Research on Government Regulation, Corporate Governance and Excessive investment in Real Estate Enterprises

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Abstract

From 2012 to 2016, the real estate market experienced a period of transition from tightening purchase restriction regulation to reducing the number of unsold homes and other prudent regulations. This article took the data of A-shares real estate listed enterprises from 2012 to 2016 as a sample and constructed a regression model based on the Richardson residual model. This paper empirically studied whether corporate governance could inhibit excessive investment behavior from two aspects of internal governance structure and external governance environment. We have extended and analyzed the impact of policies on excessive investment and compared the differences of the relationship between corporate governance and excessive investment under different regulatory policies. The study found that the governance to excessive investment of directors and independent directors under government regulation has been strengthened. There was a "U"-shaped curve relationship between ownership concentration and excessive investment, and equity restrictions was difficult to restrain the excessive investment behavior of enterprises. In the external governance environment long-term debt, market competition, and excessive investment were significantly negatively correlated and government regulation reduces the impact of long-term debt on excessive investment. The tightening policies and other non-monetary policies all had a weakening effect on excessive investment of real estate enterprises.

Keywords

Government regulation, governance structure, over investment.

1. Introduction

Enterprises allocate social resources rationally through effective investment can not only promote high efficient operation of the market economy, but also provide the impetus for its sustainable and stable development. In recent years, the real estate industry that has undergone rapid development has not only driven the rapid development of urbanization in China, but also caused a sudden increase in investment in real estate projects、high price of house and serious inventory pressure risk, and so on. In order to ensure the stability of the industry, the State Council has successively introduced a series of tightening and prudent intervention policies. In 2012-2014, a series of tightening comprehensive policies such as "five regulations of country" and "five regulations of central bank" were promulgated. In 2015, the Central Bank lowered the reserve rate and the interest rate for nine times. The real estate tax was formally included in China legislative plan, "reduction of unsold houses and control house prices" has become the current goal; at the 19th National Congress, Xi Jinping proposed that "houses are used for housing, not for speculation." he emphasized the construction of long-term mechanisms such as tightening credit . At the same time, from 2010 to 2016, China's real estate incremental capital output rate of fixed assets (referred to as ICOR) increased from 2.5 to 8.01. This means that the investment required by the real estate industry to increase output is getting higher and higher. The decrease of investment efficiency makes enterprises deviate from the goal of maximization value, resulting in the waste of social resources. Reducing the over-investment in the real estate industry and balancing the supply and demand relationship of real estate have attracted great attention of the government and all sectors of society.

Excessive investment is one of the three typical forms of inefficient investment. Regarding non-efficiency investment, Richardson [1] found that enterprises that actually had more cash for returning shareholders were more inclined to invest. He proposed corporate governance could effectively alleviate irrational behavior. Jin [2] was based on the principal component analysis method, selecting enterprises supervision and incentive indicators to explore the effects of two governance mechanisms in different industries and regions on investment. The result showed that both could significantly ease enterprises non-efficiency investment. Zhao and Xu [3] studied the relationship between director networks, independent director governance, and over-investment behaviors of listed companies. They pointed out that centrality and structural holes have positive effects on over-investment, and agglomeration have negative effects on over-investment.

Therefore, based on the trust responsibility system, it has always been the focus of academic research whether the corporate governance mechanism can produce a good constraint to irrational investment behavior, balance the control of the interest groups on the income rights and reduce excessive investment. From the aspects of governance structure and governance environment, this article conducted empirically test whether corporate governance is conducive to alleviating excessive investment behavior, further analyzed the impact of policies to excessive investment and compared the differences of the relationship between corporate governance and excessive investment under different regulatory policies. We hope to provide empirical data for real estate listed companies on optimizing governance mechanism and improving resource allocation efficiency.

2. Theory and research hypothesis

Narrow understanding of corporate governance is that the company owner gives rights to the board of directors and managers and enables them to exercise supervision and management functions which is usually achieved by designing corporate governance structures.The corporate governance structure is a system in which the company's ownership and management rights are checked and balanced based on trust responsibilities.A typical corporate governance structure is a framework of relationships formed by owners, board of directors, and managers.

