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Equity Concentration and Inefficient Investment

-- Empirical Evidence from Listed Companies in China

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Abstract. Enterprise investment efficiency has been a hot topic of concern to all walks of life, and equity concentration, as an important element of corporate governance and modern enterprise construction, has attracted extensive attention from the academic community. Hence, this paper provides theoretical analyses and empirical tests on the relationship between corporate inefficient investment and equity concentration. After regression analysis, this paper finds that there is a significant negative relationship between equity concentration and the degree of inefficient investment, which confirms the hypothesis that equity concentration reduces the level of inefficient investment; compared to the company with CEO duality, in the case of equity concentration, the separation of decision-making power and decision-controlling power is more able to reduce the level of inefficient investment; However, the allocation of decision-making power does not have a significant effect on this relationship mechanism. This paper provides some theoretical basis and implications for how enterprises can optimise their shareholding structure and promote the reform of corporate governance modernisation so as to enhance investment efficiency.

Keywords: Shareholding Concentration; Inefficient Investment; Principal-Agent Theory; Corporate Governance.

1. Introduction

Corporate governance and corporate investment efficiency has always been one of the hot issues in academic research, since China opened the stock market in the early 1990s, there have been more scholars focusing on the relationship between governance and investment efficiency of Chinese listed companies to conduct empirical research, such as Li Wanfu et al. (2011), Shen Huihui et al. (2012). The related topic is even a key concern of the business community and the government. *The Opinions of the State Council of the Central Committee of the Communist Party of China on Promoting the Development and Strengthening of the Private Economy* (hereinafter referred to as "*Opinions*") requires that guidance be given to improve the governance structure and management system of private enterprises, and that support be given to guide private enterprises to improve the governance structure of the legal person, regulate the behaviour of shareholders, strengthen internal supervision, achieve standard governance, and that conditional Private enterprises are encouraged to establish and improve the modern enterprise system with Chinese characteristics; one of the development goals of the *14th Five-Year Plan for Promoting the Development of Small and Medium-sized Enterprises* (hereinafter referred to as the *14th Five-Year Plan*) is to improve the level of business management of enterprises, and to promote the continuous improvement of the modern enterprise system and the optimisation of the internal governance structure. With regard to investment efficiency, General Secretary Xi Jinping attaches great importance to playing a key role in effective investment, stressing in the second collective study of the Political Bureau of the CPC Central Committee that it is important to improve the mechanism for expanding investment, expand the space for effective investment, expand investment in high-technology industries and strategic emerging industries, and continue to stimulate the vitality of private investment. The *Opinions* also proposes to regulate and guide the healthy development of private capital in accordance with the law, comprehensively enhance the effectiveness of capital governance, improve the capacity of capital supervision and the modernisation of the regulatory system. The *14th Five-Year Plan* points out that small and medium-

sized enterprises (SMEs) are the driving force of the national economy and social development, an important foundation for building a modernised economic system and promoting high-quality economic development, as well as an important support for expanding employment and improving people's livelihood. Based on this reality, the research on corporate governance and corporate investment is of great significance to stimulate China's market vitality, enhance the high-quality development of the economy and improve the well-being of the people, and the relevant research is also in line with the development trend of China's new era of reform of state-owned enterprises and corporate reform, and positively responds to the policy call, echoing the times, and the needs of the society.

