

# Research on the Influence of Housing Prices on the Economic Performance of Chinese Real Enterprises

Xing Lin

College of International Education, South China Agricultural University, Guangdong, China

2605206543@qq.com

**Abstract.** According to the Report of the 20th National Congress of the Communist Party of China, with importance of developing China's real economy has become increasingly prominent, the economic development should focus on the real economy. Moreover, the various impacts brought by housing price changes in recent years are also intertwined with the sustained and superior economic development in China. With this context in mind, this paper uses panel data of housing prices and real enterprise performance in 30 major Chinese provinces and cities from 2005 to 2020—aside from Hong Kong, Macao, Taiwan, and Xizang—to empirically test the relationship between housing prices and the economic performance of real enterprises in China. The findings indicate that there is a nonlinear link between housing prices and real firms' economic performance and that excessively high housing prices are detrimental to real companies' ability to function economically. Further investigation employing heterogeneity analysis reveals that the limitation of exorbitant housing prices has a greater impact on entity companies in China's west and center.

**Keywords:** Housing Price; Economic Performance of Entity Enterprises.

## 1. Introduction

In addition to being the main driver of national wealth creation, the real economy is also a key component of national prosperity, which is essential to the steady growth of both the national economy and society. As the foundation of a country's sustainable economic development and healthy social operation, the real economy also profoundly affects various aspects such as the virtual economy, which is an imperative part of economic development that cannot be ignored [1]. Hence, the development of China's entity enterprises is related to the lifeblood of China's economy with a key role in achieving sustainable and high-quality development in China. To steadily improve the development of entity enterprises, we should not only rely on the timely reform and continuous upgrading of enterprises themselves, but also pay attention to the key factors affecting the economic performance of entity enterprises. Previously, many scholars have studied the factors that may affect the economic performance of real enterprises. For example, He Fan and Liu Hongxia (2019) proposed that the digital transformation of the economy will significantly promote the economic performance of real enterprises. According to Huang Caiyu (2023), government subsidies, R&D expenditures, and ownership concentration will all have an impact on the economic performance of real enterprises. In addition, this paper argues that changes in housing prices also make a difference in the development of entities.

Since the reform and opening up, the relationship between the real estate industry and China's entity enterprises has become closer and closer [2-3]. With the prospering real estate industry, China's housing prices have been on the rise all the way and many entities have invested a lot of money in the real estate industry. From 2002 to 2019, the proportion of real estate development investment in China's GDP continued to rise to 13%, which made the funds invested by entities in their main businesses decline [4-6]. Thus, housing prices not only have an inseparable relationship with entity enterprises, but also affect the development of entity enterprises. However, due to the urbanization acceleration in China in recent years, the emergence of bubble economy risks, and the economic downturn during the epidemic, the national housing shortage and high housing prices have become more serious, which has aroused the attention of the state and the regulation of housing prices. On

September 7<sup>th</sup>, 2023, the Political Bureau of the Central Committee of China clearly stated that it would further optimize and adjust China’s real estate policy, which heralds new changes in housing prices and the real estate market as well as the significance of housing prices. The rising and falling housing prices will affect the development of China’s real economy. Therefore, a deep understanding of how housing prices affect the economic performance of Chinese real enterprises is of great significance to promote China’s modernization and high-quality development.

The impact of housing price changes on real enterprises has become a trend in academic research. Some scholars have paid attention to this field and concluded through empirical analysis that rising house prices will have a phased decreasing crowding-out effect on the debt financing of entities. Besides, entities of different natures or industries are affected to different degrees [7]. Some other scholars have found that rising house prices will cause a siphon effect, for which a large amount of investment in real estate will drive entities “divorced from reality”, thus inhibiting the innovation of entities [8]. However, few scholars have studied the impact and laws of housing prices on the economic performance of real enterprises. Therefore, in order to investigate the effect of housing prices on the financial performance of Chinese real enterprises, this study analyzes panel data of housing prices and real enterprise performance in 30 major Chinese provinces and cities from 2005 to 2020, excluding Hong Kong, Macao, Taiwan, and Xizang.

