Do largest shareholders affect financial sustainability under holdings heterogeneity? -regulation/intermediary role of financial constraints in coastal real estate

Lipai Zhang[1]•; Wenling Yu[2]; Xiqiang Xia[3]
(1. School of Business and Management, Shanghai International Studies University, Songjiang District, Shanghai;
2. School of Business, Nanjing University, Gulou District, Nanjing; 3. School of Business, Zhengzhou University, Gaoxin District, Zhengzhou)

Abstract: Real estate industry is highly related to the national economy and people's livelihood，characterized by a high degree of financial intensity. Enterprises in this industry require certain financial ability and large shareholders' controlling power to support their survivals. However, due to the multiple adverse impacts of current state policies on banks and private capital，like the credit crunch，the sudden decrease in withdrawn funds and the limitation of internal financing，the problem of capital restraints of real estate enterprises has become increasingly serious. From the perspective of corporate governance，this paper studies the interactions among financial constraints, ownership concentration and corporate performance under different shareholding states by analyzing the quantitative characteristics of equity structure，and looks for the appropriate range of the largest shareholder holding ratio, which has considered both the financial performance and risk. It is found that raising the ownership concentration could effectively ease the financial constraints and improve the performance of enterprises，both of which are significant under the state of high ownership concentration. Financial constraints play a significant intermediary effect in the state of absolute holdings, and have obvious regulatory effects in the state of decentralized equity; also, the mechanism of ownership concentration is reflected in the strengthening of corporate supervision, reduced agency costs, improved operating efficiency and increased investment attractiveness.

Keywords: *Financial Constraints; Agency Cost; Ownership concentration; Holding Heterogeneity; Real Estate Industry*

I Introduction

As the cornerstone of corporate governance, the ownership structure provides a realistic basis for the allocation of corporate residual control rights and residual claim rights. The shareholding structure reflects the rights to speak and checks and balances of shareholders as the owners in corporate reform. Moreover, it is an important part of the "principle-agent" relationship in the reform of the enterprise system[1]. The equity-structure adjustment events of listed enterprises, such as the "True Kungfu Equity Dispute" in 2007, the "Haidilao Equity Resettlement" in 2008, the "Gome Control Power Struggle" in 2010, and the "Vanke Equity Change" in 2015, all have aroused widespread and continuous attention, and the rapid changes in the ownership structure may even bring unprecedented challenges to corporate governance and even corporate survival. Specifically, the reform of the ownership structure would bring about changes in the organization and personnel of the enterprise in the short term, and finally impact the established managerial structure; its changes would also affect the ability of the enterprise to continue operations in the long term, and adjust the "principle-agent" relationship between owners and business operators. The shareholding structure of enterprises has reached a relative equilibrium in the "dynamic game" of concentration and checks and balances of multiple shareholders' shareholdings, and has achieved new changes under external shocks such as market competition changes and the introduction of new economic policies.

Under the existence of market information asymmetry, ordinary enterprises have external financial constraints, and it seems difficult for them to obtain sufficient credit support. Therefore, their internal existing financial resources are highly dependent[2-3]. The existence of insufficient investment hinders potential performance improvement; and agency conflicts caused by internal entrustment make it difficult to serve the overall interests of the enterprise effectively. Agents do not always act in the best interests of the principal[2]. For example, the manager acts as the agent of all shareholders, but may not always protect the interests of shareholders, and maximizes his own interests when making decisions. In the principal-agent relationship, due to information asymmetry, the contract between shareholders and managers is incomplete, and the "ethical self-discipline" of the manager needs to be relied on. In the case of "multiple financial difficulties", the reform of corporate shareholder equity may provide ways to improve their performance. A reasonable shareholding structure is a prerequisite for the stable development of an enterprise. Prior studies have shown that it has a strong correlation with operating performance—the former determines a relatively high degree of the internal binding force and the manager's duties, which helps the enterprise operate effectively and

improve competitiveness in the market. Namely, it provides institutional guarantees to mitigate principal-agent conflict.

Structural adjustment of major shareholders' equity is regarded as the top priority of equity reform. It determines the rationality of shareholder structure and the right to speak of major shareholders. The degree of ownership concentration could significantly change the way and effect of shareholders' exercise of rights, form core control force among all shareholders, and further affect the organizational stability, strategic development mode and governance ability of the enterprise[3].

In China, during the past two decades, enterprises have generally seen phenomena of equity concentration. The concentration of major shareholders' holdings (especially the largest shareholder) could significantly optimize the investment decisions and performance of enterprises within a suitable range; however, the previous literature lacks sufficient research on the role of equity trends in different holding states, and the role of financial constraint in the transmission process of "Ownership concentration-Corporate performance" lacks in-depth discussion. Based on this, the article will examine the effect of corporate equity structure adjustments by studying the "interactions between ownership concentration trends, financial constraints, and corporate performance." The impact mechanism of equity changes on performance will be taken from the "supervisory awareness" and "responsibility awareness" of major shareholders, which bring about the changes in their managerial behaviors. The structural reform may have direct or indirect effects on the continuous operation of the enterprise.

Based on the principles of data openness, comparability, and effectiveness, in order to better observe the effect of external financing pressure on corporate equity reform and the impact of equity structure changes on corporate governance, a typical capital-intensive industry—real estate is selected as the object of analysis. As an important engine of the national economy, this industry is inseparable from ample financial support. While since 2013, tightening of credit policies-the promulgation of the new "Five National Principles" has led to a serious reduction in funding for housing projects. The average annual interest rate of real estate loans has increased to the range of 15% to 18%, and the interest rate of private financing exceeds 30%. It is also stricter in bank's mortgage requirements, thereby suppressing the financial leverage effect. With the triple attack of national policies, capital markets and banks, most real estate enterprises' turnover growth has slowed down. The housing mergers have been intensified, and the industry's concentration has increased. Due to factors such as efficiency and internal control, the trend of ownership concentration is more common in real estate enterprises. Relevant empirical analysis of this type of industry is helpful to investigate the practical significance of the concentration of major shareholders' equity. In addition, according to the characteristics of the real estate industry, another goal is finding the appropriate scope of holdings for major shareholders to give academics and industry references.

