change in mortgage interest rate and the change of consumers' ability to pay, thus affecting the purchase demand of individual consumers. If the interest rate rises, the total repayment of individual consumers increases, and the consumers' ability to pay is relatively reduced, which leads to the decline in consumer housing demand. Moreover, the money supply affects property prices. Commercial banks are able to expand their lending portfolios when the central bank adopts an expansionary monetary policy, which raises the money supply. real estate developers to obtain bank loans, and the interest rate decline will reduce the financing cost, real estate development investment scale. However, Real estate consumer get mortgage loans, lower interest rates will reduce the purchase cost, to increase the effective demand for real estate, will expand the effective demand and supply of real estate prices under the power of supply and demand will reach a new balance. On the other hand, when the central bank tight monetary policy, the money supply decreases correspondingly and interest rates rise. In this case, the loan capacity of real estate development enterprises becomes difficult, the investment scale of real estate development will decrease, the real estate market effectively reduce the supply. Besides, the purchase cost of individual consumers increases, the individual housing consumption ability is limited, reduce the effective demand of the real estate market, thus affecting the price of real estate [3]. The transmission mechanism of monetary policy affecting real estate prices can be shown in the Fig. 2.



Fig. 2 Transmission mechanism of monetary policy.

2.3 Land policy affects real estate prices

The size of land supply and land price have an important impact on the production behavior of real estate development enterprises. As China adopts the tax sharing system, and most of the tax revenue is returned to home, the local finance cannot make ends meet, so the land finance is generally adopted to make up for the gap between income and expenditure, which makes the local governments have the incentive to make the land prices rise [4]. In China, the ownership of land belongs the state and the collective, which controls the land use plan and the reserve system. Therefore, the government can make direct provisions on the land transfer scale and land supply structure.

Land policy participation in the real estate market regulation can be divided into two categories, one is quantitative tools, including land planning and land use plan; the other is price tools including transfer mode, price control, rent control, etc. Primarily, land supply affects real estate prices. The amount of available land affects the number of real estate businesses to create. The type of land use planning dictates the structure of the development goods created by real estate businesses. In order to pull up the housing price, the government will first reduce the amount of land supply as given in Ref. [5]. Total supply of land, therefore, affect the real estate market supply and supply structure, ultimately affect the real estate prices and supply and demand balance.

In addition, land prices affect real estate prices. China land transfer implements land lease system, real estate development enterprises want to obtain land must pay land transfer fee. Although the land acquisition has adopted the market-oriented bidding, auction and hanging system, land prices largely depend on the government's land use planning and land reserve system. That is a government monopoly to a certain extent, affected the land supply and land price. As a part of the real estate price, the rise and fall of land price will eventually affect the real estate price [3]. The transmission mechanism of the land policy affecting the real estate price can be expressed in the Fig. 3.

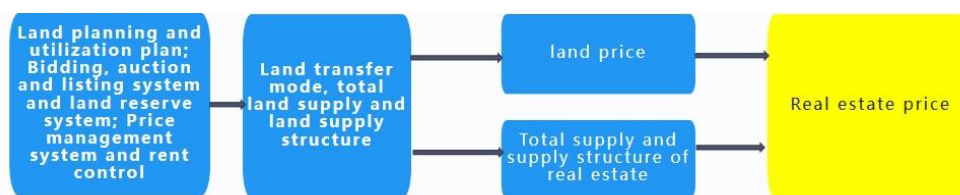


Fig. 3 Transmission mechanism of land policy.

3. The impact of individual housing consumers on real estate prices

3.1 Population size and household size affect property prices

Generally, in the areas with high population density, the demand increases accordingly, and the relative lack of real estate supply increases the property prices, To improve business, services, entertainment, tourism in areas such as real estate prices. Under the premise of a certain number of population, the family size tends to be smaller. Owing to the increase of residential units, the increase of residential area is required. It will also lead to the increase of real estate demand, thus affecting the higher real estate prices [6]. The transmission mechanism of population and family size can be expressed as illustrated in Fig. 4.



Fig. 4 Transmission mechanism of population and family size.

3.2 Consumer psychological demand affects real estate prices

In terms of population quality, with the developed social civilization and the high cultural level of workers, they must pay attention to the quality of life, and have higher requirements for living and working conditions and their surrounding environment, which will also increase the demand for real estate, thus affecting the higher real estate prices [6]. The transmission mechanism of consumer psychological demand affecting the real estate price can be expressed as depicted in Fig. 5.