The board of directors has a major say in corporate investment decisions as a supervisory and decision-making body. The supervisory theory believes that the expansion of the board of directors will help strengthen the supervision ability of the board of directors, and all stakeholders are more conducive to coordinating rights between interest groups. The more board members may also bring more resources to the board, increase the effectiveness of the investment, and reduce the possibility of excessive investment. Reasonable director's remuneration can motivate the directors to fulfill their "good governance obligations" on the company's financial resources and reduce adverse consequences such as adverse selection.The incentive system for directors is conducive to preventing management from having excessive investment tendencies in order to gain benefits. This article proposes the following hypothesis：

Hypothesis 1: Expansion of the board of directors can inhibit over-investment in real estate listed companies

Hypothesis 2 :Directors' compensation incentives can ease over-investment in real estate listed companies

The actual manager is motivated to carry out "reverse selection" under the "lemon market" environment affected by agency costs and will increase the agency risk of companies affected by agency costs. Kolasinski and Li [4] deem that independent directors can effectively supervise the behavior of large shareholders and managers, and reduce the probability of non-efficient investment decisions. Hang [5] found that the increase in the proportion of financial independent directors will reduce the incidence of over-investment in the company. As a non-stakeholder, independent directors express their opinions in corporate affairs, which can reduce the control of major shareholders in terms of qualifications, economy, procedures, and exercise of rights, and promote management to rationally allocate resources. In addition, Independent directors are generally experts in related fields

and can provide intellectual resources for corporate decisions which improve the investment efficiency of enterprises.Therefore, it is proposed:

Hypothesis 3 Independent director system can inhibit over-investment in real estate listed companies

Regarding the influence of controlling shareholders on enterprises, Johnson's "Hollowing theory" holds that in order to seek their own interests, controlling shareholders will transfer the company's assets through covert methods and damage the interests of small and medium shareholders.The "support theory" proposed by Friedman stated that in order to avoid a financial crisis, controlling shareholders tend to use their own resources to increase their investment income. Maury and Pajuste [6] believe that the greater the number of large shareholders, the easier it is to form internal containment, which is conducive to improving investment efficiency. Yang and Zhang [7] found that the concentration of major shareholder rights is conducive to reducing agency costs.The proportion of shares held by the largest shareholder and the balance of equity can reduce over-investment. The higher the proportion of large shareholders is, the more they tend to supervise the investment behavior of managers. That is, as the degree of ownership concentration increases, over-investment behavior will be constrained and reduced.However, when the equity is highly concentrated, the controlling shareholders are more willing to invest in projects that have high return but high risk for their own interests which will increase the over-investment of enterprises. The equity restriction represents the level of restraint of other shareholders on the self-interest behavior of large shareholders. A diversified and decentralized equity structure helps to improve the level of corporate governance and prevents its "hollowing out". This article proposes the following hypothesis：

Hypothesis 4: The proportion of shares held by the top ten shareholders and excessive investment are in a "U-shaped" relationship.

Hypothesis 5: There is a negative correlation between equity restriction and over-investment in real estate listed companies.

As a necessary source of funds, liabilities have been incorporated into external governance mechanisms by a large number of scholars. Garcia-Herrero [8] finds that the degree of financial marketization can reduce the over-investment of companies due to bad loans by affecting the bank lending system. Zhu and Wang [9] studied the inefficient investment behavior of companies from the perspective of corporate governance. They analyzed the effects of external governance factors on inefficient investments and found that the increase in long-term debts exacerbated over-investment behavior, and the increase in short-term debt boosted under-investment behavior. The "liabilities control hypothesis" believes that liabilities as substitutes for dividends can reduce free cash flow held by managers.China's real estate companies are greatly affected by government intervention. Under the conditions of "budget constraints "and "bank loan restrictions ", long-term debt can restrict the return of interest and principal, which affects the size of the company's credit and reinvestment decisions. Therefore, put forward the following hypothesis:

Hypothesis 6: Long-term liabilities can inhibit corporate investment overheating

The "law and finance" theory holds that corporate governance affects the value of corporate investment as the financial environment and investor protection mechanisms change.Enterprises will seek advantages and avoid harm to adapt to competitive environment. Tan [10] uses market competition and non-controlling shareholdings as external governance indicators to conduct research on management rights, external governance mechanisms and over-investment. He believes that both can suppress excessive investment behavior. In the fierce market competition environment, companies will be more cautious about major investment decisions in order to avoid financial risks such as bankruptcy liquidation, which minimize the irrational behaviors such as excessive investment of the company. Therefore, put forward the following hypothesis:

Hypothesis 7: Intense market competition can reduce over-investment in real estate listed companies.

