Effects of Short-Term International Capital Flows on China's Real Estate Prices

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Abstract

Nowadays, the real estate prices in China have shown a continuous upward trend. Prices in the first-tier cities such as the north and the Guangzhou-Shenzhen are getting higher and higher, and ordinary people are becoming increasingly unaffordable. High housing prices have not only put pressure on people's lives but also have had many adverse effects on China's economic development. Many scholars at home and abroad think that the continuous rise of house prices is closely related to the flow of international short-term capital. International short-term capital when entering the Chinese market, because of its speculative easy to create a bubble, bringing huge risks. Through theoretical and empirical research, this paper analyzes whether the international short-term capital flows have an impact on house prices. Finally, it concludes that the inflow of international short-term funds to the real estate market in China has a positive impact on the real estate market in China, and to a certain extent, has promoted the real estate prices. The entry and exit of hot money have a great volatility effect on the real estate market, which has a great impact on the long-term, healthy and stable development of China's real estate market.

Keywords

International Short-Term Capital Flows, Real Estate Prices, Co-Integration Test, VAR Model

1. Introduction

1.1. Research Background

At the present day of economic globalization, the scope of international capital flow is constantly expanding, and its active presence is visible in all markets. Among them, the international short-term capital is particularly noticeable.

Since the 1990s, with the frequent financial crises, international short-term capitals have played an important role in many market crises. There is also great risk behind their super-liquidity and speculation.

Since the reform and opening up, China has maintained a steady growth rate of economic growth and the policy of encouraging foreign investment has also been implemented and implemented. Since 2000, short-term international capital has frequently moved in and out of China and its scale has risen rapidly, affecting China's economic market and economic and industrial development. As a pillar industry of national economy, the real estate industry has always been the focus of international short-term capital flows because of its high profits, strong speculative and so on. Since 2003, the development of China's real estate market has been in full swing. Housing prices peaked in 2007. In 2008, the US subprime mortgage crisis swept the world, and the real estate market in China entered a temporary downturn.

China's Bureau of Statistics published 2008-2009 China's 70 major cities housing prices show that in 2008 year-on-year housing prices showed a downward trend year-on-year, and in December 2008 dropped to −0.5%, real estate sales shrunk, more discount discounts appear. And from 2009 to 2010 and then resume the upward trend, and was an explosive rise. In the China Statistical Yearbook released by the National Bureau of Statistics of China, the added value of the real estate industry in 2009 and 2010 for the national economy were 1865.49 billion Yuan and 227.820 billion Yuan respectively, which has been showing a balanced trend of growth since 2011. It can be seen that international short-term capital has an impact on the Chinese real estate market. On the other hand, China's regulatory control system is not perfect. International short-term capitals can often bypass our control and enter China's capital market by various means and conduct speculation.

Nowadays, the real estate prices in China have shown a continuous upward trend. Prices in the first-tier cities such as the north and the Guangzhou-Shenzhen are getting higher and higher, and ordinary people are becoming increasingly unaffordable. High housing prices have not only put pressure on people's lives but also have had many adverse effects on China's economic development. Many scholars at home and abroad think that the continuous rise of house prices is closely related to the flow of international short-term capital. International short-term capital when entering the Chinese market, because of its speculative easy to create a bubble, bringing huge risks. Through theoretical and empirical research, this paper analyzes whether international short-term capital flows have an impact on housing prices and draws conclusions based on empirical analysis, which is of great significance to the healthy operation of China's economy.

1.2. Literature Review

Concerning the research of international capital flow on the real estate price, there is a general positive correlation between scholars in the international

community and the related theories can be divided into two kinds. The first is that capital inflows reduce interest rates, resulting in higher real estate prices, such as Bouvatier (2006) [1] and Lartey (2009) [2]. Another view is that increased demand leads to rising house prices, which in turn leads to increased capital inflows such as Laibson and Mollerstrom (2010) [3].

Domestic scholars conducted qualitative research on the impact of international short-term capital inflows on housing prices. MengXiaohong and Li Chunji (2006) [4] analyzed the impact mechanism of international capital flows on real estate prices in China using the terms and conditions of trade terms, and concluded that in the long run, fluctuations in international capital flows will lead to fluctuations in real estate prices. Zhu Mengnan and Liu Lin (2010) [5] suggest that the inflow of international short-term capital will lead to the appreciation of the RMB exchange rate and the expected market appreciation of the RMB, which will lead to the rise of stock prices and housing prices. The appreciation of the RMB and the rising prices of housing prices will act against international short-term capital flows, Promote capital inflows.