Fig. 5 Transmission mechanism of consumer psychological demand.

4. Unmajeure factors, social, environmental and other factors affect real estate prices

4.1 The impact of the war on real estate prices

Taking the "Russia-Ukraine conflict" in 2022 as an example, the world turmoil is vividly reflected in finance, energy, commodities and other aspects. In real estate, many markets also spread the news of price increases. On the same day that the conflict escalated, global stock markets plunged on February 24, with the three major US stock indexes falling more than 2 percent at one point on the day, while Russian stocks fell 42.46 percent. Accordingly, the prices of energy, gold and grain began to rise sharply, and the sharp turbulence in the global market shows that the global economy is highly sensitive to geopolitical conflicts. As a war zone in Ukraine, the local housing prices have not changed much. There are still a large number of luxury houses listed, and the price varies from 20,000 yuan to 40,000 yuan/square meter, not much different from the pre-war price. However, the housing market didn't crash. and it is impossible for someone to go to the war zone to buy a house. Besides, the conflict between Russia and Ukraine has hurt other property markets, such as Britain and India. In 2021, the United States and European prices surged to record highs. The outbreak of the conflict between Russia and Ukraine, causing rising global commodity prices, could further stimulate housing prices. British experts say the UK property market will face rapidly rising inflation, successive interest rate rates and costs of living crisis due to the impact of rising fuel and energy prices. Property brokerage credal said 60-65 percent of Indian cement makers' business is directly or indirectly related to crude oil prices, with prices expected to rise in the coming months. Canada predicts that due to the geopolitical conflict, or inflation and interest rates, residential mortgage costs may increase. The transmission mechanism of real estate price influence can be expressed as presented in Fig. 6.

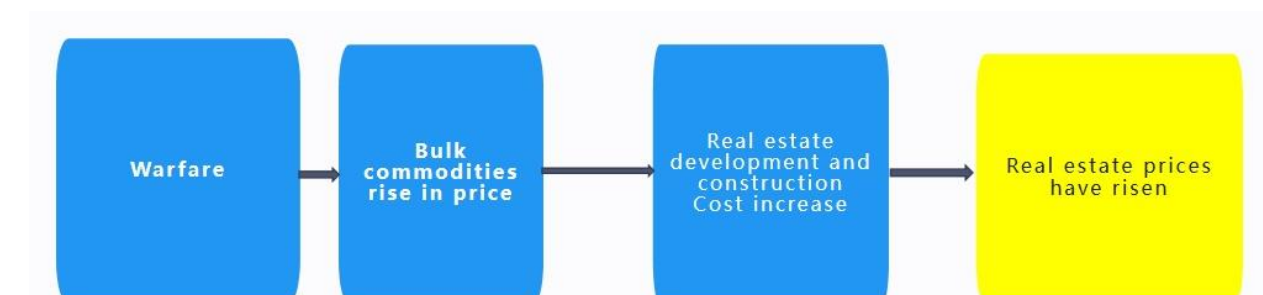


Fig. 6 Transmission mechanism of war.

4.2 Social factors affect real estate prices

The factors affecting real estate prices mainly include politics, social security, urbanization development level, etc. As for political stability and situation, they are conducive to enhancing investors' confidence in buying real estate and real estate prices stabilize or rising. On the contrary, political instability and social unrest will inevitably lead to low property prices. With regard to public security conditions, if all kinds of crimes often occur in the real estate is located, people's lives and property lack protection, the real estate prices will be low. Last but not least, the higher the level of urbanization, the higher the population concentration in urban areas, resulting in an increasing demand for real estate, leading to the rise of real estate prices [6]. Social factors affecting the real estate price transmission mechanism is shown in Fig. 7.



Fig. 7 Transmission mechanism of Social factors.

4.3 Environmental factors affect real estate prices

Environmental factors mainly include natural environmental conditions, municipal infrastructure and water supply and drainage facilities, public building supporting facilities conditions, etc. The degree of the habitable affects the natural environment of real estate prices. In cities, whether the air is polluted and the water is clean largely affect real estate prices. The complement of municipal infrastructure influences the real estate price. Municipal infrastructure includes transportation facilities, post and telecommunications facilities, and water supply and drainage facilities, which will affect the production and operation of local enterprises and residents' living conditions, thus impact on real estate prices. The public facilities also affect real estate price. Supporting facilities of public buildings include commercial service facilities, cultural and educational facilities, sports and entertainment facilities, and medical and health facilities. The better these conditions, the higher local property prices.[6] The real estate price transmission mechanism affected by environmental factors can be expressed as demonstrated in Fig. 8.