The research layout is as follows: Chapter II is a literature review, introducing research progress and remaining shortcomings, and pointing out the foothold of this research; Chapter III proposes relevant theories and hypotheses based on previous research that requires to be improved; Chapter IV selects samples, variables and pre-processed of data to build empirical models; Chapter V makes empirical analysis of the role of ownership concentration on financial constraints and corporate performance differences in sample enterprises in different holding states, the mediation/regulatory role of financial constraints in the transmission process of "ownership concentration-corporate performance", and the mechanism of the adjustments of the equity structure; Chapter 6 summarizes the conclusions and proposes new research directions.

II Literature review

II.1 Financial constraints and countermeasures

Financial constraints in a narrow sense refer to business constraints caused by excessively high external financing costs or insufficient credit allocations, then the total amount of funds cannot match the needs of the enterprise's continuous operation or even investment; while the financial constraints in broad sense refer to both internal and external financial constraints. Existing funds caused by restrictions cannot meet normal investment needs. It is defined as: due to the imperfect market, the enterprise is unable to obtain sufficient cash flow, and the ability to continue operations is inhibited, eventually the operating surplus cannot reach the optimal state[1]. With the rapid development of the capital market and enterprises, it is difficult for enterprises to support their further progress with endogenous financing, and the importance of external financing has become increasingly prominent. However, the existence of financial constraints would significantly limit the investment efficiency of enterprises and

reduce their solvency, even causing an unusually low profile.

Research on financial constraints focuses on the impact of financial constraints on business operations and measures, and most of them emphasize on national policies, business operations and internal control optimization. In terms of relevant impact, there has been extensive evidence supporting that financial constraints have important or even decisive negative effect on the survival and annual performance. The focus of exploration financial constraints is related to investment activities. For example, it is believed that the more external funds the enterprise needs, the stronger the opportunity for listing would it acquire[2]. Also, the degree of financial constraints of enterprises has significant impact on the cash holding policy[3]. Prior literature analyzed the listed enterprises in the 20th century, and proposed that the financial constraints of enterprises will be accompanied by higher cash-flow sensitivity[1,4].

However, as for measures to ease financial constraints, scholars have proposed innovative financing methods. For instance, developing a multi-sector DSGE model combined with related industries or introducing a banking sector with financial liquidity to reduce social financing costs[5]. However, a considerable proportion of enterprises in China still face severe financing problems, as these measures have not penetrated into the level of business management. Specifically, there are fewer attempts to analyze relevant measures in combination with the quantitative characteristics of equity structure. The quantitative characteristics are mainly reflected in the degree of ownership concentration, such as the proportion of the top three/five/ten largest shareholders, which reflects the degree of internal management and supervision of shareholders. However, it is still controversial how to determine the appropriate ratio range of ownership concentration.

II.2 The influence of ownership concentration on financial constraints and corporate performance

Ownership concentration is an important indicator to measure corporate equity allocation, organizational structure rationality and internal control. As for whether the concentration of equity should be increased or reduced, existing studies have separately explored the differential effects of major shareholder's equity ratios on the financial status and sustainable operations based on the first type of agency problem (the agency conflict between shareholders and operators), and the second type of agency problem (large and small shareholder conflicts of interest).

Most scholars point out that ownership concentration could improve the corporate security and alleviate the internal conflicts[6]. The concentration of capital provides powerful control over their businesses[7]. It is seen that those large, listed enterprises have centralized equity all over the world, as increasing equity holdings could also be beneficial to minority shareholders[8]. Some scholars have found that the concentration of equity could also ease financial constraints and improve the potential capability of enterprises. When the shareholding of controlling shareholders is large enough, the possibility of "tunneling behavior" is low[9]. As is pointed out that, when announcing private sales, the change of enterprise value is closely related to the change of ownership concentration[10]. The academic circles also believe that ownership concentration makes managers tend to choose favorable investment decisions. The "absorption effect" brought by excellent corporate performance in attracting investment can effectively alleviate the financing difficulties. If an enterprise achieves equity diversification through public offering, it will still incur some costs, such as increased listing costs and loss of control over the shareholder register[2]. Meanwhile, ownership concentration could raise the innovation ability of employees. Compared with enterprises with multiple owners, enterprises with single ownership tend to transform R&D into product innovation more effectively, while the latter are usually better at utilizing external knowledge and human capital[11].

According to the principal-agent theory, scholars have confirmed the positive significance of ownership concentration by reducing the "free-ride" effect from equity[12]. Also, they have found mitigation effect of ownership structure measured by differences in controlling shareholder control and cash rights[13]. The higher enterprise internationalization is associated with higher level of earnings management, which can reduce the negative impact of internationalization on earnings management by improving enterprise ownership structure. Through the Structural Equation Model (SEM), the relationship between ownership concentration and credit constraint in China's A-share listed enterprises is examined; it is concluded that ownership concentration will reduce the credit constraint of enterprises[14]. Greater control and oversight on cash management reduce the incentive to exploit minority shareholders over their harmful effects (more control over illegitimate private interests).

However, some scholars argue that the concentration of equity has negative impact. They advocate that the corporate equity

structure should achieve mutual supervision and restriction, and that the control rights of enterprises should be decentralized. To reduce the adverse influence of ownership concentration on enterprises, the academic circle conducts research mainly from the aspects of financial risk, improvement of internal control system and operation performance. (1) Financial risk level, based on the analysis of ownership structure concentration on corporate profits, the academic circle think that there are risks of profit distribution (caused by abnormal dividend policy, policy risk, interest rate risk and repayment risk, etc.), investment risk (excessive investment and inadequate investment), operational risk, liquidity surplus and deficiency. It is also added that private enterprise equity is negatively correlated with corporate credit availability[15]; the effect of the composition of Sharia Supervisory Board (SSB) on the risk of Islamic Banks is once investigated, and found that the reduction of ownership concentration could effectively reduce the bankruptcy risk of Banks[16]. (2) At the level of internal control, it is proposed that ownership structure could significantly influence top management personnel and internal monitoring work, which was partly due to the impact of ownership structure on external control threats[17]; and the allocation of sufficient equity shares of the second shareholder could limit the control of the largest shareholder[18]. Therefore, the shares of the second largest shareholder guaranteed their right to perform the supervisory role. If minority shareholders are less, major shareholders would increase their interests and motivation on encroach[9]. These major shareholders often take self-interest behavior, such as violation of the enterprise's regulations of association, misappropriate or transfer of assets to meet their individual interests. This phenomenon is also referred to as "tunneling". The main forms of corporate major shareholders' encroachment include capital appropriation, related party transactions, guarantee and malicious financing, unfair salary distribution, etc., which are likely to occur after the change of major shareholders' equity, all of which aggravate the information asymmetry between enterprises and external investors. (3) In terms of business performance, it is found that if external institutions hold certain shares of an enterprise, they can use the information for trading (speculation) and decide whether to intervene or improve the performance[19]. Intervention can increase the value of the existing equity of the institution, but it can only increase the trading profit of the institution, only if it improves the information accuracy relative to that of the uninformed trader. Moreover, the ownership structure would affect investment and corporate value through the regression of ordinary least square method[20], and the optimal ownership structure usually involves kinds of decentralization to avoid excessive monitoring by other shareholders[2,21].