China's real estate market is greatly affected by the regulation of national policies. The British classical economist Adam Smith put forward the "two-handed theory" which are the market (invisible

hand) and the government (visible hand) in his "The Theory of the Rich Country" published in 1776. In the development of the socialist market economy, the role of the market and the government is indispensable.The process of economic restructuring is a process of most effectively allocating resources. The core of effectively allocating resources is to handle the relationship between the government and the market so that the market can play a decisive role in the allocation of resources and better play the role of the government. Sun [11] and Wang[12] used the internal difference method and matrix estimation method to study government intervention and over-investment respectively. The results showed that government regulation and control would increase state-owned enterprises' excessive investment behavior. Therefore, it is proposed:

Hypothesis 8: Government intervention will inhibit over-investment in real estate listed companies.

3. Model Building and Variable Selection

3.1 Sample selection and data sources

This article studied A-shares listed real estate enterprises in 2012-2016. To ensure the authenticity, reliability and comparability of the research, we excluded ST or *ST financial anomalies and listed enterprises whose financial information is unsound after 2012, and finally obtained a total of 5129 data from 79 enterprises. The financial data used in this article are all from the CSMAR database. The government regulation data is obtained from the "China Real Estate Policy Report"published by the China Index Research Institute. The statistical software is Spss20.0.

3.2 Inefficient investment model

This article uses Richardson's research method for reference to measure investment efficiency with the difference between actual investment and expected investment. Using the model (1) to estimate the expected investment of the sample enterprises, the non-efficiency investment level is the difference between the actual new investment of the company and the expected new investment. Among them, model residuals greater than 0 is excessive investment.

$$Inv_{i,t} = \alpha_0 + \alpha_1 Growth_{i,t-1} + \alpha_2 Lev_{i,t-1} + \alpha_3 Cash_{i,t-1} + \alpha_4 Size_{i,t-1} + \alpha_5 \mathrm{Re}t_{i,t-1} + \alpha_6 Inv_{i,t-1} + \sum year + \varepsilon_{i,t} \quad (1)$$

Among them: Inv represents new investment, which is the difference between the total investment of the company's capital and projects and the value-preserving investment. Growth represents a growth opportunity, represented by Tobin-Q value. Lev is a financial leverage effect, expressed as an asset-liability ratio. Cash represents a cash holding, measured as the ratio of current-period money funds to the ending total assets; Size represents the size of the company , Take the natural logarithm of the total assets; Ret represents the reinvestment rate of return; $Inv_{i,t-1}$ is the amount of new investment in the previous period, and year is the annual dummy variable.

3.3 Government Regulation, Corporate Governance and Excessive investment Regression Mode

Build model (2) to verify the relationship between corporate governance and excessive investment. Build model (3) to verify the impact of government regulation on the relationship between corporate governance and excessive investment.

$$Over-invi,t = \beta_0 + \beta_1 Bsize_{i,t} + \beta_2 Ibr_{i,t} + \beta_3 Dsi_{i,t} + \beta_4 \mathrm{Top}10_{i,t} + \beta_4 Top10^2{}_{i,t} + \beta_5 Cstr2\_10_{i,t} + \beta_6 LongD_{i,t} + \beta_7 Comp_{i,t} + \beta_8 Control1_{i,t} + \theta_{i,t} \quad (2)$$

$$Over-invi,t = \beta_0 + \beta_1 Bsize_{i,t} + \beta_2 Ibr_{i,t} + \beta_3 Dsi_{i,t} + \beta_4 \mathrm{Top}10_{i,t} + \beta_4 Top10^2{}_{i,t} + \beta_5 Cstr2\_10_{i,t} + \beta_6 LongD_{i,t} + \beta_7 Comp_{i,t} + \beta_8 Control1_{i,t} + \beta_9 \mathrm{Control}2_{i,t} + \theta_{i,t} \quad (3)$$