Existing studies have paid less attention to the impact of equity concentration on corporate inefficient investment. All along, focusing on corporate governance and investment efficiency and other related areas of academic topics have a lot of discussion and research, although at present temporarily less scholars directly study the empirical relationship between equity concentration and corporate inefficient investment, but there are still many scholars explore the relationship between the proportion of shares held by the first largest shareholder of listed companies in China and the performance of the company, and there is a large divergence, lack of consistent research conclusions. For example, Sun Yongxiang and Huang Zuhui (1999) in the study of equity structure and performance of listed companies pointed out that there is an inverted U-shape relationship between the shareholding ratio of the first largest shareholder and the Tobin's Q value of the company, and that the equity structure with a certain degree of concentration, relative controlling shareholders and the presence of other large shareholders is conducive to the performance of the company; an empirical study conducted by Wu Shukun (2002) on listed companies from 1997 to 2000 showed that the proportion of shares held by the largest shareholder was positively correlated with firm performance, and that equity concentration, internal shareholding and firm performance showed a significant inverted U-shaped correlation; Bai Chong'en et al. (2005) concluded that the relationship between the shareholding of the first largest shareholder and the market value of the company is a non-linear U-shaped relationship; Xu Liping et al. (2006) found that in listed companies controlled by controlling shareholders of different natures, there is a significant positive relationship between the concentration of shareholding and the company's operating performance. Most of the current research related to equity structure focuses on the relational role of its impact on firm performance. And when exploring the efficiency of corporate investment, numerous scholars are currently based on macro policies or fundamentals, and the perspective is mostly environmental uncertainty and policy impact. Given that fewer scholars take equity concentration as an entry point to explore its relationship with investment efficiency, and equity concentration as one of the basic indicators and fundamentals of corporate governance, this paper will examine the impact mechanism of equity concentration on enterprise investment efficiency, with a view to helping enterprises to further optimise the equity structure, improve the corporate governance system, and better exert the corporate governance mechanism, so as to make optimal investment decisions, reduce the level of inefficient investment, and improve the productivity and market vitality of enterprises and industries.

In view of the important concerns of the business community, government and academia about investment efficiency and equity concentration and its own research significance, this paper provides theoretical analyses and empirical tests on the impact mechanism between corporate inefficient investment and its equity concentration. With reference to the current research literature and based on the Principal-Agent Theory of corporate governance, this paper puts forward the two hypotheses that equity concentration will reduce the level of inefficient investment and equity concentration will increase the level of inefficient investment. The sample period selected in this paper is 2008-2022, and the corporate financial and governance information data are mainly from the CSMAR(China Stock Market & Accounting Research) Database and refer to previous related studies to screen the effective samples, and the regression model of the degree of inefficient investment and equity concentration is established through the inefficient investment level measurement model and the introduction of common control variables and year and industry dummy variables. Through

regression analysis, this paper finds that equity concentration and the degree of inefficient investment show a negative correlation, which confirms the hypothesis a of this paper, i.e., equity concentration reduces the level of inefficient investment. In addition, this paper in the further discussion of this relationship mechanism for heterogeneity analysis, the study shows that CEO duality (CEO duality is a business practice where the CEO of a company also serves as the chairman of the board of directors, which is synonymous with the meaning when *dual* is equal to one later in the paper.) to a certain extent is not its important influence factors; and relative to the company with CEO duality, the greater separation of the decision-making power and decision-making control will be with the concentration of equity, more able to reduce the enterprise's non-efficient investment. This paper provides some theoretical basis for how to optimise the shareholding structure of enterprises, promote corporate governance reform, and improve the modern enterprise system, so as to promote the improvement of the level of efficient investment, which is of revelation significance and research value.

Based on the first type of Principal-Agent Problem, this paper proposes hypothesis a: equity concentration reduces the level of inefficient investment. The separation of ownership and control of the company due to dispersed shareholding will create a conflict of interest that exists between managers and dispersed minority shareholders, generating agency costs. In addition, individual dispersed minority shareholders have limited control and influence over corporate decisions, with inefficient externalities, i.e., the cost of shirking by dispersed minority shareholders is shared by all shareholders in proportion to their shareholdings, thus giving them a greater incentive to neglect some tasks of ownership (Demsetz annd Lehn, 1985); and because the cost of monitoring managerial behaviour and investment decisions is borne by the the costs of monitoring managerial behaviour and investment decisions are borne by the shareholders themselves, and the benefits of monitoring will be shared by all shareholders, so the cost of monitoring for dispersed minority shareholders will be much greater than the benefits of monitoring, thus giving rise to the Free-Rider Problem arises out of Rational Ignorance, resulting in a lack of incentive to monitor investment decisions. In contrast, in the case of concentrated ownership, the more concentrated the ownership, the greater the extent to which the benefits and costs are borne by the same shareholders, the greater the incentive to monitor investment decisions without any "externalities" affecting their decision to fulfil the ownership mandate (Demsetz and Lehn, 1985); and the controlling major shareholder can act as the chairman or chief executive officer of the company by himself or send his direct representative to appoint the management personnel, which can promote the high degree of consistency between the interests of the operators and the shareholders and alleviate the Principal-Agent Problem. Therefore, with the increase of equity concentration, the stronger the major shareholder's motivation and ability to supervise the company's investment decision, the lower the level of inefficient investment. Considering Type II Agency Problem, this paper proposes hypothesis b: equity concentration increases the level of inefficient investment. Due to the lack of external monitoring under the condition of equity concentration, there is a possibility of Tunneling (Shleifer and Vishny, 1996). At the same time, the majority shareholder has an incentive to consume the company's wealth to pay himself a high salary, to engage in Sweetheart Deals with the company he controls, and to invest in projects that have a negative NPV and that are beneficial to him (Sun Yongxiang, 1999). In addition, it is difficult to replace the agents appointed directly by the controlling shareholder(Sun Yongxiang, 1999), and the lack of a dynamic performance reward and punishment system is not conducive to performance incentives for managers(Fama, 1980), thus discouraging them from making investment decisions in a serious and prudent manner. Therefore, the increase in equity concentration will exacerbate the problem of inefficient investment.