II.3 Existing research limitations and ideas of this research

Ownership concentration in Chinese enterprises is universal. It plays a key role in the investment, financing and performance of enterprises. The centralization of equity can effectively alleviate the conflict of interests between shareholders and managers, which reduces the first category of agency costs. The operating condition of an enterprise is also affected by a relatively low ownership concentration, which in turn affects its financial indicators and drags down corporate performance[22-23]. At present, the literature rarely considers the interaction among them under different holding states of the largest shareholder. Therefore, the following part regards "the interaction among these three objectives" as the starting point, to analyze how ownership structure affects performance and financing.

This paper takes real estate enterprises as core example and uses panel data from WIND and other databases to analyze their relationship under different shareholding levels. The research ideas are as follows.

Firstly, the regulation and mediation of financial constraints are considered in turn. In previous literatures, financial constraints were mainly taken as explained variables to consider how to be alleviated. However, easing financial constraints is not always the ultimate goal. The healthy financing situation should serve their business performance. The easing of financial constraints can "unbind" performance expansion and provide material basis for operation and production. Since few literatures emphasize its indirect effect, therefore, this paper takes financial constraints as intermediary and regulatory variables respectively: to explores the mode of action of financial constraints based on the path of "ownership concentration -- financial constraints -- enterprise performance", and observes the specific utility of financial constraints in different shareholding states. The model constructed is seen from Figure1.
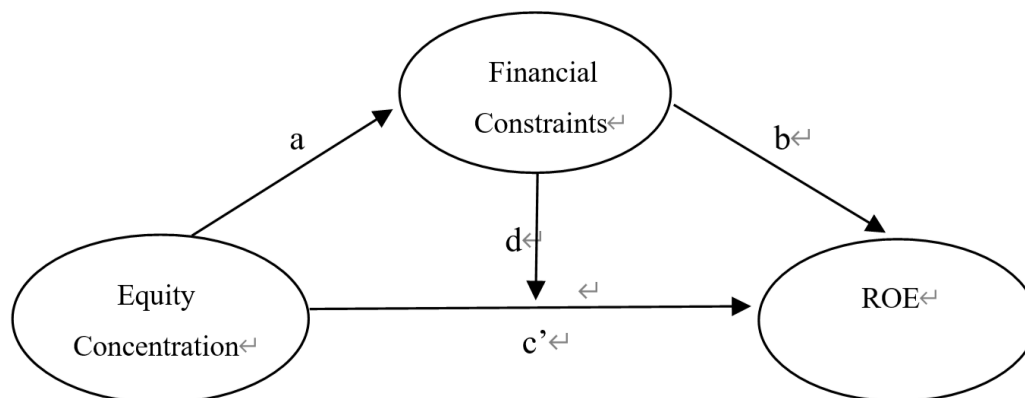
Figure 1 Interactive relationship model of "Equity Structure - Financial constraints - Enterprise Performance"

Secondly, the enterprises are grouped according to the differences in equity status, and the utility differences in the sub-sample groups are observed. This paper compares the interaction between ownership concentration and enterprise performance of the largest shareholder under the condition of differentiation of ownership status, and deeply explores the mechanism of ownership concentration. In addition, in order to guide existing enterprises to improve internal control, the research on the reasonable range of the shareholding ratio of the largest shareholder provides reference for the existing corporate system reform, internal control improvement and sustainable development of enterprises.

III Theory and research hypothesis

In today's world, the ownership concentration is the organizational form of the ownership structure of most enterprises. The change of equity trend often affects two kinds of agency costs directly or indirectly. The first kind of agency cost is principal-agent contradiction, which mainly arises from division of labor and asymmetric information. The second kind of agency cost is reflected

between shareholders' conflict, involving "trench defense effect", "tunnel effect" and other ways to obtain private interests through deceptions, which requires to be adjusted

by ownership structure adjustments.

By strengthening the centralization of equity, major shareholders will have more control and attention to enterprises, which could alleviate financial constraints through strengthening supervision, easing credit pressure and improving investment attraction. Firstly, the supervision effect of major shareholders is conducive to improving the corporate governance mechanism, alleviating the conflicts between shareholders and managers, and making managers serve the goal of maximizing shareholders' wealth as much as possible. Under the equity incentive, the sense of responsibility and enthusiasm of major shareholders could be realized by strengthening the daily management. Driven by the sense of ownership, major shareholders would bind their personal interests with the interests of the enterprise, which promotes them to improve the capital utilization, reduce the adverse phenomena such as excessive investment, and then reduce the capital pressure[24]. So hypothesis H1a is put forward.

H1a: With other conditions remain unchanged, financial constraints are inversely proportional to ownership concentration.

But there are also studies suggest that the centralization of large shareholders is not conducive to enterprise information disclosure. The related information asymmetry will cause both parties to face "moral hazard" after the transaction. Moral hazard is a question raised when studying insurance contracts. Economists often use moral hazard to summarize "lazy", "free-riding" and opportunistic behavior. In the governance of listed companies, it usually manifests as the following three situations: one is breaching the loan agreement and changing the use of funds privately; the second is that the borrower conceals the investment income and evades the payment obligation; the third is that the borrower is indifferent to the use of borrowed funds and is not responsible, not working hard, resulting in loss of borrowed funds.

Information asymmetry could be intensified and even distorted, making outside investors investment costs increase.