Among them: Over-Inv represents over-investment; Bsize and Ibr represent the board structure; Dsi is the incentive of directors; Top10, Top102 and Cstr2_10 represent the degree of concentration of shareholder rights and the balance of shareholder rights.The indicators of external governance mechanisms are represented by long-term debt (LongD) and market competition (M_Comp); Control1 is a group of control variables; control2 is a government control variable, divided into Tighten, Comprehensive, and Other. The definition and measurement of variables are shown in Table 1.

Table 1 Variable description

	Variable symbol	Definition and measurement
Explained variable	Over-Inv	Over-investment, Residuals with Model (1) greater than 0
explanatory variable	Bsize	Total number of directors
	Ibr	Number of independent directors / total number of directors
	Dsi	The logarithm of the annual salary of the top three board members
	Top10 Top102	The proportion of shares held by the top ten shareholders the square of the proportion of shares held by the top ten shareholders
	Cstr2_10	The ratio of the shares held by the second to the tenth largest shareholders / the proportion of the largest shareholder holding shares
	LD	Long Term Debt = (long-term borrowing + bond payable) / total assets at the end of the period
	M_Comp	Main business profit rate = main business profit / main business income
Control variable	FCF	Free cash flow = (net profit + interest expense + non-cash expense - additional working capital - capital expenditure) / total assets at the beginning of the period
	Lev	Asset-liability ratio = period-end liabilities / period-end total assets
	Operation	Main income growth rate = (Main income at the end of the period-Main income at the beginning of the period)/Main income at the beginning of the period
	Growth	Total asset growth rate = (total assets at the end of the period - total assets at the beginning of the period) / total assets at the beginning of the period
	Tighten	The number of tightening policies accounts for 50% or more of the total number of years. The value is 1, otherwise it is 0.
	Comprehensive	The ratio of comprehensive policies to annual totals is greater than 0, which is 1; otherwise it is 0.
	Other	The ratio of other policies to the total number of the year is greater than the proportion of monetary policy to the total number of years. The value is 1, the opposite is 0.

4. Empirical analysis

4.1 Descriptive statistics

From Table 2, it can be seen that the standard deviation of non-efficiency investment level is 0.129, the average value is 0.001, and the median is -0.012. This indicates that there are many under-invested

companies in the sample, but the overall investment is excessive and the difference is not obvious. As far as the board structure of real estate listed enterprises is concerned, the average of directors is 9, and the proportion of independent directors is 37.4%, which conforms to the provisions of the company law. The average shareholding ratio of the top ten shareholders in the equity structure is 56.8% and the standard deviation of the shareholder's counterbalance is 0.959, which means that the real estate enterprises have more concentrated equity and significant differences in shareholder's counterbalance. In the external governance mechanism, the proportion of long-term debts to total assets reached an average of 19.7% which indicates that China's real estate enterprises tend to choose long-term liabilities with low debt-relief pressure due to the long construction period . The average of free cash flow is -0.325, which indicates that there is a general shortage of free cash flow for real estate listed enterprises. This caters to the phenomenon of under-investment in most real estate companies, and indirectly shows that free cash flow can seriously affect the investment behavior of enterprises.

Table 2 Descriptive statistics

Variable	average value	standard deviation	median	minimum value	maximum value
In-inv	0.001	0.129	-0.012	-0.553	0.688
Over-INV	0.102	0.104	0.07	0.001	0.688
Bsize	9.112	1.823	9	5.000	15.000
Ibr	0.374	0.057	0.333	0.333	0.625
Dsi	14.131	2.999	14.633	0.000	17.393
Top10	0.568	0.169	0.552	0.223	0.975
Top102	0.186	0.138	0.155	0.011	0.653
Cstr2_10	0.858	0.959	0.478	0.017	5.664
LD	0.197	0.122	0.201	0.000	0.845
Comp	0.932	11.149	0.140	-3.802	149.118
FCF	-0.325	2.389	-0.071	-30.704	3.528
Lev	0.657	0.162	0.676	0.097	1.202
Growth	0.217	0.311	0.157	-0.270	2.889

According to the "China's Real Estate Policy Report" from 2012 to 2016, We have sorted out the real estate control policies promulgated by the State Council, the Ministry of Housing and Urban-Rural Development, the People's Bank of China, the Ministry of Finance, and the State Administration of Taxation. Specifically see Table 3.

