

# Business Groups and Non-efficient Investments

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**Abstract:** This paper takes China's A-share listed companies from 2012 to 2019 as a sample to study the impact of business groups on non-efficient investments. The study found that business groups will reduce the degree of investment deviation of enterprises, alleviate insufficient investment, and reduce excessive investment. Further considering the nature of ownership, it is found that, compared with state-owned enterprises, the impact of business groups on inefficient investment is more obvious in non-state-owned enterprises. Specifically, firstly, business group can reduce information asymmetry through its internal capital market, improve resource allocation efficiency, ease financing constraints, and reduce investment shortages; secondly, group companies can strengthen internal monitoring by assigning managers and adopt relative performance evaluation. and other measures to reduce agency problems and reduce excessive investment behavior. And put forward the following suggestions: First of all, actively promote the development of business group, rationally use the internal capital market functions of business group, improve the governance mechanism, regulate its development, and then improve the corporate financing environment, alleviate agency problems, and reduce inefficient investment. Secondly, it is necessary to improve the independence of state-owned enterprises, so that the management decisions of state-owned enterprises are carried out under market regulation.

**Keywords:** Business groups, Nature of ownership, Non-efficient investments.

## 1. Introduction

The transition of economic development from high speed to high quality is the characteristic of China's current economic development, and the factors supporting economic growth are also changing. The reduction of investment efficiency and the reduction of labor advantages have hindered economic development. Since high-efficiency investment will bring about an improvement in the speed and quality of economic development, related research on how to improve investment efficiency has received extensive attention from scholars in recent years. Existing research results on inefficient investment show that enterprises may either under-invest due to external financing constraints or over-invest due to principal-agent problems. To a certain extent, business group operation can alleviate financing constraints and agency problems. Therefore, it is necessary to study the impact of business group on non-efficient investment.

As a common organizational form, business group, based on the special functions of their internal capital markets, have continuously increased their influence in recent years and have played an important role in the economic development of various countries. Compared with developed economies, as a developing country in a transitional period, my country's external capital market still has major defects, which restrict the development of enterprises. Therefore, the internal capital market has become an important path for enterprises to achieve efficiency improvement. Existing research shows that the internal capital market of business group has functions such as internal lending, internal banking, internal guarantee, internal investment, and asset integration. Moreover, as a special organizational form, business group can form a governance system within the group and reduce agency problems. Therefore, business group occupy an important position in my country's listed companies, which is of great significance to enhance the value of enterprises and promote economic development. Unlike most countries, my country's state-owned enterprises are an important part of the market,

and the different nature of ownership often leads to large differences in enterprise investment management. Therefore, when analyzing the impact of business group on inefficient investment, ownership is considered in Inside, there is a certain necessity.

## 2. Theoretical Analysis and Research Assumptions

There are two main viewpoints on the impact of group management on inefficient investment. One is that enterprise groups may reduce agency problems, and their internal capital market function will also improve the financing environment of member companies, improve capital allocation efficiency, and reduce inefficient investment. La porta et al. pointed out that in emerging economies, due to insufficient investor protection, it is difficult for companies to conduct equity financing through external capital market channels, resulting in serious financing constraints. Therefore, use enterprise groups to form an effective internal capital market to solve the financing difficulties of member enterprises. It is of great significance to the development of enterprises [1]. Xin et al. pointed out that listed companies operating in groups do less damage to investment value [2]. Khatua uses India as an example to study the capital structure choices made by conglomerates in developing economies during economic reforms. It is found that group management enterprises can reduce financial leverage and reduce financing shortage [3]. Lin and Yeh found that by comparing the investment cash flow sensitivity of enterprise groups and non-enterprise groups, because of the existence of the internal capital market of the enterprise group, the financing problems of member companies were alleviated [4].

Second, group member companies may cause inefficient investment due to excess cash flow and internal agency behavior. Bae's study shows that when a corporate group allocates funds internally, if member companies have incomplete understanding of relevant information, over-investment may occur [5]. Gopalan et al. studied Indian

business groups and found that in order to reduce defaults, they supported underperforming member firms through internal fund transfers [6]. Li et al. pointed out in their research that the internal capital market of Chinese group enterprises did not give full play to its role in improving the efficiency of group investment and financing [7].

