Housing Prices, Financing Costs and Corporate Performance

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Abstract

This paper selects panel data of 35 major cities in China from 2003 to 2016, and studies the impact mechanism of housing price fluctuations on corporate performance from the perspective of corporate financing costs. The study found that the rise in housing prices has a certain negative effect on corporate performance. For every 1% increase in housing prices, ROE decreases by 3.45% and ROA decreases by 1.21%. Among them, financing costs as an impact mechanism, To a significant intermediary role, that is, housing price fluctuations have an impact on corporate performance by affecting corporate financing costs; in addition, the rise in housing prices has different impacts on enterprises with different equity properties, and has a greater impact on the financing costs of non-state-owned enterprises. Therefore, it is recommended to further formulate a series of "house-related policies" to effectively control the excessive growth of housing prices; strengthen the guidance of corporate investment behavior; at the same time, pay more attention to non-state-owned enterprises' investment behavior in the real estate industry.

Keywords

Housing prices, financing costs, corporate performance.

1. INTRODUCTION

Since the reform of the housing system in 1998, the real estate industry has become increasingly prominent in China's national economy and has become one of the four pillar industries supporting the "building" of the Chinese economy. However, in recent years, China's real estate prices have risen rapidly. The average sales price of commercial housing has soared from 3864 yuan / square meter in 2007 to 7,900 yuan / square meter in 2017, which has doubled in 11 years. The government and scholars expect that the problem of high housing prices will remain prominent.

Housing prices have an impact on the macroeconomic situation through various channels. The impact of housing prices on economic growth has been one of the hot topics of research. It is generally believed that the added value of the real estate industry is a component of GDP, and at the same time, real estate sales and prices will be transmitted to the investment in the real estate industry, driving the investment and output value of other related industries to rise (Davis and Heathcote, 2005; Li Yujie et al., 2010). Cho (2006) pointed out that before the financial crisis, the real estate industry in Korea and its added value of construction industry were an important reason for the country's high GDP growth. Luo et al. (2018) paid attention to the regional differences in the impact of housing price fluctuations on economic growth, and believed that rising house prices would have a positive effect on the regional economy, with house prices rising by 1% and regional economic growth by 0.213%.

In recent studies, more and more scholars have pointed out the restraining effect of rising housing prices on economic growth, with particular attention paid to the negative impact of

rising housing prices on the micro-level on the real economy. Miao and Wang (2012) and Miao and Wang (2013) constructed a multi-sectoral endogenous growth model, pointing out the redistribution effect of bubbles. They assume that all companies have financing constraints and that asset bubbles exist in only one of the production sectors. The enterprises in the production sector without bubbles are attracted by the asset bubble, and will invest limited funds in the production sectors with bubbles, so their investment in the main business is suppressed. If sectors with bubbles do not have technology spillover effects, such as the real estate industry, this shift in investment direction will have a negative impact on economic growth. Wang Wenchun et al. (2014) studied the relationship between house prices and the innovation of industrial enterprises, and believed that the faster the house price rises, the lower the innovation tendency of local enterprises. Wang et al. (2018) found that high house prices inhibited the overall investment scale of private enterprises. By constructing a model for the growth of the real economy, Peng et al. (2017) pointed out that when the house price is higher than a certain threshold, it will have a crowding-out effect on the real economy.

Further, different scholars have cut in from different angles, and the research on housing prices and corporate performance has been deepened and detailed, which has provided us with many useful lessons and help. Chen et al. (2018) studied the impact of housing prices on corporate performance from the perspective of corporate labor costs. Studies have shown that rising housing prices will push up labor costs and reduce profitability of industrial enterprises. Sun et al. (2018) discovered the restraining effect of house price fluctuations on regional industrial performance through research on household asset allocation.