Table 3 Summary of 2012-2016 Real Estate Policy

Policy type (Article)	2012	2013	2014	2015	2016
Tightening Policy / All policies	6/11	8/14	1/21	1/17	0/18
Comprehensive policy	0	1	2	3	0
Other policies / monetary policy	7/4	11/2	14/5	8/9	15/3

As can be seen from the table 3: ① The proportion of tightening policies fell from 57% to 0%, the 2014 was the turning point. In 2012-2013, the real estate market was dominated by tightening policies such as "housing and purchase restriction to increase loan interest rate". In 2014, the central government regulated more attention to long-term stability and basically restricted the purchase restriction policy. With the structural reform of the "supply side", the real estate market in 2015-2016 will be dominated by policies such as "destocking, promoting consumption, and strengthening the protection of housing". ②In 2012-2015, the comprehensive policy has stepped up from a tightening credit policy ("National Five" and "Central Five"policy) to a loosening credit policy("330，831，930"policy).

4.2 Non-efficiency investment model analysis

We use the previous model (1) to regress the non-efficiency investment. The results are shown in Table 4.

Table 4 Non-efficiency investment model regression results

	Intercept	Growth	Lev	Cash	Size	Ret	Invi,t-1
coefficient	0.335	-0.024**	0.176**	0.289**	-0.014*	0.027**	0.363**
T	2.671	-4.261	4.340	4.558	-2.527	3.774	9.726
Sig	0.008	0.000	0.000	0.000	0.012	0.000	0.000

Note: **. Significant correlation at 0.01 level; *. Significant correlation at 0.05 level

As is been shown in table 4. The new investment is significantly negatively related to Tobin's Q value.The above relationship shows that when managers find that the market value is lower than the capital replacement cost of the company, they are not inclined to buy new investment products,which will reduce the company's investment expenditure.There is a significant positive correlation between cash holdings, annual stock returns, and new investment at the 1% level.Real estate is a capital-intensive industry.The more abundant the cash flow of real estate companies, the more motivated to invest to maintain liquidity.The high rate of return on stocks means that companies are highly favored by investors, which in turn promotes companies to invest.Asset-liability ratio is positively related to new investment, which indicates that real estate companies tend to choose debt management to expand market and expand investment scale. The T value of the new investment in the previous year is the largest, at 9.7, and it is related to new investment this year at a significant level of 1%. The results show that real estate companies are greatly affected by the investment in the previous year due to the long investment cycle.

We put 3555 data of 79 companies for 5 years into the model (1) and got 395 residual values. There are 179 data with residuals greater than 0 and 216 data with residuals less than 0. Explain that there are 179 over-investments and 216 under-investment in the sample. Excessive investment accounts for 45% of all samples, which shows that China's real estate companies have inefficient investment in the past five years and generally have insufficient investment.The annual situation is shown in Table 5.

Table 5 Annual model residual results

	2012	2013	2014	2015	2016
The number of over-invested companies	39	46	43	25	26
The number of under-invested companies	40	33	36	54	53
total	79	79	79	79	79
Inefficient investment average	0.0052	0.0203	0.0263	-0.0158	-0.032