Empirical research, Song Bo, Gao Bo (2007) [6] using Granger causality test method to take the data of 1998-2006, China's real estate prices and international capital flows were tested empirically. The results show that in the long run, inflow of foreign capital has an impact on housing prices in China. In the short term, rising real estate prices attract foreign inflows. Using VAR models, Zhu Mengnan and Liu Lin (2010) [5] empirically analyzed the dynamic relationship between China's short-term international capital flows, exchange rates, stock prices and house prices since the reform in 2005. The results show that the international short-term capital flows will lead to rising house prices. Yan Tao (2013) [7] collected Shandong's data from the first quarter of 2002 to the second quarter of 2010 and found that the interaction between international capital flows and house prices is more obvious. Domestic house prices are more sensitive to international capital flows. Tan Xiaofen and Lin Tianyu (2013) [8] based on the VAR model Granger causality test and cointegration test, the analysis found that the "liquidity effect" triggered by hot money inflow can affect real estate prices in the short term.

Summarizing previous studies, the standard finds that at present, most of the previous studies on the relationship between international capital flows and real estate prices are general qualitative analysis. Later, scholars gradually began to adopt the means of empirical analysis. In order to further verify the impact of hot money on real estate prices in China, this paper uses the latest data of the real estate market, using VAR model to test it empirically.

This article is divided into four parts altogether. The first part is an introduction, which summarizes the research background, research significance and related literatures of the article. The second part is the qualitative analysis of the impact of international short-term capital on housing prices. Including the current situation and characteristics of international short-term capital in China,

the motivation of international short-term capital to enter the real estate industry in China, and the impact of international short-term capital on real estate prices. The third part is the empirical analysis of the first part of the calculation of international short-term capital, and then through cointegration test and VAR model analysis of international short-term capital flows and the relationship between real estate market prices. The fourth part is the conclusion.

2. The Qualitative Analysis of the Impact of International Short Term Capital Flows on China's Real Estate Prices

The definition of international short-term capital has always had many claims at home and abroad, the most famous of which is the theory put forward by economic historian Charles P. Kindelberg. His definition suggests that short-term international capital flows mean that investors intend to change their international movement in the short term, even if this moment is not yet established, but this will still be the case in the future. At this stage, the definition of short-term international capital recognized by academic circles as Kinderberg suggests that his definition is relatively scientific to summarize the connotation of international short-term capital. This article chooses Kinderberg's theory to define international short-term capital [9].

2.1. The Current Situation of International Short term Capital in China

In the early 1990s, a large number of international capital flowed into China. In 1992, China's market economy reform accelerated. In 1994, the exchange rate parity system was implemented. In 1996, the current account of the RMB was fully convertible. The outbreak of the financial crisis at the end of the last century has greatly affected the RMB. The pressure of devaluation of the RMB increased, resulting in a large outflow of capital. After the economic crisis, RMB appreciation is expected to rise, but also makes a lot of capital inflows. Nowadays, as the largest developing country, China has been attracting foreign investment with various preferential policies and increasing international short-term capital inflows [10].

2.1.1. Flow in the Form of Current Account

Trade refers to the trade balance in the balance of payments on the border of a country. The main methods include fake exports, fake trade and cross-border related party transactions. Among them, the fake export refers to the company that owns the foreign exchange right, selling this right to a legal person that has no foreign exchange right and can not conduct import and export activities, so that the international short-term capital can be hidden out of the country. False trade means that domestic and foreign enterprises have reached a certain tacit understanding and agreement, fabricated false contracts, made false reports on the amount of import and export goods and conducted speculative operations so as to achieve speculative goals. Cross-border related party transactions refer to

the related party transactions through the transfer of resources, obligations or services of a behavior. Domestic and foreign affiliates reached a tacit agreement, the two sides joint operation, foreign companies can easily be sent to overseas capital overseas. Since 2005, the trade surplus has risen rapidly. Except for the increase of import and export trade accompanied by the development of the country, it is not ruled out that some of them are short-term international capitals that will enter China through trade channels.