It is not difficult to find that the existing research focuses on the investigation of rising housing prices and corporate investment behavior, but there is less research on the impact mechanism of housing prices and corporate performance. Therefore, the marginal contribution of this article is to study the impact of rising housing prices on corporate performance from a micro perspective, and empirically verify the restraining effect of rising housing prices on corporate performance. Secondly, this article starts from the internal mechanism of corporate financing costs, provides a new perspective and ideas for studying the impact mechanism of China's housing price on corporate performance, reveals the relationship between the real estate market, the capital market and the real economy, and provides a macro perspective It is of practical significance to regulate the capital factor market and promote long-term stable economic growth.

2. THEORETICAL MECHANISMS AND HYPOTHESES

For a long time, economic growth is not only the core issue of macroeconomics research, but also one of the important contents of the entire economics research. It is generally believed that the rise in housing prices in a country will stimulate demand for various commodities such as steel, construction, furniture, home appliances, and machinery, and promote the development of real estate-related industries. At the same time, the wealth effect brought by the rise in housing prices is conducive to the promotion of consumption to a certain extent, which in turn drives the country's economic growth. The neoclassical economic growth theory (Solow, 1956) states that the growth of per capita output (Y / L) comes from per capita capital stock and technological progress, but only technological progress can lead to permanent growth of per capita output. Hsieh and Klenow (2010) believe that the determinants of income disparity have been basically identified in the past two decades of research, pointing out that productivity growth is the most important part of economic growth. In the dynamic model of endogenous growth, long-term growth is sustainable because of the assumption of positive externalities, without the need for exogenous technological shocks. Based on the model of endogenous economic growth, Saint-Paul (1992), Grossman and Yanagawa (1993), and King and Ferguson

(1993) point out that speculative bubbles have a negative impact on productive investment and are therefore not conducive to economic growth. The main reason is that the speculative bubble squeezed savings out of productive investment, which led to a slowdown in economic growth.

Under the framework of long-term growth theory, the return on capital is the most critical determinant of economic growth, and the direct expression of return on capital on micro-enterprises is the performance of the company. Chen Binkai et al. (2018) conducted a detailed and empirical test on the theoretical logic of the negative correlation between housing prices and corporate performance by examining the important mechanism of wage levels.

The "crowding out effect" of the rise in housing prices on the real economy has led to a mismatch of resources, especially credit resources, which has curbed the efficiency of economic growth. At the same time, the rise in housing prices will inhibit the company's innovation investment, and the decrease in the main industry's innovation investment will have a negative impact on economic growth. Below we analyze the "crowding effect" of rising house prices on corporate efficiency from the perspective of capital factor costs.

The specific impact mechanism of rising house prices on inhibiting corporate efficiency can be summarized as follows: High house prices have promoted the rise of corporate fixed asset prices, leading to the rise of corporate collateral values. Under the constraints of financial resources, especially in the period of slowing economic growth, financial institutions are more inclined to relax real estate loan conditions based on risk and expected return on capital. Through the wealth effect and mortgage effect, the company's external financing capacity is improved and financing constraints Mitigation, which in turn reduced financing costs. However, the large inflow of credit funds from the real estate sector crowded out the credit resources of the real economy sector, resulting in a reduction in corporate real economy consumption and investment and reduced corporate efficiency.

At the same time, under the effect of the Tobin Q effect and the asset-liability effect, rising real estate prices eased financing constraints, reduced financing costs, and helped companies expand their investment scale (Chaney, Sraer, and Thesmar, 2012). Therefore, the continuous rise in housing prices has reduced the financing cost of enterprises, reduced the opportunity cost of investment for enterprises, and made investment more convenient, so they have a strong incentive to expand investment scale to obtain profits. The profit-driven hypothesis based on the theory of industrial organization, that is, if the profit level of an industry exceeds the average level of society, new enterprises will enter the industry. Miao and Wang (2014) conducted a theoretical demonstration of the possibility of non-real estate companies entering the real estate industry. They established a multi-department model of asset bubbles and found that the emergence of bubbles in different sectors will lead to the effect of resource redistribution. If the bubbles appear in sectors with externalities, the emergence of bubbles will attract more resources to externalities. The sector has a positive impact on economic growth, and this conclusion is also reflected in the models of Martin and Ventura (2012), Miao and Wang (2012), and Miao and Wang (2013). The difference is that Martin and Ventura (2012), Miao and Wang (2012), and Miao and Wang (2013) all assume that all enterprises have financing constraints and that asset bubbles exist only in one of the production sectors. The enterprises in the production sector without bubbles are attracted by the asset bubble, and will invest limited funds in the production sectors with bubbles, so their investment in the main business is suppressed. If sectors with bubbles do not have technology spillover effects, such as the real estate industry, this shift in investment direction will have a negative impact on economic growth. In other words, in order to chase the high profits of the real estate industry, while actively raising funds to enter the real estate industry, the company will reduce the original main investment projects. Therefore, the increase in investment scale caused by the decline in

