

Government Intervention, Nature of Ownership and Enterprise Investment Efficiency—An Empirical Research Based on Panel Data Analysis

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Abstract. In the critical stage of economic transformation and upgrading, the government has a strong incentive to intervene in the investment behaviour of enterprises under the double assessment of political and economic indicators. This paper found that government intervention has a significant impact on enterprise investment, by providing financial support and other means to promote enterprises to expand investment, but due to the lack of effective guidance, it turns into over-investment. After further distinguishing the nature of ownership between state-owned enterprises and non-state-owned enterprises, the phenomenon that government intervention affects enterprise investment is more obvious in state-owned enterprises, which is reflected in promoting over-investment and restraining under-investment. Therefore, government intervention will affect the investment efficiency of state-owned enterprises to a greater extent and make them develop in the direction of over-investment. This paper provides an overall perspective to explore the impact of government intervention on enterprise investment behaviour under the rapid economic growth.

1 Introduction

During the more than 40 years of reform and opening, the economic reform of transformation and upgrading, relying on creative government decentralization and market-oriented means, has achieved the new brilliance of China's economic growth that has attracted worldwide attention, and has become the second largest economy in the world. At the same time, through the "troika" of economic growth led by investment, consumption and export, China has gradually realized that investment is not only in an extremely important position in the macro-economy, but also a necessary factor for the survival and development of enterprises. However, the simple way of expanding investment to promote economic growth has also brought thorny problems to China, such as repeated construction, heavy reliance on investment and the decline of investment efficiency (Economic Growth Frontier Research Group, 2005) ^[1].

Although the key point to improve the efficiency of capital investment at the enterprise level is the market forces inspired by the reform, the influence of a certain institutional environment represented by government intervention cannot be ignored. Due to the incomplete reform of the economic system and the special system of state-owned enterprises, there are also policy distortions caused by government intervention (Han and Zheng, 2014) ^[2] and biased intervention against the policy burden of state-owned enterprises (Zhang et al., 2014) ^[3]. Therefore, from the perspective of the nature of ownership, it is of great significance to clarify the influence mechanism of government intervention on the efficiency of enterprise

investment, which is of great significance to adjust the efficiency of resource allocation and promote high-quality economic development.

The conclusions and contributions of this paper are mainly reflected in two aspects. First, through the study of the impact of government intervention on enterprise investment, it is found that government intervention will significantly affect the investment behaviour of enterprises, which is reflected in expanding investment and aggravating over-investment. Second, under the background of China's special system, because of its natural shareholder characteristics and social and political responsibility, state-owned enterprises are more sensitive to government intervention, and their over-investment is more serious and under-investment is alleviated.

2 Literature review

The phenomenon of local government intervention in the local economy and business operation and investment is widespread in China (Shi, 2015) ^[4], and it may be a "helping hand" or a "predatory hand" (Shleifer and Vishny, 1998) ^[5]. There are two reasons for this. First, under the incentive of GDP assessment system and tax maximization (Li and Zho, 2005) ^[6], local governments have the economic motivation to intervene in regional enterprise investment activities. Second, in addition to performance goals and economic goals, they also shoulder the goals of public service and social stability (Lin and Li, 2004) ^[7]. Therefore, the government will strive to achieve

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multi-objective optimization by intervening in the investment activities of enterprises.

In view of the relationship between government intervention and enterprise investment, there are two voices in western academic circles, and a lot of research has been carried out. On the one hand, the research of Daron and Simon (2005)^[8] shows that if government officials' intervention in economic activities is not effectively restricted by law, it is very easy to reduce the efficiency of regional investment, and the level of regional economic development will also be negatively affected. On the other hand, Johnson and Mitton (2001)^[9] analysed the fact that enterprises with political connections with the Malaysian government were subsidized by the government during the financial crisis and found that the political relations of these enterprises brought them an increase in value.