From the existing research, enterprise business groups will have an impact on inefficient investment from the following aspects.

First, ease financing constraints. As a developing country in transition, my country's external capital market is relatively imperfect. It is not uncommon for companies to face external financing difficulties and other problems resulting in insufficient investment. Cai et al. pointed out that through the internal capital market, funds can flow from an enterprise with abundant funds belonging to the same group to another enterprise with good investment opportunities but difficult external financing, realizing internal capital allocation among member enterprises and alleviating financing constraints [8].

Second, reduce inefficient investment due to information asymmetry. When studying GE's internal capital market, Alchian pointed out that, compared with the external market, within the business group, fund providers have easier access to information, which makes the internal capital allocation more efficient. Williamson proposed that the enterprises in the group realize the allocation of resources through competition with each other. In the process of competition, by comparing and selecting projects with higher investment value to invest funds, the information advantages of the internal capital market can be fully utilized, thereby improving the efficiency of resource allocation [9].

Third, reduce agency problems. With weak owner oversight, management has the opportunity to increase its own interests by controlling more resources, resulting in overinvestment, and the presence of conglomerates reduces agency problems. Listed companies can reduce overinvestment by strengthening financial monitoring. When the group appoints the chief financial officer to the member enterprises, it will control the agency problem of the member enterprises. The relative performance evaluation mechanism can also be used to supervise the behavior of member enterprises. Compared with independent companies, business group can also use relative performance evaluation to form a comparative competition mechanism within the group, provide timely and accurate feedback on the business status of the enterprise, and use information to compare motivation and survival motivation to reduce managers' agency behavior.

Through the above methods, the group allocates funds internally, and the allocation of funds will be carried out in a more efficient direction. Therefore, this paper proposes the hypothesis H1:

H1: Business group will reduce the inefficient investment

of listed companies. The specific embodiment is that the business group reduces the underinvestment of enterprises and alleviates the overinvestment of enterprises.

One of the main ways for business group to influence inefficient investment is to ease financing constraints through internal capital markets, or to reduce agency problems through internal comprehensive management. In my country, state-owned enterprises are supported by state funds and related policies, and credit support, and some state-owned enterprises have a monopoly position in the market, which makes it more convenient for state-owned enterprises to have external financing, and banks are more inclined to provide financing for state-owned enterprises. Therefore, SOEs are less likely to underinvest due to financing constraints. On the other hand, although state-owned enterprises have the advantage of being supported by national policies, at the same time, their operation and management also bear greater constraints. Due to the requirements of the country's phased industrial policies and development goals, the investment decisions of state-owned enterprises often cannot be made in the most efficient direction, and the policy burden is heavy. Even if measures such as relative performance evaluation are taken, member companies cannot choose more efficient investments. Therefore, the transmission mechanism of improving investment efficiency by solving information asymmetry and agency problems is relatively ineffective in state-owned enterprises. Therefore, this paper proposes the hypothesis H2:

H2: Compared with state-owned enterprises, the influence of business group control on the inefficient investment of listed companies is more significant in private enterprises.

### 3. Reserch Design

#### 3.1. Model Construction and Variable Definition

When the actual investment of an enterprise deviates from the normal investment level, it is generally said that the enterprise has inefficient investment. This paper draws on the research of Richardson (2006), establishes a regression model, see equation (1), and calculates the normal investment level of enterprises. The absolute value of the estimated residual is recorded as the index of investment deviation. The model settings are as follows:

$$INVN_{i,t} = \beta_0 + \beta_1 TQ_{i,t-1} + \beta_2 LEV_{i,t-1} + \beta_3 CASH_{i,t-1} + \beta_4 AGE_{i,t-1} + \beta_5 SIZE_{i,t-1} + \beta_6 RETS_{i,t-1} + \beta_7 INVN_{i,t-1} + \sum YEAR + \sum IND + \xi_{i,t} \quad (1)$$

The definitions of each variable are shown in Table 1, while controlling for year and industry effects.