financing costs is largely reflected by the entry of non-real estate companies into the real estate industry. Based on the above analysis, the theoretical hypotheses one and two are proposed:

Hypothesis 1: Rising housing prices have an inhibitory effect on corporate efficiency, that is, an increase in the growth rate of housing prices will cause a decline in corporate performance.

Hypothesis 2: The channel through which housing prices affect economic growth is the reduction of corporate financing costs. Housing prices continue to rise. Through wealth effects and mortgage effects, it eases financing constraints and reduces corporate financing costs.

In view of China's unique economic system and incomplete development of financial markets, the nature of corporate ownership makes the impact of corporate financing costs on the relationship between housing prices and economic growth more complicated. Compared with non-state-owned enterprises, due to the existence of implicit government guarantees, state-owned enterprises cannot pay interest even if the current debt ratio is high. Considering their future financing convenience and low bankruptcy risk, they are less subject to financing constraints and have Debt financing advantages. On the other hand, the convenience of equity financing will affect the choice of corporate financing methods, and then affect the level of corporate financing costs. Lǒǒf (2004) found that the convenience of equity financing will reduce the degree to which companies rely on debt financing. Compared with non-state-owned enterprises, China's state-owned enterprises face less obstacles in equity financing and have the advantage of equity financing. This advantage makes state-owned enterprises not overly rely on debt financing (Xiao Zezhong et al., 2008; Chang et al., 2014). Therefore, considering the differences in financing between state-owned and non-state-owned enterprises, this article believes that the impact of rising housing prices on the cost of debt financing of state-owned and non-state-owned enterprises may also differ significantly. Based on this, the third theoretical hypothesis is proposed:

Hypothesis 3: The difference between the financing costs of state-owned enterprises and non-state-owned enterprises has a difference in the impact of housing prices on economic growth, and the reduction in financing costs of non-state-owned enterprises has a greater effect on housing prices.

3. DATA AND VARIABLES

3.1. Model Setting and Variable Selection

3.1.1 Benchmark regression model

The purpose of this study is to verify the relationship between housing prices and corporate performance. Based on the above basic hypotheses, the following benchmark regression econometric model is constructed.

$$\text{profit}_{ict} = \alpha_0 + \alpha_1 * \text{HP}_{ct} + \beta * X + d_{citycode} + d_{industry} + \varepsilon \qquad (1)$$

According to the economic growth theory, the return on capital is positively related to the economic growth rate. The higher the return on capital, the faster the economic growth. Therefore, this article selects the representative indicators of corporate profitability profit (ROE (return on net assets) and ROA (return on total assets)) to build a model (1) to study the impact of housing prices on corporate performance at the micro-enterprise level. The subscript c represents City, t for year, and i for business. The main explanatory variable is the log lnhp of the average sales price of residential commercial housing in year t in city c, ie.

X is the control variable. Refer to relevant researches such as Chen et al. (2018), B.lu et al. (2019), Sun et al. (2018) and Yu et al. (2019), and select variables such as asset-liability ratio,

scale, solvency and corporate growth As a control variable. Among them, the size is obtained by the logarithm of the total number of employees of enterprise i. The solvency indicates the ratio of non-current assets to total assets. The company grows into operating income (year-on-year growth rate).