The main marginal contributions of this paper are as follows: first, most of the existing literature related to the influencing factors of investment efficiency focuses on the relationship between the firm's external environment and fundamental factors and investment efficiency, such as institutional influences, national or local policy support, cultural factors, etc., or discusses them with investment efficiency from a more macro perspective, such as corporate governance and internal control. For

example, Lv Changjiang and Zhang Haiping (2011) examine the impact of equity incentive systems on corporate investment behaviour, and show that equity incentive schemes help to curb inefficient investment; Shen Huihui et al. (2012) explored the impact of environmental uncertainty on investment efficiency from the perspective of financing constraints and found that investment deviations caused by environmental uncertainty in non-state-owned holding companies increased firm value; while investment deviations caused by environmental uncertainty in state-owned holding companies decreased firm value; the empirical study of Fang Hongxing and Jin Yuna (2013) points out that there is an inhibitory effect of corporate governance and internal control on the inefficient investment and so on. This paper, on the other hand, starts from corporate governance and explores the influence mechanism of investment efficiency at the micro level of equity concentration, providing empirical evidence for the important proposition of investment efficiency from the perspective of equity concentration, which to a certain extent broadens the research boundaries of the related fields and helps to deepen the understanding of the investment efficiency of the company.

Secondly, a large part of the current discussion on equity concentration focuses on its impact on the company's operating performance, governance efficiency, financing constraints and market value of the company, and M&A, etc. For example, Xu Liping et al. (2006) examined equity concentration and equity checks and balances in Chinese listed companies and their impact on company's operating performance, and showed that there is a significant positive linear relationship between equity concentration and operating performance. significant positive linear relationship between equity concentration and business performance; Wu Shukun (2002) found that the proportion of shares held by the first largest shareholder is positively related to firm performance in a study on the U-shaped relationship between shareholding structure and firm performance; Du Ying and Liu Liguo (2002) empirically pointed out that dispersed outstanding shareholders are less likely to engage in corporate governance in the heavily speculative atmosphere of the securities market, and that equity concentration has a significant inverted U-shaped curve relationship with corporate performance. By revealing the mechanism of the impact of equity concentration on inefficient investment, this paper enriches the existing empirical research on the consequences and importance of equity concentration on the basis of previous studies, and increases the depth and complexity of the research on equity concentration to a certain extent.

Third, on the one hand, the study of the mechanism of the impact of equity concentration on the level of inefficient investment in companies provides a theoretical basis and practical significance for the current government how to optimise the allocation of equity, and further improve the reform of equity distribution; at the same time, it deepens the understanding of policymakers on the consequences of equity concentration and so on, and helps to better measure the costs and benefits of adjusting the policy. On the other hand, the research in this paper provides a useful perspective on how enterprises should improve their investment efficiency based on the background of equity reform, and improve the modernisation reform of corporate governance by optimising the equity structure, so as to increase effective investment and promote the high-quality development of enterprises.