**Table 1.** Model (1) Definition and calculation method of each variable

Variable type	Variable name	Variable definitions
Explained variable	INVN	The new investment of enterprises is measured by the ratio of new investment expenditure of enterprises to total assets.
Explanatory variables	CASH	The cash position is measured by the ratio of the company's net operating cash flow to total assets.
	TQ	Tobin's Q value is measured by the ratio of the company's market price to the company's replacement cost.
	LEV	Leverage level, measured by the ratio of total assets to total liabilities.
	AGE	The listing year is measured by the difference between the financial reporting year and the IPO year.
	SIZE	The size of the enterprise is measured by the natural logarithm of the total assets of the enterprise.
	RETS	Market returns, measured by annual individual stock returns taking into account cash dividends.

In order to test Hypothesis 1 of this paper, a regression model was established, as shown in Equation (2), with investment deviation degree (AUIINVN) as the explained variable and business group (Group) as the explanatory variable. Analyze the relationship between business groups and enterprise inefficiency investment.

$$AUIINVN_{i,t} = \beta_0 + \beta_1 \text{Group}_{i,t-1} + \beta_n^* \text{controls}_{i,t-1} + \Sigma \text{YEAR} + \Sigma \text{IND} + \xi_{i,t} \quad (2)$$

Among them, the explanatory variable AUIINVN in model (2) represents the degree of deviation of enterprise investment, and the residual estimated in model (1) is obtained by taking

the absolute value. The explanatory variable Group indicates the group attribute of the enterprise, if it belongs to the business group, it is 1, otherwise it is 0. At the same time, referring to existing research, the control variables are Tobin's Q value, cash position, board size, executive compensation, asset-liability ratio, and return on assets. Tobin's Q value is controlled to control the investment opportunities of the company; the net operating cash flow of the company is controlled to control the free cash flow of the company; the ratio of independent directors, executive compensation, return on assets, asset-liability ratio and other factors are controlled to control Corporate financial governance. Control for both year and industry effects.

**Table 2.** Model (2) Definitions and calculation methods of variables

Variable type	Variable name	Variable definitions
Explained variable	AUIINVN	The deviation of enterprise investment is measured by the absolute value of the residual calculated in model (1).
Explanatory variables	Group	Business group, whether it belongs to an business group, it is 1 if it belongs to an business group, otherwise it is 0.
Control variable	CASH	The cash position is measured by the ratio of the company's net operating cash flow to total assets.
	TQ	Tobin's Q value is measured by the ratio of the company's market price to the company's replacement cost.
	BOARD	The size of the board of directors, measured by the logarithm of the total number of people on the board.
	LEV	Leverage level, measured by the ratio of total assets to total liabilities.
	SALARY	Executive compensation, the natural logarithm of the total compensation of the top 3 executives of the listed company.
	ROA	Return on assets is measured by net profit for the year and total assets at the end of the year.

### 3.2. Data Sources and Sample Selection

This paper selects all A-share listed companies from 2012 to 2019 as samples, obtains data from the CSMAR database, and processes the samples as follows. First, ST companies, financial industries, and companies with missing required data were excluded. Second, in order to reduce the impact of outliers in sample data, 1% quantile winsorize was performed on continuous variables at the enterprise level. Finally, in order to control the impact of industry and year, the models control for annual and industry effects. After the above processing, 13166 samples were finally obtained.

## 4. Empirical Analysis

### 4.1. Empirical Analysis of Business Group and Inefficient Investment

Table 3 shows the regression results of the degree of deviation between business group and investment efficiency. Column (1) is the regression result without controlling the industry and annual effects, and no control variables are added. The regression results without the addition of control variables, the third column is the regression results of the fixed effects of industry and year, and the addition of control

variables. As shown in Table 5.6, the influence of the business group (Group) on the investment deviation degree (AUIINVN) is negative, and the coefficient is -0.007, which is significant, indicating the robustness of the regression results. Thus, hypothesis 1 is verified, indicating that business groups will reduce inefficient investment. According to the estimation results of control variables, the coefficient of cash holdings (CASH) to investment deviation (AUIINVN) is 0.052, and it is significant, that is, the more cash holdings, the lower the investment efficiency. The possible reason is that too much free cash may lead to The irrational investment of enterprises is especially obvious in over-investment; Tobin's Q value (TQ) and board size (BOARD) have a significant positive impact on the degree of investment deviation (AUIINVN), with coefficients of 0.007 and 0.027 respectively, indicating that enterprises have investment opportunities Larger and larger board sizes increase the firm's inefficiency investments. The company's asset-liability ratio (LEV) and return on total assets (ROA) have a significant negative impact on the degree of investment deviation, and the coefficients are -0.021 and -0.374, respectively, indicating that with the increase of the enterprise's asset-liability ratio and return on assets, Reduced inefficiency investments by firms.