In the BOP, the income items include the employee remuneration and the return on investment, both of which are most likely to be the channels for international short-term capital inflows. The income item is composed of employee's remuneration and investment income. Employee compensation refers to the income earned by a PRC employee who is working overseas within one year and the salary and benefits (also within one year) of expatriates working in China. The volatility of the remuneration of the general staff is small, relatively stable, but changes in individual income will bring short-term capital flows. Investment income refers to the profits of the enterprises under the direct investment projects, the return on investment in securities, and the reinvested earnings. Now that the Chinese government adopts an open policy to encourage enterprises to go global, the scale of overseas investment is constantly expanding and naturally accompanies the flow of short-term international capital.

The transfer of current account mainly through overseas remittances, compensation and gratuitous donations. It accumulates in multiple accounts and accumulates in multiple accounts to enter the domestic financial assets market through the black market or bank. After making a profit in the domestic market, he still remits money to foreign countries on his own behalf. This is also a channel that international short-term capital flows can not be ignored.

The remuneration of workers in China in the past decade showed a steady growth trend. At the same time, investment returns before 2007 showed a steady trend with a predominance of capital outflows. After 2007, there was a big change in investment returns with a predominance of capital inflows. The growth of projects with current transfers and investment gains is decreasing. It can be seen that international capital flowed into China after 2007, of which short-term international capital accounted for a large part.

2.1.2. Flow in the Form of Capital Projects

In China, foreign direct investment can be opened in the commercial bank opened to retain, you can sell. China's encouragement policy also gives a good environment for foreign direct investment. International short-term capital will be able to enter through this channel. Specifically, capital inflows will be retained in the form of principal of the new company. After the revaluation of the RMB, the company will write-offs and capital withdrawals, eventually leaving the country. This appears to be a lawful act that yields a great deal of immediate benefit. This approach can also be said to be profitable through RMB currency appreciation [11].

Foreign debt refers to the international short-term capital through short-term government and foreign loans to enter the territory of a country. With the advent of accession to the WTO and the opening up of a new international landscape, the scale of China's foreign debt has grown continuously and has now reached a certain scale. China's foreign-invested enterprises are not yet well controlled by their policies. Therefore, short-term international capital can easily enter the domestic capital market in this way, not only failing to facilitate the reproduction of enterprises, but exacerbating speculative arbitrage.

As mentioned earlier, the flow of trade and capital projects and, of course, the existence of international short-term capital entering China through illegal means. These international short-term capital are smuggled into China through private financial channels and money. It is a big test for regulators in China to bring or take foreign currency into or out of a country through non-governmental financial institutions or to carry the currency directly to and from the border. As shown in Table 1 for the Foreign debt situation for 2001-2014, we can see that the growth of short-term foreign debts is rapid.

2.2. International Short-Term Capital in the Form of Real Estate in China

In recent years, a large number of international short-term capital in the real estate market exists, there are several existing forms.

Direct investment refers to the international short-term capital in China directly set up real estate companies to invest in real estate, such as Singapore

Table 1. Foreign debt situation for 2001-2014(Unit: billions of dollars).

Years	Foreign debt balance	Trade credit	Registration of foreign debt balance	Short-term foreign debt balance	Short-term foreign debt ratio
2001	203.20	54.8	148.50	83.77	41.21%
2002	202.63	57.6	145.03	87.08	42.97%
2003	219.36	62.3	157.06	102.77	46.85%
2004	262.99	80.9	182.09	138.71	52.74%
2005	296.54	106.3	190.25	171.64	57.88%
2006	338.59	119.6	218.99	199.23	58.84%
2007	389.22	148.7	240.52	235.68	60.55%
2008	390.16	129.6	260.56	226.28	58.00%
2009	428.65	161.7	266.95	259.26	60.48%
2010	548.94	211.2	337.74	375.70	68.44%
2011	695.00	249.2	445.80	500.90	72.07%
2012	736.99	291.5	445.49	540.93	73.4%
2013	863.17	336.5	526.67	676.63	78.39%
2014	895.46	334.4	561.06	683.36	76.32%

Data sources: National Bureau of Statistics.

CapitaLand, or by way of mergers and acquisitions in the Chinese real estate industry. Such as Morgan Stanley at the end of 2004 costing 500 million yuan acquisition of Shanghai Jin Lin Tiandi Court, then acquired the Shanghai World Trade Center and so on.