The rest of the paper is structured as follows: the second part presents the research hypotheses of the paper in the light of relevant literature and theories; the third part is the empirical design; the fourth part reports the empirical results and analyses of the paper; the sixth part provides a further discussion on the proposition of equity concentration and inefficient investment; and last part is to conclude the study.

2. Theoretical Hypothesis

Dispersed shareholdings lead to a further separation of ownership and control of the company and potential conflicts of interest between managers and dispersed minority shareholders. Under dispersed shareholding conditions, a significant number of shareholders will hold similar sized shares and voting rights, resulting in limited control and influence of individual shareholders over corporate decisions, leading to greater incentives for dispersed minority shareholders to shirk, resulting in the

Free- Rider Problem, which arises out of Rational Ignorance. Because the cost of monitoring the manager's behaviour and the company's decision-making is borne by the shareholders themselves, the gains and effectiveness of monitoring will be shared by all shareholders, while the share held by each shareholder accounts for a relatively small proportion, so the dispersed minority shareholders are allocated to the profit or bear the operating losses are relatively small, the cost of its monitoring will be greater than the monitoring of the gains brought about by the cost of monitoring. Moreover, a diffuse ownership structure has inefficient externalities: because the costs of shirking by dispersed minority shareholders is shared by all owners in proportion to the number of shares of stock they own; for the typical dispersed minority shareholder, the large divergence between benefit and the costs would lead to a greater incentive to neglect some tasks of ownership (Demsetz annd Lehn, 1985). Consequently, dispersed minority shareholders lack incentives to monitor investment decisions and are more inclined to bear the risks and losses resulting from overly risky investment decisions by the operator due to adverse selection.

In contrast, under conditions of concentrated ownership, given the large proportion of shares held in the company, the majority shareholders have a greater incentive to monitor and incentivise managers than dispersed minority shareholders, with a view to ensuring that the company's investment behaviour is in line with shareholders' profit-maximisation objectives, thus contributing to the efficiency of the investment. The more concentrated is ownership, the greater the degree to which benefits and costs are borne by the same owner. In a firm owned entirely by one individual, all benefits and costs of owner shirking are borne by the sole owner. In this case, no "externalities" confound his decision about attending to the tasks of ownership(Demsetz and Lehn, 1985). Furthermore, the dominant majority shareholder has control over the firm, and the controlling interest allows the majority shareholder to act as chairman or chief executive officer of the firm, either by himself or by sending a direct representative, and to appoint management personnel, thus converging and aligning the interests of the operators with those of the shareholders. Therefore, the ability of major shareholders to supervise and control the company can, to a certain extent, alleviate the proxy phenomenon mentioned above, alleviate the problem of overinvestment, avoid investing cash flows in projects with negative net present value, and promote effective investment.

Hence, the larger the shareholding proportion of the major shareholders and the higher the equity concentration, the stronger the shareholders' motivation and ability to supervise the company's investment decisions, thus reducing the inefficient investment. This paper proposes hypothesis a: equity concentration reduces the level of inefficient investment.

However, the concentration of shareholding leads to a certain extent to insufficient external supervision. The higher the degree of equity concentration, the less favourable it is for the managerial class to accept the supervision and constraints of diversified property rights subjects on the enterprise's operation activities in a wider scope (He Jun, 1998). Concentration of shareholding will give rise to another type of Principal-Agent Problem, i.e., the two parties in conflict of interest will be converted from shareholders and management personnel to majority shareholders and minority shareholders, resulting in the emergence of the Tunneling. The controlling shareholders, by virtue of their position of control, will seek their own interests at the expense of the minority shareholders (Shleifer and Vishny, 1996), and have the incentive to engage in investment activities based on the self-interest rather than market efficiency and profit maximisation for all shareholders. Majority shareholders will have an incentive to invest in the project if the gain from the project is greater than the loss they are liable to bear in proportion to their shareholding. This is because the remaining shareholders share the losses and risks for them and majority shareholder can enjoy profits that do not have to share with the remaining shareholders. This will lead the majority shareholder to consume the company's wealth to pay himself a very high salary to make a Sweetheart Deal with the company that he himself controls, investing in a project that has a negative NPV and at the same time is beneficial to him (Sun Yongxiang, 1999). In addition, the high concentration of equity makes it costly for the controlling shareholders to know and recognise the operational and investment errors of their directly appointed agents, which is not conducive to the replacement of managers (Sun Yongxiang,

1999). And because the competitive managerial labour market outside the firm and the managerial performance reward and punishment system inside the firm have an incentive effect on managerial performance (Fama, 1980). Difficult-to-replace agents will discourage operators from making effective investments in a serious and prudent manner, thus harming the firm's investment efficiency.