Compared with foreign countries, the domestic research on the relationship between the two started relatively late, and some scholars explore whether government intervention leads to inefficient investment. When enterprises are intervened and controlled by local governments, they may get more cash flow, which leads to over-investment (Lin and Li, 2008)^[10]. Focusing on state-owned enterprises, there is a widespread motivation for local governments to intervene in the investment activities of state-owned enterprises based on the goal of diversification (Hao and Liu, 2011)^[11]. In addition, Tang Xuesong et al. (2007)^[12] studied the motivation of government intervention. Through the empirical analysis of the financial data of listed enterprises in China, it is found that local governments undertake economic tasks such as improving the local GDP growth rate. In order to meet such goals, the government often interferes with the investment of enterprises, which leads to over-investment of state-owned enterprises.

3 Hypothesis development

Since the reform and opening in the 1970s, the central government has not only implemented a series of reforms in the financial system to devolve financial power to local governments at all levels, but also transformed the assessment of governments at all levels into the dual assessment of political and economic indicators. Local governments at all levels hold a very positive attitude towards improving the level of local economic development. Investment at the enterprise level is a convenient way to invigorate the capital stock, and enterprises can develop in a direction that meets their own needs through investment. It will increase fiscal revenue and promote employment, which is conducive to the development of the local economy. Therefore, the government has a strong motivation to intervene in enterprise investment through direct or indirect means.

In view of the above reasons, although there may be two diametrically opposite results of over-investment and under-investment in enterprise investment, due to the double assessment of politics and economy, local governments will tend to promote enterprises to expand investment through government intervention. This

expansion of investment in local governments can achieve dual indicators, and there are potential personal benefits for government officials (Tong et al., 2016)^[13]. But in reality, if there is no favourable guidance for expanding investment, it will lead to serious over-investment problems such as repeated investment, repeated construction and overcapacity (Li and Jiang, 2007)^[14]. To sum up, local governments will intervene more in the investment behaviour of enterprises, causing them to over-invest. Based on this, this paper puts forward the research hypothesis H1.

H1: *The higher the degree of government intervention, the more serious the overinvestment of listed companies.*

The most important feature in the reform and opening is the coexistence of state-owned and non-state-owned enterprises. While the government interferes in its business and investment activities through the identity of natural controlling shareholders of state-owned enterprises (Pan et al., 2008)^[15], the government still has strong administrative claim and control over state-owned enterprises. The government has the ability to interfere with the investment decisions of the state-owned enterprises under its jurisdiction. Due to the low cost of intervention and the policy burden and social burden borne by state-owned enterprises, these double burdens determine that state-owned enterprises are more subject to government administrative intervention (Sappington and Stiglitz, 1987)^[16]. This kind of government intervention will promote the diversification of investment decision-making objectives of state-owned enterprises, paying more attention to whether they meet the policy burden, rather than the net present value of the investment project, making state-owned enterprises more prone to over-investment. In sum up, local government will influence the over-investment behaviour of state-owned enterprises more on the basis of interfering with the investment of enterprises to make them over-invest. Based on this, this paper puts forward the research hypothesis H2.

H2: *Compared with non-state-owned enterprises, the over-investment of state-owned enterprises is more serious under government intervention.*

4 Research design

4.1 Sample selection

Since the data after 2016 in the "China Marketization Index—Annual Report on the Relative Progress of Marketization in Various Regions" edited by Fan Gang and Wang Xiaolu have been adjusted later, in order to maintain its originality, this paper selects China's Shanghai and Shenzhen A-share listed companies from 2014 to 2016 as the initial sample. The financial data and corporate governance data of the sample companies are collected from China Stock Market & Accounting Research Database (CSMAR). Some of the annual report data are checked and supplemented from firms' home pages and other websites. Finally, 6783 effective observation data are obtained.

4.2 Variables definition and model construction

4.2.1 Variables definition

Investment efficiency (*Inv*): this paper draws on the Richardson model to calculate inefficient investment to measure enterprise investment. The specific method is to represent the investment efficiency through the residual error obtained by the OLS regression of the model. The residual greater than 0 indicates over-investment, and the greater the value, the greater the degree of over-investment. The residual less than 0 indicates under-investment, and the smaller the value, the greater the degree of under-investment. Show three variables: investment efficiency (residual absolute value, *Inv*), over-investment (residual greater than 0, *Ovin*) and under-investment (residual less than 0, *Underin*).