In direct investment, the acquisition of bulk and uncompleted flats is becoming more and more popular because it makes the investment and withdrawal of international short-term capital more convenient. After the acquisition of bulk property, international short-term capital will often wait for the appreciation of the RMB to the expected exchange rate target, the sale for arbitrage. If the RMB appreciation does not meet the expectation, the international short-term capital can also benefit from the domestic real estate market, and the investment risk is relatively small. "Unfinished House" refers to the land that has been handled, planning procedures, but after the project started, due to the inability of developers to continue to invest in construction or into debt disputes, down more than one year real estate projects. For the international short-term capital, "uncompleted flats" low investment costs, and will be able to make huge profits in the short term, it is also increasingly becoming an important inflow of international short-term capital in China's real estate.

The form of foreign debt is also one of the important ways for international short-term capital to enter China's real estate industry. For example, the way in which Chinese real estate companies list overseas, such as Shimao Real Estate and Greentown China, which were listed in Hong Kong in 2006. Or by selling its own shares to overseas businesses or individuals, introducing international capital.

To enter China's real estate industry through overseas financing means to issue loans to small and medium-sized real estate developers. In recent years, China has continuously raised the threshold for credit for real estate development and stepped up its control over the scale of credit. Real estate enterprises mainly rely on commercial bank loans for financing. This has forced many small and medium enterprises in the real estate industry to urgently need other ways of financing to develop their operations. Short-term international short-term capital equity investment will be for the domestic small and medium-sized real estate business to provide short-term funds, which flows into China, into the real estate market. In fact, more than small and medium-sized real estate enterprises are involved. According to the survey, in the fourth quarter of 2013, more than 20 real estate enterprises, including Wanda, Xuhui, Greenland, Agile, China Shipping and Evergrande, all conducted different ways of financing, The total funds raised about 22 billion US dollars.

2.3. Motivation Analysis of International Short-Term Capital Entering Chinese Real Estate

By combining the existing literature and data analysis, this paper finds that the motivation of short-term capital entering Chinese real estate mainly includes the

following points.

The real estate market is highly speculative. The development of the real estate industry is accelerating and the price of housing is rising and rising again. Although the new policies are continuously promulgated by the state and implemented to control the excessive growth of house prices, the real estate market still has little to gain. Unbalanced supply and demand and unstable housing prices are prone to economic bubbles, and the real estate industry has huge capital capacity and is well suited for large capital inflows. Once the short-term capital spotted the opportunity to enter and exit the real estate market, you can make huge profits. It is the speculative nature of the real estate industry, so that the international short-term massive influx of real estate to get the benefits [12].

Strong real estate market liquidity. The real estate market has been continuously developing over the years, and the real estate industry system has been continuously reforming and innovating. Today's real estate market has been able to achieve a substantial degree of freedom of circulation, that is, trading more convenient, more open information. There is no doubt that the speculative nature of international short-term capital is unimaginable. When it enters a country, it tends to flow preferentially to highly liquid markets such as the real estate market, making it more profitable.

Finally, the real estate industry is a high-profit industry. Especially in the first-tier cities of China, areas with rapid growth, large population, scarce land and good investment lots can often achieve extraordinary returns. According to the "Research Series of the Development Research Center of the State Council (2012)" issued by the State Council Development Research Center, the gross profit margin of China's real estate industry was about 20% around 2003. However, by 2007, the average annual profit margin reached 30%, which has exceeded the overall level of industry. The report also pointed out that some well-known domestic real estate developers gross margin close to even more than 50%, far higher than Japan and the United States real estate development companies. Despite the declining real estate profits in recent years, considerable gains can still be achieved in the face of huge transaction volumes.

2.4. Theoretical Analysis of the Impact of International Short-Term Capital on Chinese Real Estate Prices

The continuous influx of hot money has brought a great impact on the real estate market. This article analyzes the impact of international short-term capital on the real estate prices in China from three aspects: money supply, demand and cost.

Changes in real estate prices is an example of changes in asset prices, there are many factors that affect the price of assets, the surface is caused by the imbalance between supply and demand of assets, in fact, with the amount of the currency are also inseparable [9].

Monetary theory, $MS = k \times MB$, that is, money supply = currency multiplier

base currency.

There are two more formulas in the Friedman-Schwarz model:

$$MS = k \times DL + K \times E \times FR \tag{1}$$

$$\Delta MS = k \times \Delta DL + K \times E \times \Delta FR \tag{2}$$

where k is the money multiplier, DL is the amount of domestic inward credit, E is the exchange rate, and FR is the foreign exchange reserve.