The marginal contribution of this paper is from the following two aspects. To begin with, this paper adds to the theoretical research on real economy and real estate by examining the connection between housing prices and real businesses' financial performance. It is also beneficial to better optimize the real estate industry in China from a practical perspective. Secondly, we discover that there is a nonlinear relationship between housing prices and the financial performance of actual businesses by performing a regression analysis of the two variables. Based on the result of this study, the rise in housing prices may be conducive to improving the performance of entities in the short term. However, the rising housing prices may harm the sustainable development of entities in the long run. This paper can provide suggestions for the government to adjust housing prices, thus contributing to the construction of a modern industrial system in China.

## 2. Research Design

### (1) Setting of Measurement Model

To explore the influence relationship between the changing housing price and the economic performance of real enterprises, this paper puts forward the basic econometric regression model as follows:

$$eeb_{it} = x + \alpha_1 hp_{it} + \alpha_2 hp2_{it} + \beta_1 eco_{it} + \beta_2 gov_{it} + \beta_3 tra_{it} + \beta_4 fin_{it} + \beta_5 ind_{it} + \mu_{it} + \varepsilon_{it}$$

In the above model, *i* represents the major provinces in China and *t* represents the year. *eeb<sub>it</sub>* indicates the economic performance of China’s entity enterprises, *hp<sub>it</sub>* the housing price of each major province, and *hp2<sub>it</sub>* the square of the housing price. *eco<sub>it</sub>* is the level of China’s macroeconomic growth, *gov<sub>it</sub>* indicates the intervention of our government. *tra<sub>it</sub>* is China’s import and export trade. *fin<sub>it</sub>* means China’s financial level and *ind<sub>it</sub>* means China’s industrial structure, with  $\mu_{it}$  and  $\varepsilon_{it}$  as random interference terms.

### (2) Data and Variables

Taking housing prices and the economic performance of real enterprises in major provinces and cities in China as the main research objects, this paper adopts panel data from 2005 to 2020 as the sample interval and conducts regression analysis with the help of Stata16. In the meantime, the China Industrial Economy Database, China Macroeconomic Database, China Statistical Yearbook, and EPS Database provided all of the data used in the study. On this basis, the data are screened as follows. (1) The data from Xizang, Taiwan, Macao, Hong Kong, and Macau are not used in this paper since part

of the data are missing or incomplete; (2) This article uses the income, profit, and profit rate statistics of industrial companies above designated size to analyze the economic performance of entity enterprises.

The core variables of this paper are housing prices and the economic performance of real enterprises. The economic performance of entity enterprises ( $eeb_{it}$ ) is the dependent variable. This study uses data from the China Industrial Economic Database to adopt the profit rate of each year in the sample cycle of the primary business of industrial businesses larger than the prescribed size as the  $eeb$  data. Housing price ( $hp_{it}$ ) and its square ( $hp2_{it}$ ) are independent variables. This paper uses the absolute value of housing prices every year in the sample cycle of major provinces and cities in China as the data of  $hp_{it}$ , with data sourced from the China Macroeconomic Database.

There are various factors affecting the economic performance of real enterprises. Besides housing prices, five influencing factors are also considered, including macroeconomic growth, government policy intervention, import and export trade, China's financial level, and China's industrial structure. Therefore, to make the research results fit the actual development of China's economy, apart from the core variables, this paper also introduces five control variables that may affect the economic performance of real enterprises corresponding to the above five influencing factors, including China's per capita GDP ( $eco_{it}$ ), the ratio of China's fiscal revenue to GDP ( $gov_{it}$ ), the ratio of China's import and export trade amount to GDP ( $tra_{it}$ ), the ratio of China's deposit and loan to GDP ( $fin_{it}$ ), and the ratio of China's secondary industry to tertiary industry ( $ind_{it}$ ). The definitions and calculation methods of core variables and various control variables are shown in Table 1.

**Table 1.** Variable Definitions

Variable name	Variable symbol	Variable calculation
Economic performance of entity enterprises	$eeb_{it}$	Profit rate of main business income
Housing price	$hp_{it}$	Absolute value of housing price
Square term of house price	$hp2_{it}$	(Absolute value of housing price) ^ 2
Economic growth	$eco_{it}$	Absolute value of GDP per capita
Government intervention	$gov_{it}$	Fiscal expenditure/GDP
Import and export trade	$tra_{it}$	Import and export trade amount/GDP
Financial level	$fin_{it}$	Deposits and loans/GDP
Industrial structure	$ind_{it}$	Proportion of tertiary industry/secondary industry

The descriptive statistical results of related variables used in this study are shown in Table 2.