In addition, and respectively represent city dummy variables and industry dummy variables, which are used to control the fixed effects between different cities and different industries.

3.1.2 Research on Impact Mechanism

According to Hypothesis 2, to study the intermediate effect of financing costs on housing prices and economic growth, a further model is set up as follows:

$$\text{FC}_{it} = \alpha_0 + \alpha_1 * HP_{ct} + \beta * X + d_{citycode} + d_{industry} + \varepsilon \tag{2}$$

$$\text{profit}_{ict} = \alpha_0 + \alpha_1 * \text{FC}_{it} + \beta * X + d_{citycode} + d_{industry} + \varepsilon \tag{3}$$

Among them, FC is the variable of corporate financing cost, which is defined as the total annual financial expenses / liabilities. Model (2) aims to study the impact of housing prices on corporate financing costs, while model (3) studies the relationship between financing costs and corporate profits.

3.2. Data Sources

This article takes listed companies with Shanghai and Shenzhen stock exchanges registered in 35 major cities as research objects. The data used is mainly from the data of the 35 major cities, WIND database, CEIC database and Guotai'an database of the National Bureau of Statistics' official website from 2003 to 2016. Since the excessive increase in housing prices began in 2003, and the update of some research data ended in 2016, the research period of this article is from 2003 to 2016.

At the same time, according to the research needs of this paper, referring to the experience of Zeng (2012), Bing et al. (2019), the data were removed as follows: First, the real estate industry, construction industry, financial industry, "agriculture, forestry, animal husbandry" , Fisheries "," electricity, heat, gas and water production and supply "," mining "and" transportation, warehousing and postal industry "listed companies were eliminated; secondly, ST listings that had appeared for 3 consecutive years were excluded Companies; finally, remove critical missing data such as ROE (return on equity). Further, the micro-enterprise data after elimination is matched with the macro-region data, and finally 12,474 sample data of 891 sample companies are obtained. The statistical description of each variable is shown in the following table.

4. EMPIRICAL INSPECTION

4.1. Basic Regression Results

According to model (1), the basic regression results are shown in Table 2. Among them, the explained variable in column (2) is the result of ROE estimation of the return on assets, which shows that the housing price is significantly negatively correlated with ROE, and for every 1% increase in housing price, ROE decreases by 3.45%, which meets the basic assumptions. The result in column (3) shows that the relationship between housing prices and ROA is still negative. For every 1% increase in housing prices, ROA decreases by 1.21%. In addition, since the results of the Hausman test show that the random effect model is rejected, the research in this paper mainly uses the fixed effect model. In order to control multi-dimensional fixed effects

at the same time, the reghdfe command is used to control regional fixed effects and industry fixed effects.

Table 1. Statistical description of the variable

	Variable name	Approach	Mean	Min	Max
Explained variable	ROE	Roe (%)	8.72	-7988.85	2013.87
	ROA	Roa (%)	6.95	-6481.93	544.39
Explanation variable	HP	Logarithm of average selling price of commercial housing	6.66	2.94	8.34
intermediary variable	FC	Total annual financial expenses / liabilities	0.0083	-2.45	14.79
control variable	Lev	Assets and liabilities (%)	48.88	0.75	14271.78
	Size	Logarithm of total employees	7.41	1.10	12.44
	Repayment	Non-current assets / total assets	39.57	0	95.33
	Growth	Operating income (year-on-year growth rate)	25.41	-100	7123.45

Among other control variables, the size of the enterprise has a positive effect on the performance of the enterprise, which fully shows that the development of the enterprise requires a certain scale, and the realization of economies of scale depends on a certain level of scale. At the same time, corporate performance is affected by corporate growth, and the orderly development of corporate growth capabilities ensures better and faster development of corporate performance. The ability to pay debts is negatively related to corporate performance, and the proportion of corporate non-current assets affects the level of corporate net profit. It is not consistent with foreign studies. The empirical results show that the leverage ratio is negatively related to corporate performance. The possible reason is that China's market economy system is not yet perfect. The characteristics of endogenous financing of listed companies, the imperfect corporate bankruptcy system and the imperfect manager selection mechanism all lead to a negative correlation between corporate debt ratios and corporate performance.