Therefore, the higher the degree of equity concentration, the less external supervision, the greater the motivation of controlling major shareholders to misappropriation of benefits through investment decisions, the less the degree of managerial incentives, the higher the level of inefficient investment. This paper puts forward hypothesis b: equity concentration increases the level of inefficient investment.

Based on the above hypothesis, this paper takes Chinese listed companies as empirical samples for regression study.

3. Empirical Design

3.1. Sample Selection and Data Sources

The sample period of this study is 2008-2022, and the data of corporate financial and governance information are mainly from the CSMAR(China Stock Market & Accounting Research) Database. Referring to previous related studies, this paper screens the valid samples by the following steps: 1) excluding the samples of enterprises that are ST or ST*; 2) excluding the samples of enterprises that are newly listed in the current year, and have already been delisted or suspended; 3) excluding the samples of enterprises that are listed on the Bejing Stock Exchange; 4) Excluding all the samples of enterprises with missing explanatory and interpreted variables. After the above processing steps, the paper finally obtains a panel data containing 27,548 firm-year observations.

3.2. Variable Design

3.2.1. Explained Variable

In this paper, we refer to Richardson (2006), Xu Qian (2014), and Chen Xiaodong et al. (2016) to establish model (1) to measure the investment efficiency of the company.

$$Inv_t = \alpha_0 + \alpha_1 Growth_{t-1} + \alpha_2 Lev_{t-1} + \alpha_3 Cash_{t-1} + \alpha_4 Age_{t-1} + \alpha_5 Size_{t-1} + \alpha_6 \mathrm{Ret}_{t-1} + \alpha_7 Inv_{t-1} + \sum Industry + \sum Year + \varepsilon \quad (1)$$

Where, Inv_t denotes the actual new investment expenditure of the company in year t=total investment-maintenance investment=cash paid for the purchase and construction of fixed assets, intangible assets and other long-term assets+net cash paid for the acquisition of subsidiaries and other business units-net cash recovered from the disposal of fixed assets, intangible assets and other long-term assets-net cash received from the disposal of subsidiaries and other business units-(depreciation of fixed assets + intangible assets) amortisation+amortisation of long-term amortised expenses)/total assets at the beginning of the year; $Growth_{t-1}$ denotes the growth opportunity of the firm at year t-1 by Tobin's Q; Age_{t-1} denotes the age of the firm at year t-1, expressed in terms of IPO years=observation year-IPO year; Lev_{t-1} denotes the financial leverage of the firm at year t-1, denoted by gearing ratio; $Cash_{t-1}$ denotes the cash flow position of the firm at year t-1, expressed as net cash flow from operating activities/total assets at the beginning of the year; $Size_{t-1}$ denotes the asset size of the firm in year t-1, expressed as the natural logarithm of total assets;Ret_{t-1} denotes the stock return of the firm in year t-1, expressed as the annual return on individual shares considering reinvestment of cash dividends;Inv_{t-1} denotes new investment expenditures in year t-1;$\sum Industry$ denotes the industry dummy variable, using the SEC 2012 industry standard, the manufacturing industry "C" code takes 2 digits, and other industries take 1 digit, for industry classification;$\sum Year$ is year dummy variable; and ε is the residuals of the model estimation.

OLS (Ordinary Least Squares) regression of model (1) by year to obtain the residuals of the model, the absolute value of the residuals estimated by the model is the degree of inefficient investment in the company, the larger the absolute value of the residuals means that the higher the degree of inefficient investment, i.e., the lower the efficiency of the investment. Positive residuals belong to over-investment and negative residuals belong to under-investment.

Sample data processing includes: 1) taking the SEC 2012 industry standard, manufacturing industry "C" code to take 2 digits, and other industries to take 1 digit, for industry classification; 2) excluding the financial industry, data missing sample data; 3) annual continuous variables on the 1% and 99% quartile of the Winsorize processing.