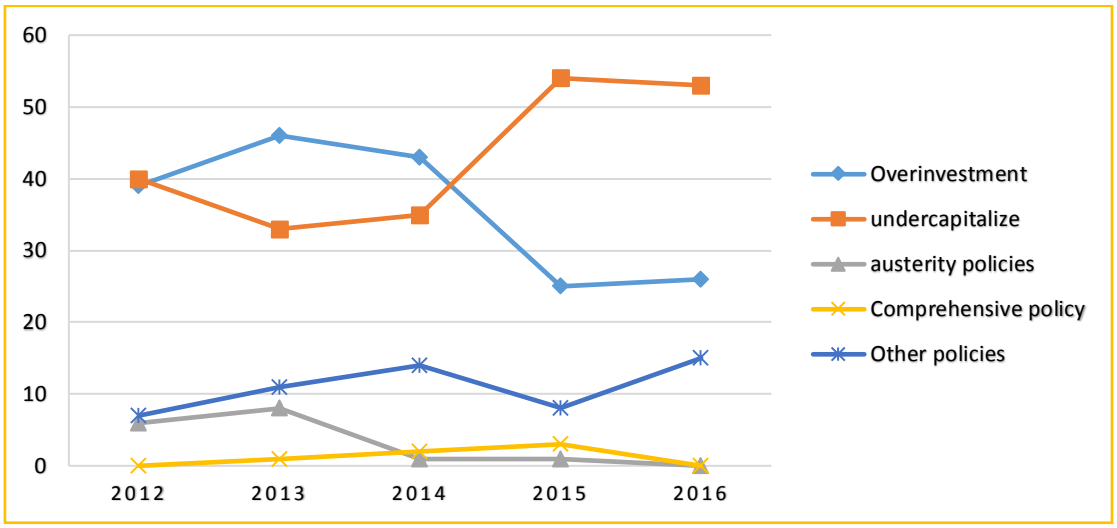

Figure 1 Inefficient investment trends and policy trends of real estate listed companies from 2012 to 2016

From Table 5, it can be seen that the over-investment problem of real estate companies is serious before 2014. In recent years, the state has introduced and implemented a series of real estate regulation and tightening policies. It can be seen that over-investment in real estate in 2016 and 2017 has been curbed, and over-investment has decreased with the implementation of tightening policies. Figure 1 reflects the trend of changes in non-efficiency investment and national regulation policies of real estate listed companies during 2012-2016.The trend of over-investment in real estate is similar to that of other policies, and contrary to the trend of comprehensive policies. it also shows that regulatory policies will affect the over-investment of real estate companies.

4.3 Government Regulation, Corporate Governance and Excessive investment Regression Analysis

Using the previous model (2) and model (3), regression calculations were conducted on government regulation, corporate governance, and over-investment of real estate companies. The results are shown in Table 6.

we can see that the proportion of the directors、independent directors and the excessive investment are all negatively correlated, which verified hypotheses 1 and 3. It indicates that as a supplement of supervision, the independent director system of a real estate enterprise can reduce the absolute control of large shareholders to the enterprises and ensure the independence of investment decisions. At the same time, the expansion of the board of directors makes it easier to increase investment efficiency and restrain irrational investment.

Directors' remuneration is significantly and positively related to excessive investment, which negated the hypothesis 2. The incentive mechanism of China's real estate directors has not sound, and high remuneration will push the board of directors to blindly perform investment decision-making to increase personal interest to lead excessive investment.

The proportion of shares held by top ten shareholders of real estate is negatively correlated with excessive investment at the level of 5%, and the square of the top ten shareholders' shares is significantly positively correlated with them, which indicates the degree of concentration of ownership and the excessive investment of the enterprises are in a “U” type relationship. which verified hypotheses 4 .

There is no obvious correlation between shareholder’s counterbalance and excessive investment of the enterprises. According to the data, it was found that in the excessive investment sample, there were 129 data of the largest shareholder's shareholding ratio is greater than two to ten major shareholders, accounting for 72% of the total. It indicates that the percentage of shares held by the

second to the tenth largest shareholders in the over-investment sample is relatively low which is unable to effectively constrain the decision-making behavior of the largest shareholder.