Government Intervention (*Gov*): this paper draws on the "Government and Market Relationship" index in the "China Marketization Index—Annual Report on the Relative Progress of Marketization in Various Regions" edited by Fan Gang and Wang Xiaolu as a proxy variable for the degree of government intervention.

After learning from the existing literature, adding variables that control the basic characteristics of enterprises and corporate governance, as well as dummy variables that control industry and annual differences, this paper selects the following control variables: free cash flow ratio (*Fcf*), management expense ratio (*Mfee*), asset-liability ratio (*Lev*), cash holdings (*Cash*), board independence (*Indep*), company growth (*Growth*), ownership (*Soe*), company size (*Size*), listing age (*Age*) industry dummy variables (*Industry*) and Annual dummy variable (*Year*).

4.2.2 Model construction

In order to test the relationship between government intervention, the nature of ownership and enterprise investment, this paper constructs model (1) and model (2). The specific models are as follows:

$$Inv = \beta_0 + \beta_1 Gov + \beta_2 Fcf + \beta_3 Mfee + \beta_4 Lev + \beta_5 Cash + \beta_6 Indep + \beta_7 Growth + \beta_8 Soe + \beta_9 Size + \beta_{10} Age + \sum Industry + \sum Year + \varepsilon \quad (1)$$

$$Inv = \beta_0 + \beta_1 Gov \times Soe + \beta_2 Gov + \beta_3 Fcf + \beta_4 Mfee + \beta_5 Lev + \beta_6 Cash + \beta_7 Indep + \beta_8 Growth + \beta_9 Soe + \beta_{10} Size + \beta_{11} Age + \sum Industry + \sum Year + \varepsilon \quad (2)$$

5 Empirical results and analysis

5.1 Descriptive statistics

This paper has performed descriptive statistics on the main variables, but omitted due to space issues. It is found that the investment efficiency (*Inv*), measured by the mean absolute value of the difference between the actual capital investment level of the enterprise and the capital investment level estimated by the model (1), is about 0.051, and the median is both at around 0.032, it indicates

that the investment efficiency of most listed companies is low; and the ratio of overinvestment (*Ovin*) to under-investment (*Underin*) in investment efficiency is about 2:1, indicating that listed companies still prefer under-investment, but the degree of over-investment is higher than under-investment. The average value of government intervention (*Gov*) is 6.932, indicating that the degree of government intervention in the region where the sample companies are located is at a medium level.

5.2 Regression analysis

In order to further study the relationship between government intervention, nature of ownership and investment efficiency of listed companies in China, model (1) and model (2) are used to test hypotheses H1 and H2.

Table 1 reports the specific regression results of government intervention and investment efficiency in model (1). Column (1) is the regression result of overall investment efficiency. Government intervention is positively correlated with investment efficiency at a significance level of 10%, indicating that government intervention will affect investment efficiency to a certain extent. Governments at all levels will actively intervene in the investment of enterprises through different channels, thereby affecting the investment efficiency of enterprises. Columns (2) and (3) are regression results of over-investment and under-investment. Government intervention is positively correlated with over-investment at a 5% significance level, indicating that government intervention will further Excessive investment that promotes investment efficiency. The government will intervene in the direction of enterprise investment, exert policy and social pressure on enterprises, so that they may invest in projects that deviate from normal business objectives or blindly add untimely capital, resulting in excessive investment. Therefore, hypothesis H1 can be verified.

Table 1. The regression result of government intervention and investment efficiency.

VARIABLES	(1) <i>Inv</i>	(2) <i>Ovin</i>	(3) <i>Underin</i>
<i>Gov</i>	0.001* (1.70)	0.004** (2.00)	0.000 (0.63)
<i>Fcf</i>	-0.010 (-0.88)	-0.044 (-1.11)	-0.025*** (-3.69)
<i>Mfee</i>	0.071*** (7.71)	0.190*** (4.97)	0.036*** (6.85)
<i>Cash</i>	-0.015** (-2.18)	-0.084*** (-3.28)	0.019*** (4.67)
<i>Growth</i>	0.039*** (28.49)	0.082*** (22.56)	0.007*** (6.84)
<i>Size</i>	-0.002** (-2.49)	0.002 (0.95)	-0.005*** (-10.81)
<i>Constant</i>	0.056*** (2.91)	-0.074 (-1.08)	0.125*** (10.77)
<i>Industry</i>	Control	Control	Control
<i>Year</i>	Control	Control	Control
R-squared	0.182	0.301	0.174
Observations	6,783	2,227	4,556