Table 2. Results of the impact of housing prices on economic growth

	(1)	(2) roe	(3)roa
HP	-2.855748*** (0.8810)	-3.450918*** (0.5659)	-1.212999*** (0.1551)
Lev		-0.4856143*** (0.1722)	-0.072062*** (0.0232)
SIZE		2.840576** (1.4462)	0.1995389 (0.1514)
Repayment		-0.2691674*** (0.0813)	-0.0728434*** (0.0051)
Growth		0.0152918** (0.0064)	0.005528*** (0.001702)
Regional fixed	fixed	fixed	fixed
Industry fixed	fixed	fixed	fixed
_cons	27.95222*** (0.2123)	41.51389*** (5.9850)	19.64386*** (1.3331)
N	11200	10478	10551
Adj R2	0.025	0.0156	0.1251
F	10.51	10.84	62.53

Note: *, **, *** indicate significant levels of significance of 10%, 5%, and 1%, respectively, and the standard error in brackets is robust.

4.2. Inspection of the Internal Mechanism

As mentioned earlier, the increase in housing prices reduces the financing constraints and reduces financing costs, which has a "crowding out" effect on the real economy, which in turn affects corporate performance and inhibits economic growth. The empirical research in this section aims to verify the second hypothesis, namely, the intermediate mechanism effect of financing costs.

4.2.1 The impact of rising housing prices on corporate financing costs

The results of the research on housing prices and corporate financing costs are shown in Table 3 (1). Rising housing prices will reduce corporate financing costs. The two have a significantly negative correlation at the level of 1%. In particular, every 1% increase in housing prices, Corporate financing costs will fall by 0.009%, in line with theoretical expectations. It shows that after the housing price rises, the value of real estate held by the company rises, the value of mortgage assets rises, and the financing cost decreases accordingly, which enhances the company's external financing capacity.

Table 3. Intermediate mechanism of housing prices affecting economic growth-financing costs

Explained variable	FC (1)	ROE (2)	ROA (3)
HP	-0.0086062*** (0.0009)		
FC		44.48584*** (13.5165)	12.53929 (2.7168)
Lev	0.0004252*** (0.0001)	-0.5217394 (0.1834309)	-0.0753716 (0.0243)
Size	0.0034803*** (0.0007)	2.515333* (1.4356)	0.0573305 (0.1422)
Repayment	0.0007089*** (0.0000)	-0.297122*** (0.0870)	-0.0804919 (0.0054)
Growth	0.0000127* (7.05e-06)	0.0150961*** (0.0064)	0.0054273 (0.0017)
Regional fixed	fixed	fixed	fixed
Industry fixed	fixed	fixed	fixed
_cons	-0.0109313*** (0.0076)	23.13668 (5.4256)	12.90484 (0.7692)
N	10551	10478	10551
Adj R2	0.1239	0.0161	0.1269
F	108.71	4.19	56.61

Note: *, **, *** indicate significant levels of significance of 10%, 5%, and 1%, respectively, and the standard error in brackets is robust.

4.2.2 The impact of financing costs on corporate performance

Consistent with the foregoing, this section also selects the ROE and ROA of the enterprise as the measure of corporate performance, and studies the relationship between financing costs and corporate performance. The empirical results are shown in Tables 4 (2) and (3). Corporate financing costs are positively correlated with ROE and ROA. That is, the lower the corporate financing cost, the lower the return on net assets of the enterprise, and the return on total assets of the enterprise. The "crowding out" effect of the reduction of financing costs on the real

economy is obvious. For every 1% reduction in financing costs, the return on net assets of the enterprise decreases by 44.49%, and the return on total assets decreases by 12.54%. As mentioned earlier, the decline in corporate financing costs has led to more funds entering the bubble sector, including real estate, which has reduced the number of original main investment projects and curbed the development of the real economy.