Investors appeal the extra pay for information asymmetry to make up the related risk, which further makes the rising costs of external financing. Enterprises, especially those in small-and-medium size, are deeply sunk into financing dilemma. In addition, with the increase of major shareholders' holdings, their behaviors of seeking personal gains may also occur, resulting in damage to the enterprise's assets. Its typical performance is "self-interested merger and acquisition of major shareholders". This will exacerbate the second type of agency problem. So H1b is the opposite hypothesis.

H1b: If other conditions remain unchanged, financial constraints are in proportion to ownership concentration.

Similarly, the academic circle has found that when the degree of financial constraint is controlled, the increase of ownership concentration can effectively reduce the first type of agency cost, ensure the consistent motivation of managers' behavior with maximization of shareholders' equity, which reduces the probability of managers' seeking profits for personal gain. At the same time, ownership concentration also promotes the growth of business profits and enterprise value by improving operating efficiency and reputation. At the same time, with the increase of shareholding, the motivation of major shareholders' occupation could be gradually offset by the increasingly strong sense of "ownership", so it is less possible to "hollowing out" the enterprise value. In China, Haidilao experiences equity structure adjustments from even distribution to concentration also verified this conclusion. Therefore, hypothesis H2a is proposed.

H2a: Under the condition of existing financial constraints, ownership concentration degree could improve enterprise performance significantly.

Strengthening equity centralization may accompanied by the phenomenon that major shareholders occupy more equity. Not only in emerging markets, but also among developed countries with perfect civil law, there are cases reflecting the "tunnel effect", from which the Asian financial crisis in 1997-1998 is a typical one. Major shareholders of listed companies will always 'dig underground tunnels under the sun' through various means to dig out the wealth of minority shareholders, transfer the assets or profits of listed companies, and empty the listed companies. Tunnels act in many ways.

For performance issues, if the concentration of equity slightly decreases, it can form an effective check among shareholders, making enterprise decision-making more "democratic". The check and balance role on the minority major shareholders, could prevent the operation risk caused by their arbitrary or wrong ideas, and supervise the selfish behavior of major shareholders. It can also encourage minority shareholders to participate more actively in the daily operation activities. The decentralized ownership structure also effectively restrains the "trench defense effect" and "tunnel effect". If the concentration of equity is reduced, it would be difficult for major shareholders to misappropriate assets and transfer corporate income and profits, thus maintaining the rational allocation of corporate resources. Accordingly, hypothesis H2b is proposed.

H2b: Under the condition of existing financial constraints, reducing ownership concentration can significantly improve enterprise performance.

As for the impact of ownership concentration on corporate performance, the current research pays little attention to the potential impact of corporate financial constraints. The influence of ownership concentration on corporate performance can be transmitted in three ways: (1) The improvement of ownership concentration brings about changes in corporate governance, which directly affects performance ability; (2) The improvement of ownership concentration brings about the change of the financial constraint of intermediary variable, so as to produce the result of "unbinding" or "straitened constraints" for enterprise performance; (3) When the improvement of ownership concentration brings about changes in financial performance, financial constraints may play a regulating role. As a moderator variable, enterprises with higher financial constraints may have more obvious "action elasticity" and space to reduce constraints, and the conduction utility may be greater. So we have the following hypothesis.

H3: In the transmission process of ownership concentration degree to enterprise performance, financial constraints have significant regulating and mediating effects.

IV Research sample and design

IV.1 Sample selection and pretreatment

This paper attempts to test the above assumptions, discloses the influence mechanism of ownership concentration, and

create a reasonable proportion for the largest shareholder. The basic registration information and main financial index data collected in this study were from the WIND database, and the ownership concentration index was from the CSMAR database. STATA 16 was used for statistical analysis and test.

The investigated samples are limited to the real estate industry by following reasons :(1) the real estate industry is a highly capital-intensive industry with long project investment cycle and high risk. If there exist financial constraints, it will directly lead to difficulties such as insufficient investment, operating loss, idle assets, and even the continuous operation threat. Since the promulgation of restrictive policies such as the new "Five National Principles", real estate enterprises have seen their financing costs rise and their channels become narrower. This is conducive to the observation of financial constraints. (2) Real estate investment has long been regarded as a barometer of China's economic development, and the comprehensive performance of such enterprises will bring significant surplus to the national economy. (3) As the foundation of corporate governance, the ownership structure has strong correlation with corporate performance; However, the concentration of equity in China's real estate enterprises is more common. In this highly capital-intensive industry, shareholders can effectively control the enterprise's financial flow and business performance with the increase of shareholding ratio. Decentralized ownership structure will restrict resource allocation and strategic unity.

A total of 868 data sets of 124 A-share enterprises listed on the Shanghai and Shenzhen Stock Exchanges for seven consecutive years from 2012 to 2018 were selected as the original research samples. Samples collected are rejected according to the following criteria:(1) enterprises with missing or discontinuous material data and abnormal index values; (2) an insolvent enterprise; (3) cross-listed enterprises within and outside China.

To eliminate the influence of extreme value of continuous variable, the outlier Winsor shrinkage was performed (before and after 1% and 99% quantile, respectively) to make them equal to corresponding quantile values.

IV.2 Variable setting and model construction

IV.2.1 Variable settings

Variables selected are shown in Table 1.

(1) Financial constraints (SA)

In recent years, most scholars use "Investment-Cash flow sensitivity", "KZ index" and "credit rating" to measure the degree of financial constraint. However, because this method contains many indicators, when the randomness of sample data is strong, the results will not be accurate enough. It is evident in the case of policy changes, enterprises entering a new growth cycle and strategic adjustment. The above indicators will change significantly, making the same indicators not comparable in different stages. Therefore, the SA index is selected to measure financial constraints. The calculation method of SA index is:

$$SAindex = -0.737 * Size + 0.043 * Size^2 - 0.04 * Age$$

Size is represented by the value of the total book value of assets. Age is the cumulative years from the incorporation or merger to the current condition.

(2) Corporate Performance (ROE)

From the perspective of shareholders, it should consider the maximization of shareholder benefit. The return on equity (ROE) is used as the main measure and the return on assets (ROA) is used for robustness test.