3.2.2. Explanatory Variable

Regarding the measurement of equity concentration, based on some domestic studies, scholars have chosen the proportion of shares held by the first largest shareholder (Xu Liping et al., 2006), the sum of the squares of the proportion of shares held by the top ten shareholders (Wu Shukun, 2002), the proportion of shares held by the top five shareholders (Zhang Hongjun, 2000; Du Ying, Liu Guoli, 2002), or the proportion of shares held by the first largest shareholder, the proportion of shares held by the top five shareholders, the proportion of shares held by the top ten shareholders' shareholding ratio and other variables to establish the equity concentration model (Chen Deping and Chen Yongsheng, 2011). Based on the references, this paper adopts the proportion of shares held by the first largest shareholder as the measure of the independent variable.

3.2.3. Control Variables

In this paper, the set of control variables containing natural logarithm of the number of board members(*Board*), ratio of the number of independent directors to the number of board directors(*Indep*), a dummy variable equal to 1 if the CEO is also the chairman of the board and 0 otherwise(*Dual*), ratio of market value of equity plus market value of net debt to total assets at the end of the period(*TobinQ*), the stated-owned enterprise dummy(*SOE*), the natural logarithm of the number of years since the establishment of the firm(*FirmAge*), ratio of net profits relative to total assets(*ROA*), natural logarithm of total assets(*Size*), ratio of total liabilities to total assets(*Lev*).

3.3. Model Design

To test the relationship between equity concentration and the level of inefficient investment, we develop and examine the following regression model:

$$IID_{i,t} = \alpha + \beta * Top1_{i,t} + Board_{i,t} + Indep_{i,t} + Dual_{i,t} + TobinQ_{i,t} + SOE_{i,t} + \text{Firm}Age_{i,t} + ROA_{i,t} + Size_{i,t} + Lev_{i,t} + Industry_{i} + Year_{t} + \varepsilon_{i,t} \quad (2)$$

where,$IID_{i,t}$, i.e., $InefficInvestDegree_{i,t}$, denotes the level of inefficient investment in firm i in year t; the rest of the variables are designed in the same way as set up in model(1).

4. Empirical Analyses

4.1. Descriptive Statistics

Table 1 reports the descriptive statistics. In the full sample, the mean value of *IID* is 0.05, the standard deviation is 0.163, the maximum value is 17.552, and the minimum value is 0. Its mean value is small, but there is a big difference between the maximum value and the minimum value, which indicates that there are obvious differences in the degree of inefficient investment in different companies, and the mechanism of the factors affecting this indicator has research value and practical significance; the mean value of *Top1* is 0.342, and the standard deviation is 0.15, with a significant difference between the maximum value of 0.9 and the minimum value of 0.003, suggesting that equity concentration varies considerably across companies.

Table 1. Descriptive Statistics of Variables

Variable	Sample Size	Mean	Standard Deviation	Minimum	Maximum
IID	27548	0.05	0.163	0	17.552
Top1	27548	0.342	0.15	0.003	0.9
Board	27548	2.142	0.203	1.099	2.996
Indep	27548	0.374	0.055	0.091	0.8
Dual	27548	0.241	0.428	0	1
TobinQ	27548	2.342	12.19	0.153	1752.705
SOE	27548	0.408	0.491	0	1
FirmAge	27548	2.856	0.342	1.099	3.989
ROA	27548	0.032	0.151	-14.586	4.489
Size	27548	22.191	1.354	13.763	28.543
Lev	27548	0.483	1.4	0.007	178.345

4.2. Correlation Analysis

Table 2 reports the correlation coefficients between the variables. In the full sample, *IID* and *Top1* show a simple negative correlation with a correlation coefficient of -0.028, indicating that an increase in equity concentration reduces the level of inefficient investment without controlling for other factor variables, which preliminarily verifies the validity of the theoretical hypothesis a of this study. In addition, the absolute value of correlation coefficients between all variables is less than 0.5, indicating that there is less possibility of serious multicollinearity problems in the model, and the regression model established in this paper has interpretability.