Table 2 reports the specific regression results of government intervention, nature of ownership and investment efficiency in model (2). $Gov \times Soe$ is an interactive item of government intervention and nature of ownership. Column (1) is the regression result of overall investment efficiency. Interaction term between government intervention and ownership is negatively correlated with investment efficiency at the 1% significance level, indicating that the investment efficiency of state-owned enterprises is lower than that of non-state-owned enterprises. Columns (2) and (3) are the regression results of over-investment and under-investment. Interaction term between government intervention and nature of ownership is positively correlated with over-investment at a 1% significance level, and negatively correlated with under-investment at a 1% significance level, indicating that the over-investment of state-owned enterprises is serious, and there is less under-investment. Since the actual control of state-owned enterprises is in the hands of the government, the multiple goals of political performance, stability maintenance and development undertaken by local governments will be easier to achieve through the control of state-owned enterprises. On the one hand, this kind of control will directly lead to its over-investment. On the other hand, when state-owned enterprises are in operational or financial difficulties, local governments will inevitably pay more attention to them, and help them to raise funds faster, maintain capital operations through financial assistance, low-interest loans, and government guarantees, softening their budget constraints have, further leading to aggravation of over-investment and alleviation of under-investment. Therefore, hypothesis H2 can be verified.

Table 2. The regression results of government intervention, nature of ownership and investment efficiency.

VARIABLES	(1) <i>Inv</i>	(2) <i>Ovin</i>	(3) <i>Underin</i>
$Gov \times Soe$	-0.002*** (-9.05)	0.005*** (5.49)	-0.001*** (-6.79)
<i>Gov</i>	0.002*** (2.60)	0.005*** (2.63)	0.000 (1.24)
Fcf	-0.014 (-1.21)	-0.045 (-1.14)	-0.027*** (-4.01)
$Mfee$	0.067*** (7.37)	0.183*** (4.84)	0.035*** (6.56)
<i>Cash</i>	-0.014** (-2.08)	-0.079*** (-3.12)	0.019*** (4.69)
<i>Growth</i>	0.037*** (27.26)	0.080*** (21.78)	0.006*** (6.01)
<i>Size</i>	-0.000 (-0.44)	0.006** (2.09)	-0.004*** (-9.01)
<i>Constant</i>	0.029 (1.47)	-0.131* (-1.90)	0.112*** (9.57)
<i>Industry</i>	Control	Control	Control
<i>Year</i>	Control	Control	Control
R-squared	0.192	0.310	0.182
Observations	6,783	2,227	4,556

5.3 Robustness tests

First, this paper uses the growth rate of operating income instead of Tobin's Q value to represent the level of

corporate growth and recalculates inefficient investment. Second, this paper adopts the overall comprehensive index in the "Annual Report of China Marketization Index", that is, the "marketization index" as the proxy variable of the "relationship between government and market" in government intervention. The above robustness test results are similar to the main test, which verifies the robustness of the main test conclusion.

6 Conclusion

In the critical period of reform and opening, the government's control and intervention of the market and enterprises has been weakened to a certain extent, but it still has an impact. At the same time, it is difficult for the government as a shareholder of state-owned enterprises to control its potential political and social influence. This paper uses China's Shanghai and Shenzhen A-share listed companies from 2014 to 2016 as a sample to empirically test the relationship between government intervention, the nature of ownership and enterprise investment efficiency. Research shows that under government intervention, the investment efficiency of enterprises will be significantly affected. This kind of investment efficiency is mainly reflected in negative over-investment. Compared with non-state-owned enterprises, the investment efficiency of state-owned enterprises is lower, showing a significant positive correlation, and the phenomenon of over-investment by state-owned enterprises is serious.

Based on the above research conclusions, this paper has two enlightenments: First, we still need to adhere to the reform of decentralization, regulation, and service. The second is to strictly check the qualifications of investment projects, improve investment efficiency, and eliminate duplication and blind investment under the premise of taking into account the social and people's livelihood and economic benefits.

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