Through the formula we can see that in the course of economic liberalization and trade, the money supply is affected by the foreign exchange reserves. Since 1994, China began to implement the system of forced exchange settlement and exchange, so after the short-term capital inflow, no matter what form it will eventually be converted into RMB. This change in the amount of money will eventually affect asset prices. As a pillar of the national economy, the real estate industry, as an important component of the real economy, is bound to be greatly affected.

Needless to say, real estate prices are determined by real estate demand and supply. However, there is supply rigidity in the real estate market. Due to the fact that the newly started houses can not be completed in a short time and the number of newly completed real estate is not large compared with the total amount of real estate, the supply of real estate is relatively stable. As a result, the short-term real estate prices can be mainly affected by real estate demand.

Figure 1 real estate demand curve. The curve represents the relationship between the demand for real estate and its price, the horizontal axis Q represents the real estate demand, the vertical axis P represents the real estate price. Assuming other conditions do not change, when the real estate prices decline, real estate demand rises, as shown in Figure 1(a) below. Assume that other conditions also change, taking the change of consumer income as an example. When the real estate price drops, the demand will no longer move up and down the curve, but the whole demand curve will shift. By observing Figure 1(b), when D0 is the initial expression curve, curve D0 shifts upward to curve D1 with the increase of consumer's income level. Similarly, when the income level of consumers declines, Left lower position to the curve D2 position [13].
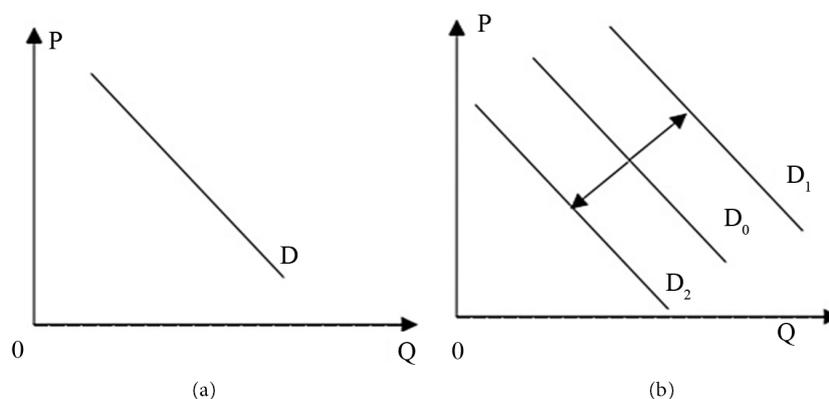

Figure 1. Real estate demand curve.

There are many influencing factors of real estate demand, such as the level of income of consumers, the level of renting of substitutes, the state purchase policy and the investment environment of the real estate market. These factors affect real estate demand by affecting the final price of real estate.

The cost-push doctrine argues that the impact on asset prices rising rapidly to generate inflation is not money supply or aggregate social demand, but rising product costs. For example, the inflow of international short-term capital and related industries combined. Take the real estate industry as an example, the real estate market needs a large amount of labor force. The continuous increase of workers' wages leads to the increase of unit cost and the rise of real estate prices. This price rise is bound to some extent counter-productive and wage levels. When workers ask for a raise in wages again, prices will continue to rise, creating a cycle of price spiraling. So, by raising costs affect the real estate prices [14].

3. An Empirical Analysis of the Impact of International Short-Term Capital Flows on China's Real Estate Prices

According to the theoretical analysis of the previous chapters, we know that the flow of international short-term capital in China has a huge impact on the real estate market and plays a role in the real estate price changes. In recent years, China's housing prices showed a continuing upward trend, which is with the inflow of international short-term capital have a certain relationship it, the following will be verified through empirical research.

3.1. Data

Due to the availability of data, the following formula is used to obtain data: international short-term capital = increase in foreign exchange reserves − net foreign direct investment − current account surplus.

The result is positive capital inflow and negative capital outflow. The increase in foreign exchange reserves is calculated by subtracting the "foreign exchange reserve at the end of the period" from the current account surplus minus the "period-end import", and the net foreign direct investment is the "net foreign direct investment in use" "This article selects the hundred real estate price index of China as the real estate price index value, given the availability of data and monthly data to better reflect the trend of being covered by the annual data. The sample data for this paper is monthly data from December 2010 to December 2012 (Table 2), a total of 244 data, the source for the Cathay Pacific database. HM represents the scale of international capital flows, P represents real estate prices.