**Table 2.** Descriptive Statistics

	Sample value	Average	Standard deviation	Minimum value	Maximum value
$eeb_{it}$	480	0.161	0.365	0.892	0.312
$hp_{it}$	480	0.632	0.500	0.152	3.766
$hp2_{it}$	480	0.650	1.512	0.023	14.186
$eco_{it}$	480	1.092	0.627	0.499	5.310
$gov_{it}$	480	2.962	1.136	1.288	8.131
$tra_{it}$	480	0.299	0.360	0.007	1.721
$fin_{it}$	480	0.273	0.306	0.798	2.170
$ind_{it}$	480	4.442	2.821	0.505	16.488

### 3. Empirical Analysis

#### (1) Full Sample Analysis

In this paper, the method of adding control variables step by step is used to analyze the whole sample. The specific steps of this research method are as follows. Firstly, the model without adding any control variables is regressed, and then the control variables are added in turn for regression until all five control variables are added to the model. According to the method of gradually adding control variables for the regression test, the basic regression results can be obtained as shown in Table 3. The first term of the coefficient of house price is significantly positive under the significance level of 1%, and the second term is significantly negative under the same significance level, according to a comparison and analysis of the basic regression results with and without control variables. The relationship between house prices and the financial success of actual businesses is therefore inverted U-shaped. Through further calculation, it can be concluded that with the gradual increase in housing prices, the economic performance of real enterprises will turn to negative growth after reaching 4.05 without adding control variables. When control variables are added, the economic performance of real enterprises will turn to negative growth after reaching 4.00. This shows that the early stage of the rising house prices will promote the growth of economic performance of real enterprises to a certain extent. Nevertheless, after the house prices rise to a certain peak, it will restrain the performance of real enterprises. It can be preliminarily inferred that high housing prices are not conducive to improving the economic performance of real enterprises.

**Table 3.** Full Sample Analysis

	RE(1)	RE (2)
hp <sub>it</sub>	0.081***(4.67)	0.096***(5.05)
hp2 <sub>it</sub>	-0.010***(-2.89)	-0.012***(-3.46)
eco <sub>it</sub>		-0.001(-0.87)
gov <sub>it</sub>		-0.022**(-2.57)
tra <sub>it</sub>		-0.034**(-2.58)
fin <sub>it</sub>		-0.010**(-2.30)
ind <sub>it</sub>		-0.015**(-2.29)
Time effect	Control	Control
Regional effect	Control	Control
Constant term	0.148***(26.02)	0.204***(11.68)
R2	0.3146	0.3650
Obs	480	480

Note: \*\*\*, \*\*, and \* represent the significance level of 1%, 5%, and 10% respectively. The t value is in parentheses, which will be the same hereinafter.

#### (2) Regional Heterogeneity Analysis

Under the macroeconomic background, there are often different situations and degrees of development in different regions. Therefore, according to the geographical location and economic development of major provinces in China, this paper divides the sample into three categories: from eastern, central, and western China, to make a regression analysis. Table 4 displays the regression findings of the regional heterogeneity analysis. We may observe, compare, and analyze the regression findings to determine that the housing prices in China's eastern, central, and western areas have an inverted U-shaped association with the economic performance of real firms. According to the regression results, the inflection points of the eastern, central, and western regions are 2.333, 0.953, and 0.508 respectively. In other words, the central and western regions are easier to reach the

inflection points and turn into negative orbits. Therefore, the continuous rise of housing prices in the central and western regions of China will more easily inhibit the future performance improvement of local entities. This may be due to the fact that the state has increased its development and support for the central and western regions in recent years. On the one hand, it has accelerated the economic development of the central and western cities, and some entities in the central and western regions are still in the initial stage or growth stage, which is more fragile than those in the eastern region. On the other hand, it attracts people to central and western cities, thus increasing residents' demand for commercial housing. Combined with the above factors, the entity enterprises in the central and western regions are more significantly affected by the changes in housing prices. It can be seen that in the eastern, central, and western regions of China, high housing prices are not conducive to improving the economic performance of real enterprises. Moreover, the impact of housing prices in the central and western regions on the economic performance of local real enterprises is more significant. This further verifies the preliminary conclusions obtained from the full sample analysis.