**Table 3.** Regression results of deviation degree between business group and investment

	(1)	(2)	(3)
VARIABLES	AUINVN	AUINVN	AUINVN
L.Group	-0.006** (-2.39)	-0.007*** (-2.98)	-0.007*** (-2.81)
L.CASH		0.052*** (3.17)	0.052*** (3.11)
L.TQ		0.005*** (5.96)	0.007*** (6.77)
L.SALARY		-0.001 (-0.52)	0.002 (1.33)
L.BOARD		0.032*** (5.52)	0.027*** (4.58)
L.LEV		-0.008 (-1.33)	-0.021*** (-3.08)
L.ROA		-0.353*** (-18.33)	-0.374*** (-19.13)
Constant	0.033*** (20.39)	-0.021 (-0.80)	-0.051* (-1.83)
annual effect	N	N	Y
Industry effect	N	N	Y
R-squared	0.001	0.039	0.047
Adj R-squared	0.000454	0.038	0.044

Note: The t value in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

Inefficient investment can be divided into underinvestment and overinvestment. According to the residuals calculated by the expected investment model of investment, this paper records the samples with residuals greater than 0 as over-invested samples, and the samples with residuals less than 0 as under-invested samples. Regression is carried out to explore the impact of business groups on over-investment and the impact of corporate over-investment. Differences in the impact of underinvestment. Judging from the over-investment sample, the impact of business groups on over-investment is

significantly negative and stable. Among them, the impact of corporate cash position and Tobin's Q value on over-investment is significantly positive, indicating that over-investment will be more serious with the increase of cash and investment opportunities held by companies. From the sample of underinvestment, the impact of business groups on underinvestment is significantly positive and stable. Based on the above analysis, business groups can restrain over-investment and alleviate under-investment.

**Table 4.** Regression results of business group and over-investment and under-investment

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Overinv	Overinv	Overinv	Underinv	Underinv	Underinv
L.Group	-0.004*** (-3.24)	-0.004*** (-3.13)	-0.003** (-2.42)	0.007* (1.69)	0.007* (1.82)	0.007* (1.93)
L.CASH		0.044*** (4.86)	0.041*** (4.53)		-0.038 (-1.44)	-0.040 (-1.52)
L.TQ		0.002*** (3.41)	0.001** (2.56)		-0.008*** (-5.29)	-0.010*** (-6.35)
L.SALARY		-0.003*** (-3.53)	-0.001 (-0.62)		-0.005* (-1.69)	-0.007** (-2.53)
L.BOARD		0.009*** (2.75)	0.004 (1.11)		-0.051*** (-5.47)	-0.049*** (-5.26)
L.LEV		0.003 (0.80)	0.004 (0.97)		0.035*** (3.39)	0.055*** (5.06)
L.ROA		-0.005 (-0.54)	-0.011 (-1.17)		0.734*** (21.44)	0.740*** (21.53)
Constant	0.038*** (44.43)	0.057*** (3.97)	0.033** (2.16)	-0.030*** (-10.95)	0.123*** (2.90)	0.156*** (3.48)
Year	N	N	Y	N	N	Y
Industry	N	N	Y	N	N	Y
R-squared	0.002	0.036	0.043	0.000	0.045	0.122
Adj R-squared	0.002	0.031	0.036	0.0003	0.041	0.118

Note: The t value in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

Classify the samples according to ownership, and explore whether the impact of business group operation on investment efficiency is different under different ownership perspectives.