(3) Ownership concentration (OC)

Ownership concentration reflects the concentration degree of the enterprises' shares among major shareholders. The indicators mainly include the proportion of the largest shareholder (TOP1), the proportion of the top five shareholders (TOP5) and the proportion of the top ten shareholders (TOP10). In most cases, the level of corporate ownership concentration is mainly measured by the proportion of the largest shareholder. When the largest shareholder holds more than 50% of the shares, he or she has absolute control; if the shareholding ratio is between 20% and 50%, the enterprise is in a relatively concentrated holding state; if the largest shareholder holds less than 20% of the shares, the enterprise is in shareholding dispersion state.

In China, the ownership concentration of the real estate industry is relatively high. From 2012 to 2019, 56.22% of China's real estate enterprises were in the state of relative holding and 27.79% were in the state of absolute holding. At the same time,

the ratio between the shareholding ratio of the largest shareholder and the sum of the shareholding ratio of the next nine major shareholders is 4.5495 on average. Therefore, it can be seen that the largest shareholder plays an important and even dominant role in the internal control and operation of the enterprise. Based on this, the shareholding ratio of the largest shareholder is used to measure the level of ownership concentration.

(4) Control variable group

①This paper measures the equity checks and balances based on "the ratio of top ten shareholders to the largest shareholder -1". This indicator pays attention to the influence of the remaining nine shareholders on the largest shareholder.

②The number of years (Age) of the enterprise is a common control variable, reflects the development of the enterprise, business foundation and the ability to resist financial risks to a certain extent; the cash holding set (CH) and net cash flow from operating activities (NCF) reflect the daily liquidity of the enterprise, since their abundance could reduce the external financing pressure and alleviate the shortage of investment. Liability-asset ratio (RAL), total asset turnover ratio (TAT), fixed asset ratio (FAR) and enterprise growth ratio (TobinQ) are commonly used business indicators, which respectively measure the enterprise's solvency, capital operation ability, production equipment input status and sustainable development ability. They are conventional indicators of performance in multi-dimensional situations.

(5) Dummy variable group

①This paper firstly controls the year fixed effect to overcome the disturbance factors which may influence the study due to the time change.

②Secondly, because the research samples are limited to the real estate industry in China, the industry effect has been controlled. In view of China's special institutional environment, state-owned enterprises are often limited by strict operating rules, and the "selfish" behavior of agents is often severely restricted and punished. Therefore, the agency cost and the risk of "vacancy" or "offside" are usually low. And private enterprises often appear "the first type of agency problem" in the economic transition period. Therefore, this paper will control the differences in the nature of the controlling equity.

Table 1 Variable construction

Variable types	variable	symbol	Calculation and description
Explanatory variables	Corporate financial performance	_ROE_	Net profit per year/total final net asset
Explanatory variables	Financial constraints	_SA_	$SAindex = -0.737 * Size + 0.043 * Size^2 - 0.04 * Age$
	Ownership concentration	_OC_	The proportion of the largest shareholder
Control variables	Degree of equity balance	_OB_	The percentage of the top 10 shareholders/the percentage of the largest shareholder -1
	Establishment of fixed number of year	_Age_	The number of years which is logarithmically treated
	Cash on hand	_CH_	The enterprise's annual cash capital/final total assets
	The capital structure	_RAL_	Total ending liabilities/total final assets
	Asset turnover capacity	_TAT_	Total asset turnover, calculated by current operating income/total assets at the end of the period
	Fixed assets ratio	_FAR_	Fixed assets/total assets at the end of the period
	Enterprise growth ability	_Tobin Q_	Market value of the enterprise/replacement cost of assets
	Net operating cash flow	_NCF_	Net operating cash flow/total assets at the end of the period
Dummy variable	Year fixed effect	_Year_	Dummy variable: if the financial data belongs to a certain year from 2012 to 2018, the value of that year is 1; otherwise, it is 0
	Nature of equity fixed effect	_EN_	Dummy variable: it can be divided into 7 categories according to their nature: private, central or local state-owned holding, provincial

			state-owned holding, collective, foreign capital and others. EN is 1 if it belongs to a certain class, otherwise it is 0

IV.2.2 Model Constructions

Based on the research hypothesis, models (1) and (2) are established to test hypothesis 1 and 2:

$$SA_{i,t} = a_0 + a_1 OC_{i,t} + \varphi control_{i,t-1} + u_{i,t} \quad (1)$$

$$ROE_{i,t} = \gamma_0 + \gamma_1 OC_{i,t} + \gamma_2 SA_{i,t} + \varphi control_{i,t-1} + u_{i,t} \quad （2）$$

The control variables use the value of the lagged phase to mitigate endogenetic interference.

For hypothesis 3, the mediating effect and the regulating effect of financial constraints are tested and subgroup regression is performed.

V Empirical analysis results

V.1 Descriptive statistics

Table 2 illustrates the summary statistics of the 849 observations.

Table 2 Descriptive statistical results of the whole sample

Variable	Obs	Mean	Std.Dev.	Min	Max
ROE	604	.092	.111	-.744	.65
SA	604	5.303	1.912	.876	10.558
OC	604	.392	.162	.1	.796
OB	604	.657	.678	.03	3.081
Age	604	3.259	.153	2.895	3.587
NCF	604	.01	.096	-.268	.271
RAL	604	.646	.176	.125	.92
TAT	604	.268	.161	.02	.95
Tobin Q	604	1.671	1.452	.84	11.69
FAR	604	.037	.065	0	.422
CH	604	.145	.093	.021	.528

In the whole sample group, the mean ROE and its standard deviation are 0.092 and 0.111 respectively, indicating that during the sample period studied, China's real estate enterprises as a whole have a positive return on assets but with certain fluctuations. The mean value and standard deviation of SA are 5.303 and 1.912 respectively, and the variation is relatively large. OC has little volatility, with a standard deviation of 0.162 and an industry mean value of 0.392, indicating relatively concentrated ownership. For the degree of equity checks and balances, it can be seen that the average proportion of the largest shareholder is 1.657 times that of the following nine major shareholders, which means that the largest shareholder has clear control over the enterprise.

From the control variable group, real estate enterprises generally have a certain number of years since establishment, among which the minimum value after logarithmic treatment is 2.895 (that is, 16.44 years). There are insufficient net operating cash flow (mean value is only 0.01), high operating debt ratio (mean value is 0.646) and insufficient turnover capacity (mean value is merely 0.268). However, the current growth indicators show a good average of 1.671, reaching the peak of 11.69, which will encourage enterprises to continue increasing investment spending.