Table 6 Government regulation, corporate governance and over-investment regression results

变量	模型(2)			模型(3)		
	系数	T值	Sig值	系数	T值	Sig值
Intercept	0.223	3.203	0.002	0.217	3.026	0.003
Bsize	-0.007**	-1.814	0.072	-0.006*	-1.699	0.091
Ibr	-0.273***	-2.524	0.013	-0.254**	-2.324	0.021
Dsi	0.004**	1.988	0.048	0.003*	1.748	0.082
Top10	-0.117**	-2.071	0.040	-0.119**	-2.080	0.039
Top102	0.178**	2.472	0.014	0.187**	2.572	0.011
Cstr2_10	0.002	.253	0.801	0.004	0.603	0.547
LD	-0.219***	-3.624	0.000	-0.227***	-3.724	0.000
Comp	0.002**	2.013	0.046	0.001*	1.873	0.063
FCF	-0.054***	-5.533	0.000	-0.053***	-5.436	0.000
Lev	0.035	.760	0.448	0.035	0.754	0.452
Growth	0.110***	4.105	0.000	0.116***	4.278	0.000
Operation	-0.001***	-3.157	0.002	-0.001***	-3.129	0.002
tighten				-0.012	-0.918	0.360
comprehensive				0.015	1.185	0.238
other				-0.005	-0.256	0.798
Adj-R2	0.461			0.463		
F值	13.7			11.228		

Note: ***. Significant at 0.01 level; **. Significant at 0.05 level; *. Significant at 0.1 level.

In the external governance mechanism, long-term debt and excessive investment were negatively correlated at the level of 1%, it verified hypothesis 6. It shows that the increase in long-term debt reduces the free cash flow controlled by the manager and makes real estate enterprises supervised by more creditors, reducing the behavior of excessive investment.

In this paper, the main business profit rate reflects the degree of market competition. The stronger the main business profitability, the lower the degree of market competition. The weaker the main business profitability is, the higher the degree of market competition is. As is been shown in table 6. The profit rate of the main business is positively related to excessive investment, indicating that the degree of market competition is negatively related to the over-investment of real estate listed companies, which verified hypothesis 7. It shows that in the fierce competition environment, management will avoid projects with negative net present value of investment in order to improve performance and avoid financial difficulties.

The regression results of model (3) reflected in Table 6 indicate the coefficient of tightening policy and over-investment is -0.012, and that of other policies and over-investment is -0.005.negatively correlated but not significant, which indicates influenced by regional or economic development and other factors, the effect of policy intervention on excessive investment in real estate is not significant. To a certain extent, the results verify the hypothesis 8 is established. Combining with the related policies of “destocking, raising credit, and implementation of affordable housing” and other relevant policies in real estate in recent years, it shows that under the government’s regulation, real estate companies are more inclined to abandon the investment projects with negative net present value, and then turn their targets into tasks such as dissolving cumulative inventory task. Under the government's regulation, the negative impact of the scale of directors, independent directors, and market competition on excessive investment has been strengthened, and the negative impact of long-term debt has weakened. The positive influence of directors' incentive on excessive investment has been strengthened.

5. Summary and Strategy

5.1 Summary

From the previous empirical results and analysis,we can clearly get the following conclusion.

(1) The enlargement of the board of directors can restrain the company's over-investment, but the effect is not obvious. The independent director system has positive governance effects on over-investment behavior. The influence of the two has been strengthened under the government's control.

There was a "U"-shaped curve relationship between ownership concentration and excessive investment, and shareholder's counterbalance was difficult to restrain the excessive investment behavior of enterprises.

Long-term debt has a mitigating effect on over-investment, which has weakened under the government's control. In the fierce market competition environment, companies will reduce the incidence of over-investment in order to reduce the possibility of bankruptcy liquidation.

(4) The tightening policies and other non-monetary policies all had a weakening effect on excessive investment of real estate enterprises.

5.2 Strategy of Governance mechanism optimization

According to the above conclusion,we'd like to give the following strategies to effectively curb excessive investment in real estate listed companies.

(1) Improve the governance mechanism of real estate enterprises. Exert independent director's supervision and governance functions and reputation incentives. Balance the distribution of shares, and protect the interest of small and medium shareholders. Strengthen the checks and balances of other shareholders.

(2) Adjust the corporate debt structure. Optimize the scale of real estate loans and increase the qualifications for enterprise loans; financial institutions should make timely and dynamic tracking to reduce non-performing loans.

(3) The government should regulate the irrational investment behavior of real estate enterprises, avoid large-scale "one size fits all" and monopolistic behaviors, strengthen the market free competition, and prevent the risk of investment operation.

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