3.2. Model Construction and Empirical Test

Take a vector autoregression (VAR) model. The VAR model constructs a model by using each endogenous variable in the system as a function of the lagged values of all endogenous variables in the system. Its greatest feature is that there is

Table 2. International Short-term Capital Measurement Results (Unit: 100 million US dollars).

Month	HM	Month	HM	Month	HM
2010.12	528.9	2011.12	−684.6	2012. 12	−175.2
2011.01	686.2	2012.01	−58.6	2013. 01	611.1
2011.02	597.9	2012.02	354.8	2013. 02	−381.0
2011.03	409.6	2012.03	289.6	2013. 03	356.9
2011.04	814.9	2012.04	−216.3	2013. 04	652.4
2011.05	−20.0	2012.05	−330.1	2013. 05	−493.6
2011.06	−35.6	2012.06	−1202.2	2013. 06	−528.2
2011.07	93.6	2012.07	−97.3	2013. 07	238.9
2011.08	−90.8	2012.08	−329.3	2013. 08	−316.6
2011.09	−844.5	2012.09	−17.9	2013. 09	855.7
2011.10	466.5	2012.10	−235.8	2013. 10	343.9
2011.11	−763.2	2012.11	−380.5	2013. 11	105.8
2013.12	−58.6	2014.12	−652.7	2015. 12	−1802.4
2014.01	55.8	2015.01	−1035.5		
2014.02	685.4	2015.02	−810.9		
2014.03	183.18	2015.03	−869.4		
2014.04	35.3	2015.04	−256.4		
2014.05	−394.7	2015.05	−1058.2		
2014.06	−366.6	2015.06	−784.3		
2014.07	−820.7	2015.07	−951.9		
2014.08	−544.8	2015.08	−1628.8		
2014.09	−1210.8	2015.09	−1131.6		
2014.10	−887.2	2015.10	−590.2		
2014.11	−424.5	2015.11	−1516.8		

Data sources: National Bureau of Statistics.

no endogenous variables and exogenous variables, but all variables are seen as endogenous variables, the initial coefficient of the model does not impose any constraints. In this paper, the Granger Granger causality test and impulse response function method are used to interpret the internal relations between the two from the measurement results based on the vector autoregression (VAR) model.

$$P = \alpha_0 + \sum_{i=1}^{k} \alpha_i HM_i + \mu_t, t = 1, 2, 3, \cdots, T \qquad (3)$$

where is the coefficient of the equation, which indicates the degree of influence of international short-term capital on real estate prices; k is the order of lag of autoregression. P represents the price of a hundred cities in China and HM

represents the international short-term capital flows.

3.2.1. Unit Root Test

The first step in the analysis of time series is to determine whether each time series is stable and to judge the impact of international short-term capital flows on China's real estate market. Column stability is usually tested by the unit root test. In this paper, we use the unit root test of Augmented Dickey-Fuller (ADF) to test the stationarity of time series P and HM. The specific test results are as follows.

It is found from Table 3 that the ADF test values of P and HM are greater than the critical values of each significance level, so both the price index P and the hot money HM are non-stationary sequences. After the first order difference, the ADF test values of the two sequences are far less than the critical level of each significant level and are both stationary sequences. Therefore, both P and HM are I (1) sequences. The two can further co-integration analysis.

3.2.2. Cointegration Test Analysis

The cointegration test is used to find the equilibrium relationship for two or more non-equilibrium variables. In practice, most of the economic and financial data are non-stationary time series, but the linear combination of these time series may be a stationary series. This paper adopts the Johansen cointegration test, which is a VAR-based method to test the regression coefficients. It is a good method for multivariate cointegration test. Its essence is the VAR model obtained after the cointegration constraint on the unconstrained VAR model. Through the Eviews software, we compare the LR statistic, FPE (final prediction error), SC criterion, AIC criterion and HQ (Hannan-Quinn) data under different lag periods, and select the smallest lag period value at the same time. Based on this, the VAR model lag period of cointegration test is 5 (Table 4, Table 5).

From Table 5, we can see that 16.45126 > 12.32090 and 15.31920 > 11.22480, the statistic is greater than the 5% significant level of the critical value, so there is cointegration relationship.