For the description of the key indicators of the sample, it should also be divided into: equity diversification group, relatively concentrated group and equity highly concentrated group according to the situation of ownership concentration, so as to compare whether there is a difference between the key indicators.

Table 3 Descriptive statistical results of key indicators in the subsample group

Variable	Obs	Mean	Std.Dev.	Min	Max

Equity diversification group

ROE	90	.058	.077	-.154	.328
SA	90	4.523	2.274	.876	10.558
OC	90	.159	.032	.1	.2
Tobin Q	90	2.598	2.932	.84	11.69

Relatively concentrated group

ROE	358	.085	.118	-.744	.65
SA	358	5.292	1.906	.876	10.558
OC	358	.351	.09	.2	.5
Tobin Q	358	1.574	1.12	.84	11.69

Highly concentrated group

ROE	156	124	.102	-.366	.514
SA	156	5.713	1.587	2.982	10.003
OC	156	.593	.08	.5	.796
Tobin Q	156	1.417	.457	.84	3.37

As shown in Table 3, when the equity of an enterprise is relatively dispersed, the average return on assets (ROA) of 5.8% is significantly lower than the industry average, with a gap of 2.7% and 6.6% respectively, compared with the relatively concentrated group and the highly concentrated group. At the same time, its SA mean is the lowest, that is, the degree of financial constraint is the highest. In the ownership concentration index, the largest shareholder holds most of the shares, and the mean value of the three sample groups is in stepped form -- 15.9%, 35.1%, and 59.3%. In Tobin Q, an indicator representing growth, the mean value of the equity dispersion group is 2.598, much higher than that of the other two groups (1.574 and 1.417). Therefore, it is preliminarily concluded that there may be a positive relationship among ownership concentration, financial constraint and operating performance. However, large shareholders with large holdings may hinder the long-term development of enterprises.

V.2 Correlation analysis

Table 4 shows the Pearson Correlations Matrix.

Table 4 Correlation analysis and test

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ROE	1.000										
(2) SA	0.301*	1.000									
(3) OC	0.200*	0.186*	1.000								
(4) OB	-0.018	0.092*	-0.653*	1.000							
(5) Age	0.107*	-0.055	-0.133*	0.129*	1.000						
(6) NCF	0.102*	-0.059	-0.005	-0.002	0.004	1.000					
(7) RAL	0.169*	0.616*	0.196*	0.005	0.001	-0.093*	1.000				
(8) TAT	0.178*	-0.130*	-0.027	-0.013	-0.031	0.235*	-0.003	1.000			
(9) Tobin Q	-0.155*	-0.503*	-0.182*	0.146*	0.094*	-0.011	-0.404*	-0.003	1.000		
(10) FAR	-0.111*	-0.195*	-0.033	-0.133*	-0.089*	0.087*	-0.122*	0.261*	0.049	1.000	
(11) CH	0.117*	-0.239*	0.060	-0.070*	0.067	0.251*	-0.346*	0.144*	0.248*	-0.077*	1.000

* shows significance at the.05 level.

As shown in Table 4, SA and OC are both closely related to ROE's performance, with correlation coefficients of 0.301 and 0.200 respectively. At the same time, the control variables that reflect the financial ability of enterprises are also significantly related to ROE, which proves the effectiveness of the selection of control variables.

OC, OB and SA are highly correlated, indicating that adjusting the holding status may have an effect on easing financial constraints. At the same time, we found that OC variables were significantly correlated with Age, RAL, Tobin Q, etc., thus proving the significant correlation of adjusting equity structure and corporate finance.

Among the control variables, the correlation between RAL, Tobin Q and SA reached 0.616 and -0.503 respectively (both significant at the 5% probability level), indicating that capital structure is strongly correlated with growth and financial constraints. In the above analysis, the absolute value of correlation coefficients does not exceed 0.5, thus overcoming the

problem of multiple collinearities.

V.3 Multiple regression results

V.3.1 Regression results-Assumption 1 and 2

In hypothesis 1, financial constraint SA is seen as the explained variable. After main regression, it is divided into: (1) Equity diversification group (no more than 20%), according to the proportion of shares held by the largest shareholder; (2) Relatively concentrated group of equity (between 20% and 50%); (3) Highly concentrated group of shares (over 50%). In Hypothesis 2, the enterprise performance ROE is taken as the explained variable, and regression is performed according to the same grouping standard as hypothesis 1.

The regression of hypothesis 1 shows that the SA index can be significantly increased by strenghening the ownership concentration (at the 1% probability level), that is, the financial constraint can be effectively reduced, and the corresponding coefficient value is 2.503. This empirical result is corresponding to the prior conclusions[7]. In the subsample regression, the utility of the decentralized equity group was not significant; while that of the relatively centralized equity group and the highly centralized equity group were significant under the probability of 5% and 10% respectively, and the corresponding coefficient values were 3.374 and 3.077 respectively. In the state of equity dispersion, the motivation and effect of marginal encroachment of the largest shareholder are generally more obvious, which will result in interest infringement and resource deprivation to other shareholders, thus restricting the positive effect of increasing Ownership concentration. However, in the sample group where major shareholders occupy an important or even dominant position, their self-interested behavior and marginal motivation are relatively insufficient, so that the positive utility of increasing ownership concentration is greater than the negative utility, thus effectively reducing financial constraints. The essence of the change of equity trend is the dynamic game between the "selfish" behavior and the "overall interests of the enterprise" under the goal of maximizing the shareholders' wealth.

Through the regression examing hypothesis 2, it is found that an increase in SA index (i.e., a reduction in financial constraints) could improve ROE, both significantly at the 1% level. In the main regression, increasing the ownership concentration degree would significantly improve ROE, and the corresponding coefficient value is 0.120. However, in the subsample regression, the coefficient of OC on ROE was not obvious in both the relative concentrated group and the equity dispersion group. Only in the highly concentrated equity group could ROE be effectively improved, with a probability level of 5%. In the case of non-absolute control, the positive effects of increased supervision, increased operating efficiency, and reduced agency costs brought about by the increase in the shareholding of major shareholders are still offset by the "trench defense effect" and "tunneling effect"; in the state of absolute control, the encroachment effect of major shareholders is reduced, and the stewardship effect under the "ownership consciousness" could be brought into play, thereby significantly improving operating performance.