Table 2. Correlation Coefficients between Variables

Variables	*IID*	*Top1*	*Board*	*Indep*	*Dual*	*TobinQ*	*SOE*	*FirmAge*	*ROA*	*Size*	*Lev*
IID	1.000										
Top1	-0.028	1.000									
Board	-0.022	0.045	1.000								
Indep	0.008	0.031	-0.500	1.000							
Dual	0.016	-0.072	-0.183	0.110	1.000						
TobinQ	0.026	-0.032	-0.046	0.013	0.007	1.000					
SOE	-0.042	0.261	0.265	-0.063	-0.281	-0.032	1.000				
FirmAge	-0.011	-0.121	-0.011	0.001	-0.052	0.002	0.092	1.000			
ROA	0.018	0.073	0.032	-0.013	0.007	-0.256	-0.013	-0.042	1.000		
Size	-0.040	0.241	0.246	0.019	-0.136	-0.137	0.285	0.140	0.079	1.000	
Lev	0.008	0.009	0.009	0.002	-0.013	0.178	0.025	0.025	-0.573	-0.011	1.000

4.3. Regression Analysis

Table 3 presents the empirical relationship between equity concentration and the level of inefficient investment. The first column is the regression results of the level of inefficient investment on equity concentration and control variables, which shows that the level of inefficient investment is negatively correlated with the level of equity concentration under the control of the relevant variables and is statistically significant at the 5% confidence level, i.e., Hypothesis a holds. This indicates that concentrated shareholding is conducive to the convergence and alignment of the interests of the company and shareholders, the higher the incentive for large shareholders to monitor investment decisions based on the Public Benefits of Control, and to a certain extent can alleviate the Free-Rider and Principal-Agent Problem arising from the Rational Ignorance of dispersed small shareholders.

Stronger incentives and ability of majority shareholders to monitor investment decisions can help to avoid the risks and losses caused by overly aggressive adverse selection in investment decisions. One of the explanations for the small absolute value of the coefficient is the possibility of Tunneling by controlling shareholders under high equity concentration. However, in general, the effect of high equity concentration on investment efficiency is more of a Incentive Effect than a Entrenchment Effect.

Table 3. Regression Results of Inefficient Investment Level (*IID*) on Equity Concentration (*Top1*)

IID	**Coef.**	**Std.Err.**	**t**	**P>t**	**[95%Conf.**	**Interval]**
Top1	-0.021	0.007	-2.950	0.003	-0.035	-0.007
Board	-0.008	0.006	-1.290	0.197	-0.020	0.004
Indep	0.012	0.021	0.580	0.562	-0.029	0.053
Dual	0.001	0.002	0.510	0.609	-0.003	0.006
TobinQ	0.000	0.000	3.460	0.001	0.000	0.000
SOE	-0.011	0.002	-4.690	0.000	-0.016	-0.006
FirmAge	0.001	0.003	0.390	0.699	-0.005	0.008
ROA	0.047	0.008	5.750	0.000	0.031	0.063
Size	-0.003	0.001	-3.250	0.001	-0.005	-0.001
Lev	0.004	0.001	4.490	0.000	0.002	0.006
_cons	0.128	0.025	5.140	0.000	0.079	0.177
R^2	0.0205					
F-Statistic	12.58					
Prob>F	0.0000					

5. Further Testing

However, as far as theory is concerned, different internal governance structures, such as the allocation of corporate power and senior management personnel, may produce different effects on the mechanism of the influence of equity concentration on the level of inefficient investment. And the impact of the allocation of decision-making power on investment efficiency has always been a real topic of concern in economics, management and society. For example, Eugene F. Fama and Michael C. Jensen (1983) argued that the unity of decision-making power and decision-control power is prone to Agency Problem; Liu Huilong et al. (2014) found that relative to firms with a high degree of separation of decision-making power and decision-control power, the surplus management of firms with a low degree of separation of decision-making power and decision-control power is more likely to cause inefficient investment. So, the following paper will further discuss and study whether different degree of separation of decision-making power and decision-control power make a significant difference in the level of inefficient investment in firms.

The current existing literature mainly measures the degree of separation between decision-making power and decision-control power by the variable of *Dual*, which is also used in this paper to classify the whole sample.