3.2.3. Granger Causality Test

Cointegration test results show that: there is a long-term equilibrium relationship or co-integration relationship between international short-term capital and China's real estate 100 city price index. However, whether or not there is a causal relationship between them remains unclear, so we further test the Granger

Table 3. ADF test results.

	ADF	1%	5%	10%
HM	−1.595327	−2.604746	−1.946447	−1.613238
P	1.495495	−2.605442	−1.946549	−1.613181
d(HM)	−8.746403	−2.605442	−1.946549	−1.613181
d(P)	−6.988245	−2.605442	−1.946549	−1.613181

Table 4. Hysteresis determination.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−821.2489	NA	1.06e+11	31.06599	31.14035	31.09459
1	−756.5868	122.0039	1.08e+10	28.77686	28.99991*	28.86263
2	−750.5833	10.87429	1.00e+10	28.70126	29.07301	28.84421*
3	−747.7573	4.905434	1.05e+10	28.74556	29.26601	28.94570
4	−744.3120	5.720560	1.07e+10	28.76649	29.43565	29.02381
5	−737.0440	11.51908*	9.55e+09*	28.64317*	29.46103	28.95768
6	−733.2596	5.712274	9.71e+09	28.65131	29.61786	29.02300
7	−730.3262	4.206412	1.02e+10	28.69155	29.80681	29.12043
8	−727.6364	3.653986	1.09e+10	28.74100	30.00496	29.22706

*indicates lag order selected by the criterion.

Table 5. Cointegration test results.

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.225331	16.45126	12.32090	0.0096
At most 1	0.018691	1.132064	4.129906	0.3346
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.225331	15.31920	11.22480	0.0091
At most 1	0.018691	1.132064	4.129906	0.3346

causality. The essence of the Granger causality test is to find out to what extent the dependent variable P in the VAR model can be explained by the past independent variable HM. We have adopted the Granger causality test based on the VAR model with the following results.

As can be seen from Table 6, the Granger reason that P is not HM is true, that is, P is not Granger reason of HM. The Granger reason why HM is not P does not hold, so HM is P Granger reason. That is, international short-term capital flow is the Granger reason for the change of the price index of one hundred cities in China, which is consistent with the theoretical analysis.
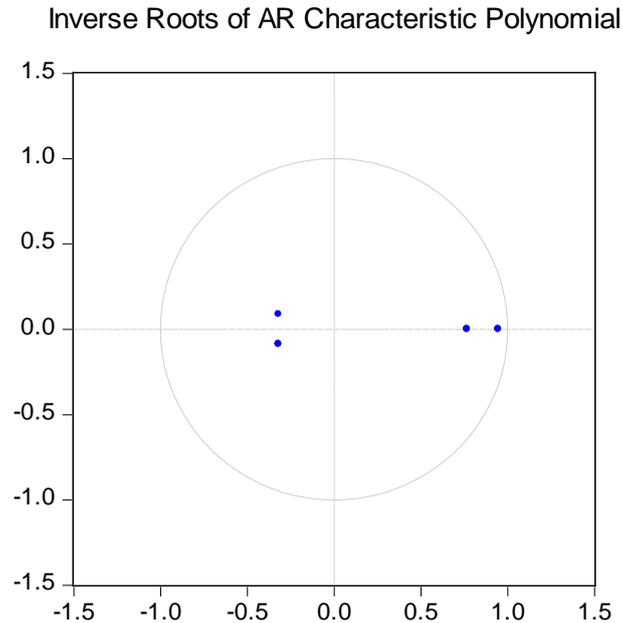
3.2.4. Impulse Response Function
First, the stability of the VAR model test, the chart is as follows.

As can be seen from Figure 2, all the unit roots of the VAR model fall within the unit circle, and the VAR model is stable.

The impulse response function's idea is to describe the impact of an endogenous variable's impact on other endogenous variables over time. In this paper,

Table 6. Granger test results.

Lags: 5			
Null Hypothesis:	Obs	F-Statistic	Prob.
P does not Granger Cause HM	56	1.20576	0.3219
HM does not Granger Cause P		2.64435	0.0353

Inverse Roots of AR Characteristic Polynomial

Figure 2. VAR stability test results.

impulse response method which depends on VAR model is used to give a positive unit size impact on international short-term capital HM, and an impulse response function graph about real estate price P is obtained.