Table 5 models (1) and (2): multiple regression results

Variables	SA	SA (<0.2)	SA (0.2-0.5)	SA (>0.5)	ROE	ROE (<0.2)	ROE (0.2-0.5)	ROE (>0.5)
SA					0.024***	0.015***	0.026***	0.034***
					（6.04）	（4.64）	（5.02）	（4.07）
OC	2.503***	2.635	3.374**	3.077*	0.120***	0.216	0.048	0.144**
	(4.08)	(0.37)	（2.54）	（1.77）	（3.70）	（0.92）	（0.63）	（2.51）
OB	0.669***	0.274	0.747***	0.508	0.008	0.013	0.001	0.010
	(4.27)	(1.00)	（3.25）	（0.38）	（0.89）	（1.27）	（0.09）	（0.19）
Age	-0.536	4.674**	-1.245	-0.397	0.093***	0.053	0.153***	0.007
	(-0.72)	(1.83)	(-1.52)	(-0.47)	（3.01）	（1.52）	（3.69）	（0.13）
NCF	-0.144	0.467	0.014	0.648	0.072*	0.058	0.065	0.001
	(-0.31)	(0.40)	（0.02）	（0.70）	（1.80）	（0.67）	（1.11）	（0.01）
RAL	4.384***	3.264**	4.527***	3.628***	-0.036	-0.016	-0.064	0.026

	(8.20)	(2.04)	（7.15）	（3.97）	（-0.94）	（-0.35）	（-1.16）	（0.44）
TAT	-0.889*	0.077	-0.622	-1.454	0.129***	0.038	0.165***	0.182**
	(-1.67)	(0.05)	（1.03）	(-1.52）	(3.77）	（0.96）	（3.95）	（2.43）
Tobin Q	-0.459***	-0.55***	-0.505***	-0.763**	0.001	-0.003	0.005	0.052***
	(-5.44)	(-4.91)	(-5.11)	(-2.36)	（0.23）	（-0.84）	（0.51）	（2.94）
FAR	-2.675**	-7.18***	-3.360**	1.687	-0.111	0.004	-0.194	-0.089
	(-2.29)	(-3.17)	(-2.24)	（0.34）	（-1.22）	（0.05）	（-0.94）	（-1.04）
CH	-0.699	1.515	-0.872	-1.055	0.175***	0.034	0.203***	0.211**
	(-0.95)	(0.85)	(-1.00)	(-0.85)	（3.56）	（0.32）	（2.92）	（2.68）
Constant	4.352*	-10.16	6.448**	5.315*	-0.431***	-0.249**	-0.554***	-0.423**
	(1.87)	(-1.26)	（2.32）	（1.97）	（-4.04）	（-2.48）	（-3.74）	（-2.03）
Firm	Control	Control	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control	Control	Control
Observations	604	90	358	156	604	90	358	156
R-squared	0.588	0.758	0.600	0.583	0.275	0.551	0.262	0.335
F	25.96	15.06	15.85	14.24	10.65	5.56	8.30	4.87
P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: In brackets are t statistics, *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$; standard errors clustering at state-level in parentheses.

V.3.2 Multiple regression results-Assumption 3

As for the role of financial constraint between "ownership concentration" and "enterprise performance", the mediating effect and the regulating effect are considered respectively.

(1) Mediating effect

As shown in Figure 1, after controlling other variables, set the coefficient of equity concentration on financing constraints as 'a'; considering the variable of equity concentration, the coefficient of financing constraints on corporate performance is 'b'; when the financing constraint SA is not controlled, the equity concentration is the effect coefficient on enterprise performance is 'c'; after controlling the SA situation of financing constraints, the effect coefficient of equity concentration on enterprise performance is 'c''. According to the holding rates of the largest shareholder, it is grouped into three conditions, as shown in Table 6.

Table 6 Regression results of mediating effect

Mediating effect assessment	Total effect (c)	Direct effect (c')	Indirect effect (ab)	A	b	Note
Total state of equity (full sample)						
Coefficient β	0.181	0.120	0.06	2.50	0.024	The indirect effect
T-value	4.95	3.70	/	4.08	6.05	coefficient column is the
Significance	0.000	0.000	/	0.000	0.000	product of the estimated values of A and B, whose significance depends on the significance of A and B.
State of equity dispersion: shareholding ratio of the largest shareholder is less than 20%（subsample)						
Coefficient β	0.256	0.216	0.040	2.635	0.015	If the total effect

T-value	0.91	0.92	/	0.37	4.64	C is not significant, the analysis of mediating effect will be stopped.
Significance	0.370	0.369	/	0.718	0.000	

Relative concentration of equity: the shareholding ratio of the largest shareholder is between 20% and 50% (subsample)						
Coefficient β	0.136	0.048	0.088	3.373	0.026	If the total effect C is not significant, the analysis of mediating effect will be stopped.
T-value	1.64	0.63	/	2.54	5.02	
Significance	0.104	0.532	/	0.013	0.000	

Highly concentrated equity: the largest shareholder holds more than 50% shares (subsample)						
Coefficient β	0.250	0.144	0.105	3.078	0.034	
T-value	2.64	1.78	/	1.77	4.07	
Significance	0.011	0.081	/	0.082	0.000	

In the total sample, the intermediary effect of financial constraints is significant, and the proportion in the total impact is 0.06/0.181=0.33. However, the effect is not significant in the decentralized group and the relatively centralized group. In the highly concentrated equity group, the impact of financial constraints is significant, and the proportion of total impact is 0.105/0.250=0.42. It is seen that under the premise of absolute holding, the intermediation effect of financial constraint is highly significant. Under the absolute controlling status of "I am the majority", the increase of ownership concentration will improve the control power of major shareholders over the management and give full play to the "supervision effect of major shareholders" rather than the "expropriation effect". As the overall interests of the enterprise are gradually consistent with those of major shareholders, major shareholders will attach more importance to financial distribution and organizational management, so as to enhance cash holdings, curb financial constraints, and realize "shareholder wealth maximization".