**Table 4.** Analysis of Regional Heterogeneity

	East (1)	Medium (2)	West (3)
hp <sub>it</sub>	0.042***(3.00)	0.530***(3.38)	0.285**(2.09)
hp2 <sub>it</sub>	-0.009***(-3.57)	-0.278**(-2.50)	-0.280***(-2.86)
eco <sub>it</sub>	0.003*(1.93)	-0.014(-1.47)	-0.013***(-3.38)
gov <sub>it</sub>	-0.018***(-3.67)	-0.437**(-2.58)	-0.302***(-4.71)
tra <sub>it</sub>	-0.001(-0.15)	-0.086(-1.10)	0.075*(1.97)
fin <sub>it</sub>	0.008*(1.92)	0.003(0.20)	-0.029***(-3.38)
ind <sub>it</sub>	0.026***(4.03)	-0.068***(-5.91)	-0.003(-0.25)
Time effect	Control	Control	Control
Regional effect	Control	Control	Control
Constant term	0.066***(3.20)	0.218***(3.80)	0.291***(9.73)
R2	0.7326	0.6596	0.5782
Obs	176	128	176

### (3) Robustness Analysis

**Table 5.** Robustness Analysis

	Hysteresis effect (1)	Instrumental variable method (2)
hpit	0.085***(4.28)	0.106***(4.62)
hp2it	-0.012***(-3.03)	-0.014***(-3.50)
ecoit	-0.002(-0.95)	-0.002(-1.34)
govit	-0.020*(-1.81)	-0.022**(-2.19)
trait	-0.043***(-3.14)	-0.032**(-2.43)
finit	-0.010***(-2.15)	-0.010**(-2.47)
indit	-0.009(-1.40)	-0.012***(-1.78)
Time effect	Control	Control
Regional effect	Control	Control
Constant term	0.204***(10.89)	0.210***(3.89)
Cragg-D F		313.007
R2	0.3666	0.7479
Obs	450	450

The above analysis empirically tests the relationship between housing prices and the economic performance of real enterprises. The findings show that there is an inverse U-shaped link between them and that increasing housing costs do not help real businesses succeed economically. Considering that there may be a lagging effect or endogenous problems in the model, to ensure the reliability of the research results, this paper uses a lagging one-period housing price and instrumental variable method to implement further regression analysis on the samples. Table 5 displays the regression analysis's findings. The first term of the home price coefficient is still considerably positive at the significance level of 1%, while the second term is significantly negative at the same significance level, according to the regression results. Put otherwise, the relationship between housing prices and the actual businesses' economic success is still inverted U-shaped, and the coefficients have passed the 1% significance test. This suggests that there is a consistent, steady, inverted U-shaped relationship between housing prices and the financial success of actual businesses. The performance of real businesses will deteriorate if house prices rise after they have increased to a certain point. The above robustness analysis further supports the assumptions proposed in this paper.

#### **4. Conclusion and Suggestions**

There is a close relationship between housing price changes and the performance of real enterprises. Analyzing their relationship is helpful to better understand the important role of real estate development in the real economy. Using panel data from 30 Chinese provinces between 2005 and 2020, this research does an empirical analysis and comes to the following findings. First, there will be a notable inverted U-shaped relationship between entity performance and property prices in China. This demonstrates how high housing costs are detrimental to the financial success of actual businesses. Secondly, the impact of housing prices in different regions on the real economy is different, and the rising housing prices in the central and western regions are more likely to have a restraining effect on the local real economy. Based on the above research conclusions, this paper puts forward the following policy suggestions.

Firstly, by standardizing the real estate market and perfecting the real estate tax system, housing prices can be reduced within a reasonable range, thus helping to prevent excessive housing prices. Because all kinds of taxes paid in the real estate development will eventually become the partly cost of commercial housing, reducing and exempting some unnecessary taxes or standardizing relevant laws and regulations can effectively reduce housing prices, so as to undermine the inhibitory impact of excessive housing prices on real enterprises.

Secondly, cities can implement differentiated housing policies and land marketization policies according to local actual conditions, such as mortgage policies, housing provident fund policies, and land supply scale. Especially in areas where housing prices are too high, it is necessary to adopt flexible policies to slow down the speed of housing price increases. Meanwhile, it is necessary to standardize the land use, control the proportion of industrial and real estate land, and reduce the idle rate of land to effectively reduce housing prices by adjusting the land supply and demand.

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