The results are shown in Table 5. The analysis and estimation results show that in both the state-owned ownership sample and the non-state-owned ownership sample, the impact of

business group operation on the degree of investment deviation is significantly negative, which are -0.004 and -0.011, respectively, indicating that business groups will reduce the degree of investment deviation, and improve the investment efficiency of enterprises, which is consistent with the previous research results. The coefficients of the two were further compared, and the coefficient difference test between

groups was carried out based on the SUR estimation. The test result showed that the p-value was 0.0297, which passed the significance test at the 5% level. Therefore, it is concluded that in non-state-owned enterprises, the impact of business groups on the degree of investment deviation is more obvious, and then the second hypothesis of this paper is verified.

**Table 5.** Regression results of business group, ownership and investment deviation degree

VARIABLES	(1) AUINVN state-owned enterprise	(2) AUINVN state-owned enterprise	(3) AUINVN non-state-owned enterprise	(4) AUINVN non-state-owned enterprise
L.Group	-0.004*** (-3.00)	-0.004*** (-3.01)	-0.009* (-1.82)	-0.011** (-2.38)
L.CASH		0.162*** (4.93)		-0.014 (-1.55)
L.TQ		0.009*** (4.34)		0.003*** (6.11)
L.SALARY		0.013*** (3.53)		-0.001 (-1.52)
L.BOARD		0.058*** (5.06)		0.004 (1.05)
L.LEV		-0.084*** (-6.27)		0.015*** (3.85)
L.ROA		-0.995*** (-23.71)		0.020** (2.00)
Constant	0.036*** (9.60)	-0.243*** (-4.35)	0.032*** (39.09)	0.037** (2.36)
Year	N	Y	N	Y
Industry	N	Y	N	Y
R-squared	0.001	0.118	0.002	0.036
Adj R-squared	0.0004	0.113	0.002	0.030

Note: The t value in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Table 6.** Regression results of business group, ownership nature and over-investment and under-investment

VARIABLES	(1) Overinv state-owned enterprise	(2) Overinv non-state-owned enterprise	(3) Underinv state-owned enterprise	(4) Underinv non-state-owned enterprise
L.Group	-0.001 (-0.35)	-0.004* (-1.69)	0.004*** (2.61)	0.020** (2.29)
L.Cash	0.052*** (4.21)	0.026* (1.87)	-0.132** (-2.47)	0.056*** (4.64)
L.TQ	0.000 (0.09)	0.002*** (2.86)	-0.016*** (-4.32)	-0.003*** (-4.59)
L.SALARY	-0.002 (-1.32)	0.000 (0.01)	-0.028*** (-4.83)	0.004*** (2.81)
L.BOARD	0.010** (2.28)	-0.000 (-0.06)	-0.095*** (-5.38)	-0.004 (-0.84)
L.Lev	-0.004 (-0.74)	0.010* (1.74)	0.146*** (7.02)	-0.014*** (-2.74)
L.ROA	-0.012 (-0.77)	-0.012 (-0.99)	1.605*** (24.13)	-0.056*** (-3.47)
Constant	0.030 (1.42)	0.039* (1.67)	0.559*** (6.17)	-0.050** (-2.40)
Year	Y	Y	Y	Y
Industry	Y	Y	Y	Y
R-squared	0.069	0.040	0.235	0.060
Adj R-squared	0.056	0.026	0.227	0.051

Note: The t value in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

## 4.2. Further Analysis

In order to study whether the influence of business groups on under-investment and over-investment is different under different ownership, this paper further tests the over-

investment and under-investment of state-owned and non-state-owned samples. The estimated results show that the impact of business groups on over-investment has not passed the significance test at the 10% level in the SOE sample. In the sample of non-state-owned enterprises, it is significantly

negative and the coefficient is -0.004. It shows that the mitigating effect of business groups on over-investment is more obvious in non-state-owned enterprises. The impact of business groups on underinvestment is significantly positive in both state-owned and non-state-owned samples, 0.004 and 0.02, respectively. The coefficients of the two were further compared, and the coefficient difference test between the groups was carried out based on the SUR estimation. The test results showed that the p-value was 0.3018, and the null hypothesis was accepted, that is, there was no significant difference between the two coefficients. The above measurement results further verify Hypothesis 2, that is, because of the policy burden, state-owned business group sometimes have to choose some projects with low investment efficiency, which leads to over-investment. Therefore, even in the case of business group, the over-investment phenomenon of state-owned enterprises still cannot be significantly improved.