Table 4 reports the results of the conditional relationship test based on the CEO duality, from which it can be seen that the coefficient on equity concentration is not significant at the 5 percent level, although it is in line with the expected sign. This suggests that the benchmark regression designed in the previous section is robust, and that equity concentration and the level of inefficient investment in overall listed firms show a negative relationship, and the allocation of decision-making power, does not have a significant impact on the mechanism of the relationship between equity concentration and the level of inefficient investment to a certain extent. Table 5 reports the results of the conditional

relationship test based on the non-duality, from which it can be seen that the coefficient on equity concentration has the expected sign and is significant at the 5 percent level; and the coefficient is larger in absolute value relative to the CEO duality condition. The non-duality implies a greater degree of separation of decision-making power and decision-making control, with the concentration of equity, shareholders and the company's interests convergence, large shareholders based on the Public Benefits of Control, will be more motivated than the dispersed small shareholders to carry out incentives to supervise the investment decision-making, in order to meet the shareholders' interests to maximize, so as to reduce the level of inefficient investment.

Table 4. The Effect of CEO Duality: the Regression Results of the *IID* on *Top1*

IID	**Coef.**	**P>t**	**[95%Conf.**	**Interval]**
Top1	-0.015	0.264	-0.040	0.011
Board	-0.001	0.948	-0.024	0.023
Indep	-0.005	0.900	-0.079	0.069
TobinQ	0.005	0.000	0.004	0.006
SOE	-0.016	0.003	-0.027	-0.006
FirmAge	-0.001	0.915	-0.012	0.011
ROA	0.068	0.000	0.039	0.096
Size	-0.000	0.829	-0.004	0.003
Lev	0.000	0.825	-0.003	0.003
_cons	0.060	0.219	-0.036	0.157
N	6632			
R^2	0.0471			
F-Statistic	13.97			
Prob>F	0.0000			

Table 5. The Effect of Non-Duality: the Regression Results of the *IID* on *Top1*

IID	**Coef.**	**P>t**	**[95%Conf.**	**Interval]**
Top1	-0.021	0.012	-0.037	-0.005
Board	-0.010	0.137	-0.024	0.003
Indep	0.017	0.483	-0.031	0.066
TobinQ	0.000	0.029	0.000	0.000
SOE	-0.010	0.000	-0.015	-0.005
FirmAge	0.001	0.888	-0.007	0.009
ROA	0.038	0.000	0.019	0.057
Size	-0.002	0.016	-0.004	-0.000
Lev	0.004	0.000	0.002	0.006
_cons	0.126	0.000	0.069	0.183
N	20,916			
R^2	0.0184			
F-Statistic	8.38			
Prob>F	0.0000			

6. Conclusion and Recommendation

The findings of this paper also provide certain practical insights for investors, enterprises and governments. In addition to financial information such as market value, investors should also include corporate governance factors in the scope of measuring investment risk in the selection of investment targets, and consider important elements and specific indicators of corporate governance such as equity concentration, so as to avoid selecting companies whose growth opportunities, performance and value are affected by ineffective investment. Meanwhile, this paper provides corresponding theoretical basis and reference value for listed companies to improve their governance structure and alleviate the Principal-Agent Problem. Enterprises should further optimise the equity structure, pay attention to the impact of equity concentration on the rationality and effectiveness of investment decisions under different conditions, adhere to corporate governance reform, enhance the supervisory impetus and level of effective investment decisions within the enterprise, and explore the optimal mechanism of corporate governance in the process of enterprise modernisation, so as to reduce inefficient investment. As far as the government is concerned, the enterprise is the micro body to promote macroeconomic development, the key hand to stimulate market vitality, and the micro foundation and power carrier to promote high-quality economic development. The results of this paper show that the government should guide enterprises to establish a rationalised equity structure, pay attention to the impact of corporate power allocation in improving the modern enterprise system and the mechanism of equity concentration and control concentration on the investment efficiency of enterprises, so as to continuously optimise the internal governance structure and the level of supervision, deepen the reform of corporate governance, improve the modernised corporate

governance system suited to China's national conditions, and empower enterprises to improve their investment efficiency.

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