Fig. 8 Transmission mechanism of Environmental factors.

5. The German property market remains stable with the experience

Compared with the sudden high and low property prices in other countries, the successful experience of the German property market for many years is worth thinking about and learning from us. German cities have high level, infrastructure, job opportunities, social security, medical treatment and other conditions, Germans have enough choice of residence to flood into big cities, therefore, urbanization determines the size of Germany's real estate market. Germany has a strict "rental law", very attention to protect the weak party in the contract, the landlord must not raise the rent, or will

receive a huge fine. So, renting a house in Germany is no less secure than buying a house. Sound laws further promote the widespread leasing behavior in the German housing market, which plays a balanced role in stabilizing the price level of the entire property market [7].

6. Empirical suggestions

To sum up, the real estate market regulation policies, population number and family size, consumer psychological needs, war, society, environment and other factors all have different impacts on the real estate prices. If the development of the real estate market exceeds the range of economic development, the domestic economy will be affected by the real estate market, then the real estate bubble will be collapsed, and the consequences will be unimaginable. In order to ensure the healthy development of the real estate market to formulate a scientific and reasonable [8], the real estate market regulation policy to curb excessively rising property prices.

Many initiatives need to be implemented, e.g., break the monopoly of the real estate market, standardize the behavior of real estate developers, strengthen information openness and transparency, severely crack down on all kinds of illegal activities in the sales link of commercial housing, reduce the use of false information to create the illusion of rising housing prices, and guide residents to buy houses rationally. It is necessary for government to reform the management system for land transfer revenue and improve the implementation of government-subsidized housing policies. To deepen financial reform, further standardize the relationship between central and local distribution and fiscal powers, and solve the problem of the problem of local governments' too much on "land finance" [9]. Further study ought to focus on improving the housing security system for low - and middle-income groups, hire purchase, speed up the development of long-term rental housing market, promote the construction of low-income housing. On this basis, it can effectively solve the housing problems of young people and new citizens, and strive to ensure that all people have access to housing [10]. 2022 real estate regulation under the implementation of the no speculation positioning, real estate regulation will better meet the reasonable housing needs of home buyers, actively promote the internal tax of low-income housing, real estate investment and sales will remain stable [11]. It is believed that with the continuous development and progress of the society, the real estate market will surely develop healthily and steadily.

7. Limitations & Prospect

China's real estate market is with the rapid development of China's macro economy and urbanization and developed, development time is short, fast. However, as China's economic development has entered a stage of high-quality development and the urbanization rate and home ownership rate have greatly improved, China's housing development is bound to enter a new stage of development. The commercialization of the Chinese housing market after 20 years of development has made great progress, greatly satisfy the housing supply and demand in total, the real estate market by large development has entered into the phase of housing stock, according to the People's Bank of China in April 2020, China's urban households home-ownership rate of 96%. In addition, National Bureau of Statistics data show that in 2019 China's urban residents per capita housing area of 39.8 square meters. Therefore, one needs to face up to our country housing investment growth decline, the contradiction between supply and demand of the emergence of a new real estate market, such as housing ChengTaoLv needs to improve, many new and housing stock, especially the quality of the old residential area, the environment, convenience and so on cannot meet the requirements of residents of housing quality [11]. These are not addressed in this paper and the limitations of the study.

8. Summary

To sum up, this paper discusses the factors that affects the real estate price from three angles. Specifically, market regulation and control policy, consumer and external social and environmental

factors affect real estate prices. According to the evaluation results, market regulation policies, consumers, external social, environmental and other factors all affect the real estate price to varying degrees. In addition, this article also discusses the experience of German real estate prices stable. Moreover, it puts forward that formulating scientific and reasonable real estate market control policies, guiding residents to purchase houses rationally, accelerating the development of long-term rental housing market, Promoting the construction of affordable housing is an important measure to keep the steady development of China's real estate prices. Nevertheless, this paper draws the above conclusion by studying the change law of the real estate market since 1980. In 2022, the development of China's real estate market will enter a new stage. These conclusions are bound to have certain limitations in the face of the new development stage. In the future, with the continuous development and progress of the society, the real estate market will surely develop healthily and stably. Overall, these results provide some guidance for real estate price changes.

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