### 4.3. Analysis of Role Channels

As mentioned above, business group can significantly

alleviate the financing constraints faced by their member enterprises through the allocation of funds and information transmission in the internal capital market. In order to verify the above mechanism, this paper refers to the article of Hadlock and Pierce to construct the SA index. The specific calculation method is as follows[10]:

$$SA = -0.737size + 0.043size^2 - 0.04age \quad (3)$$

The calculated SA index is negative, and the larger the value, the lower the degree of corporate financing constraints. In this paper, the median of the calculated SA index is used as the dividing boundary, and a dummy variable of the degree of corporate financing constraints is set (the financing constraint is high, which is 1, otherwise it is 0). Build a model to test whether business groups will have an impact on corporate financing constraints.

$$SA_{i,t} = \beta_0 + \beta_1 Group_{i,t-1} + \beta_n controls_{i,t-1} + \sum YEAR + \sum IND + \xi_{i,t} \quad (4)$$

**Table 7.** Regression results of business group and financing constraints

	(1)	(2)	(3)
VARIABLES	SA	SA	SA
L.Group	-0.198*** (-20.61)	-0.166*** (-17.41)	-0.166*** (-17.27)
L.CASH		-0.092 (-1.38)	-0.142** (-2.14)
L.TQ		0.019*** (5.25)	0.006* (1.68)
L.SALARY		0.016** (2.31)	0.016** (2.23)
L.BOARD		-0.075*** (-3.12)	-0.060** (-2.50)
L.LEV		-0.487*** (-18.85)	-0.394*** (-14.62)
L.ROA		-0.116 (-1.48)	0.026 (0.34)
Constant	0.591*** (88.13)	0.703*** (6.53)	0.624*** (5.61)
Year	N	N	Y
Industry	N	N	Y
R-squared	0.039	0.089	0.144
Adj R-squared	0.0392	0.0885	0.141

Note: The t value in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

## 5. Conclusion

From the perspective of business groups, this paper draws on the research of Richardson[11], calculates the index of investment deviation, and takes Chinese A-share listed companies as a sample to study the impact of business groups on enterprise investment efficiency. Taking into account China's special national conditions, taking the nature of ownership into account, it explores the relationship between business groups and inefficient investment from the perspective of ownership. The research finds: (1) Compared with independent enterprises, business groups will reduce the degree of investment deviation of enterprises and reduce inefficient investment. Reduce the under-investment of enterprises and alleviate the over-investment of enterprises; (2) Business groups has a significant effect on reducing the degree of investment deviation of state-owned enterprises and non-state-owned enterprises. And compared with state-owned

enterprises, the impact of business groups on inefficient investment is more obvious in non-state-owned enterprises. The mitigating effect of business groups on over-investment is not significant in state-owned enterprises, but significant in non-state-owned enterprises. The impact on underinvestment was not significantly different between SOEs and non-SOEs.

Based on the research conclusions, this paper puts forward the following suggestions: First, actively promote the development of business group. Enterprise business groups can reduce inefficient investment. Therefore, under the realistic background that the economy is in a transition period, as a reasonable way to significantly improve investment efficiency, enterprise business groups should actively promote its development; secondly, standardize the operation of the group's internal capital market. Although conglomerates can use internal capital markets to reduce underinvestment. However, some studies have found that

member companies may obtain excess cash flow through the internal capital market, resulting in inefficient investment. Therefore, business group should take measures to regulate the effective operation of the internal capital market. In order to reduce the phenomenon that the member enterprises obtain excess cash flow, the business group can reasonably monitor the financial situation of the member enterprises. Using the advantages of the internal capital market in information acquisition and internal supervision, the internal capital market will develop towards a more efficient direction. Third, improve the governance mechanism and reduce agency problems. In order to make the business groups play a better role in alleviating the agency problem, the business group needs to make reasonable use of the incentive mechanism, the supervision and check and balance mechanism, and the agency competition mechanism, and use the mutual competition and comparison among member enterprises to reduce agency behavior.

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