As can be seen from the lower left-hand panel of **Figure 3**, the impact of international short-term capital flows (HM) on China's real estate prices (P) starts to approach zero, and then the force increases slowly with larger fluctuations in periods 2 - 3, And it still did not reach the peak in the 10th issue, indicating that the international short-term capital flows have a permanent effect on the real estate prices in one hundred cities in China. As can be seen from the top right of **Figure 3**, HM has obvious ups and downs in the first second period, the third fourth period has less ups and downs, the back gradually tends to be stable. This shows that real estate prices in China have an impact on international short-term capital flows.

3.3. Results and Analysis

According to the empirical results of this paper, the analysis shows that there is a long-term equilibrium relationship between international short-term capital and real estate prices. The Granger causality test shows that the inflow of international short-term capital does promote the real estate market in China. The hot
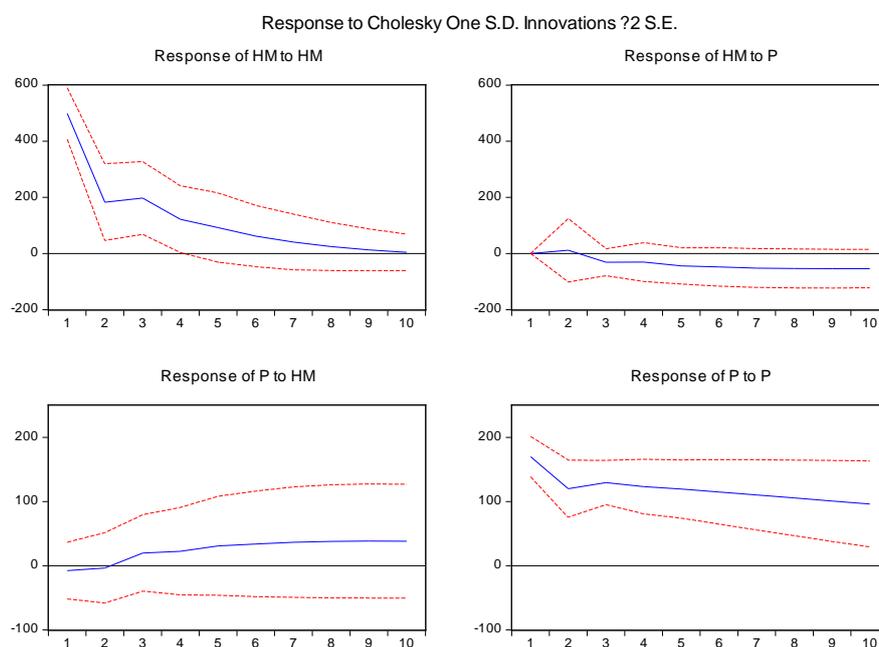
Response to Cholesky One S.D. Innovations ?2 S.E.

Figure 3. Impulse response function diagram.

money effect does exist in China's real estate market. There is a causal relationship between the two. Impulse response function analysis of the results available, the international short-term capital of China's real estate prices have a lasting effect. In summary, this paper argues that the inflow of international short-term funds into China's real estate market has a positive impact on the real estate market in China, which has, to some extent, promoted the real estate prices. The entry and exit of hot money has led to the volatility effect in the real estate market, which has a great impact on the long-term, healthy and stable development of the real estate market in China.

4. Conclusions

As economic globalization and financial globalization today, the momentum of international short-term capital flows is overwhelming. However, due to its own characteristics, speculative property and big profits, the real estate industry has become the key target of international short-term capital entering and exiting, which is the target of the international hot money speculation. As a pillar industry of the national economy, the healthy development of the real estate market is related to the happy life of the people. The price of real estate directly affects the basic needs of ordinary people. Real estate prices are often influenced by international capital. The flow of international short-term capital affects house prices by affecting the money supply, demand and costs.

The empirical analysis of this paper shows that the flow of international short-term capital does have a positive and lasting impact on housing prices in China, which, to a certain extent, drives up the real estate prices and affects the healthy development of the real estate market. All this shows that while introducing an

open door policy, China should supervise the entry and exit of hot money and improve the real estate market system so as to ensure a sound and rapid development of the real estate market. At the same time, empirical results show that though international capital flows have some impact on real estate prices, the impact is not as large as we think, indicating that there are other factors that affect the real estate prices. This is the limitation of this article.

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