4.3. Differences in the Nature of Equity

In order to test the hypothesis 3, this section divides all sample enterprises into state-owned enterprises and non-state-owned enterprises according to the nature of the company's equity, and returns to the sub-samples to study the difference in the impact of housing prices on the financing costs of different equity enterprises. The results are shown in Table 6. The regression results of the sub-samples are all significant, which proves the robustness of the full-sample model to a certain extent. At the same time, it is not difficult to see that the rise in housing prices has a greater impact on the financing costs of non-state-owned enterprises. For every 1% increase in housing prices, the financing cost of non-state-owned enterprises will decrease by 0.01334%, which is nearly five times higher than the impact on state-owned enterprises. The possible reason for this difference is that the state-owned enterprises themselves face less financing constraints, so the impact of housing price fluctuations on their financing costs is weak. Secondly, state-owned enterprises are subject to more supervision due to the nature of their ownership, and the barriers to entry into the real estate industry are higher than non-state-owned enterprises.

Table 4. Impact of housing prices on the financing costs of state-owned and non-state-owned enterprises

	State-owned enterprise	Non-state-owned enterprises
HP	-0.0024929***	-0.0133435***
	(0.0005)	(0.0015)
Lev	0.0004515***	0.0003809**
	(0.0000)	(0.0002)
Size	-0.0011648***	0.0065571***
	(0.0003)	(0.0009)
Repayment	0.0003343***	0.0009631***
	(0.0000)	(0.0001)
Growth	-2.44e-07	0.0000216
	(2.26e-06)	(0.0000)
Regional fixed	fixed	fixed
Industry fixed	fixed	fixed
_cons	0.0039415	-0.116197
	(0.0040)	(0.0115)
N	4447	6104
Adj R2	0.2451	0.1246
F	99.48	81.64

Note: *, **, *** indicate significant levels of significance of 10%, 5%, and 1%, respectively, and the standard error in brackets is robust.

5. CONCLUSIONS AND RECOMMENDATIONS

This article cuts through the cost of capital factors, using micro data from 891 listed companies in 35 major cities in China from 2003 to 2016, to study the impact of rising housing prices on corporate performance, and draws the following conclusions: 1. Housing prices are inhibiting corporate performance. For every 1% increase in housing prices, ROE decreases by

3.45%, and the return on total assets decreases by 1.21%. The rise in housing prices has a significantly negative correlation with corporate performance; 2. Financing costs have played a significant intermediary role as a mechanism of influence Role, that is, housing price fluctuations have an inhibitory effect on corporate performance by affecting corporate financing costs; 3. There are differences in the impact of different equity nature of enterprises, and rising housing prices have a greater impact on financing costs of non-state-owned enterprises. %, the financing cost of non-state-owned enterprises was reduced by 0.0133%.

Based on the empirical analysis of housing prices, financing costs, and corporate performance in this article, it is not difficult to find imbalances and inadequacy in the use of capital factors between the real estate market, the capital market, and the real economy. The rise in house prices has played a certain restraining role, but the phenomenon of "de-reliance to reality" of corporate investment is still significant. Therefore, the specific suggestions are as follows: First, in terms of policy formulation, in response to the negative impact of the current excessively fast-growing housing prices on economic growth, policy makers need to further adopt a series of "house-related" policies to effectively control the excessively rapid growth of housing prices; secondly, In terms of corporate investment guidance, enterprises are encouraged to increase investment in main industries, increase innovation subsidies, and effectively provide modern financial resources to support the real economy with the effective supply of innovation resources promoted by the capital market. Finally, non-state-owned enterprises are financed based on rising house prices. The cost impact is more significant. The decline in financing costs may lead to more companies entering the real estate industry, seeking speculative profits, and thus weakening the main industry investment. Therefore, more attention should be paid to the investment behavior of non-state-owned enterprises in the real estate sector.

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