(2) Regulatory effect

To avoid the multicollinearity problem, all data indicators were centralized and then the two models were regressed respectively. Model 1 and Model 2 both take enterprise performance as the explained variable, and the explanatory variable and control variable remain unchanged. However, Model 2 adds the interaction item of SA and OC after standardization. It can be seen from Table 7 that the change in R square is 0.004, and its significant change in F is 0.034, which is highly significant under the probability of 5%, thus confirming the existence of the regulatory effect.

Table 7 Moderating effect test results - based on R2

Model	R	R^2	Adjusted_R^2	Variation of R^2	Variation of F-statistics	Degrees of freedom 1	Degrees of freedom 2	Change in significance of F
1	.525	.275	.256	.275	.275	22	826	.000
2	.529	.279	.259	.004	4.492	1	825	.034

In Table 7, it can be seen from subsamples that, after the addition of interaction terms, the interpretation strength of the equation becomes stronger, increasing from 0.256 to 0.259; the coefficient on interaction term is positive, which is significant at 5% probability, indicating that the mitigation of financial constraints could play a positive regulatory role, and it is mainly significant in the equity dispersion group. According to descriptive statistics, the financial constraint of the equity dispersed group is much greater than that of the other two groups, and it has more obvious "action elasticity" and reduced constraint space. If it is alleviated, the conduction utility may be greater.

Table 8 Moderating effect test results - Based on multiple regression results

Variables	ROE_Z	ROE_Z	ROE_Z（<0.2）	ROE_Z (0.2-0.5)	ROE_Z (>0.5)
SA_Z	0.420***	0.421***	1.150**	0.461***	0.483**
	(9.102)	（9.140）	（2.24）	（6.81）	（2.12）
OC_Z	0.175***	0.184***	0.486	0.098	0.193
	(4.102)	（4.296）	（0.191）	（0.97）	（1.33）
SA_Z*OC_Z		0.073**	0.581**	0.101	0.082
		（2.119）	（2.21）	（1.09）	（0.52）
OB_Z	0.051	0.069	0.061	0.032	0.064
	（1.158）	（1.556）	（1.17）	（0.42）	（0.19）
Age_Z	0.128***	0.133***	0.063	0.208***	0.010
	（4.164）	（4.320）	（0.77）	（4.46）	（0.19）
NCF_Z	0.062*	0.064*	0.058	0.059	0.005
	（1.894）	（1.957）	（1.02）	（1.26）	（0.08）
RAL_Z	-0.057	-0.059	-0.076	-0.100*	0.035
	（-1.405）	（-1.468）	（-0.98）	（-1.71）	（0.39）
TAT_Z	0.187***	0.197***	0.071	0.247***	0.264***
	（5.642）	（5.888）	（1.35）	（5.35）	（3.13）
Tobin Q_Z	0.014	-0.013	-0.060	0.057	0.679***
	（0.371）	（-0.314）	（-1.10）	（0.80）	（2.90）
FAR_Z	-0.065*	-0.071**	-0.014	-0.120**	-0.048
	（-1.865）	（-2.041）	（-0.26）	（-2.14）	（-0.53）
CH_Z	0.147***	0.151***	0.070	0.166***	0.172***
	（4.183）	（4.318）	（0.86）	（3.18）	（2.68）
Constant	-0.097	-0.134	0.692	0.223	-0.511
	(-1.060)	（-1.447）	（1.13）	（1.05）	（-1.34）
Firm	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control
Observations	604	604	90	358	156
R-squared	0.256	0.259	0.464	0.2285	0.2634
F	10.647	13.441	5.56	7.37	4.65
P-Value	0.000	0.000	0.000	0.000	0.000

Note: In brackets are t statistics, *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$; standard errors clustering at state-level reported in parentheses.

V.3.3 Robustness check

To enhance the credibility of the study, the following tests were conducted in Table 9.

Table 9 Robustness test results

Variables	SA①	SA②	SA③	ROA①	ROA②	ROA③	ROA_Z	ROA_Z
OC	2.574***	0.841***	1.883*	0.043***	0.0435*	0.0477**	0.452***	0.251*
SA				0.006***	0.007***	0.006***	0.162***	0.413**
SA*OC							0.078**	0.099*

Control Variable	Control	Control	Control	Control	Control	Control	Control	Control
Firm	Control	Control	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control	Control	Control
Observations	604	604	604	604	236	604	604	90
P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: In brackets are t statistics, *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$; standard errors clustering at state-level reported in parentheses.

(1) In the test of the relationship between financial constraints and ownership concentration: Considering the limitations of the selected growth indicators (which cannot accurately reflect the market price information, and have price deviation), the control variable Tobin Q was changed into dynamic price-earnings ratio (PE), namely the ratio between equity price and annual after-tax profit per share. After Winsor tail reduction, the coefficient of OC was 2.574 and the P value was 0.000, which were still proportional and highly significant. On this basis, the fixed effect of individual enterprises was added into the equations, and OC coefficient was still positive and highly significant. On these bases, the samples are limited to the relatively concentrated group and the highly concentrated group, because these two groups are significant in the empirical study of the relationship between them. The test results show that the coefficient is 1.883, which is significant under 10% probability.

(2) On the premise of controlling financial constraints, when studying the relationship between ownership concentration and enterprise performance: Multi-dimensional analysis is used to change the indicators of corporate performance from ROE to ROA, and the control variable Tobin Q is further changed into dynamic price-earnings ratio (PE), which is applied to the regression detection of interactive relations. Results in the positive relationship test between ownership concentration and financial performance, OC beta coefficient was 0.043 and P value was 0.000. Then the sample group of the original equation was limited to the highly concentrated equity group (which was the only significant group in the empirical test above), and the OC coefficient was 0.0435, which was significant under the probability of 10%. Above these, a new control variable—the logarithm of the annual capital value of the enterprise is added. Since the enterprise performance is often closely related to its scale, this index is used to control the amount of enterprise resources and carrying capacity, and the regression result is still significant under the probability of 5%.

(3) In the mediating effect test for financial constraint (replace ROE with ROA), the corresponding coefficients on a and b are highly significant and positive, and the indirect influence is also significant. The total effect coefficient value is 0.0572 and significant at 1% probability, so the two have a positive mediating effect. In the adjustment effect test, the enterprise performance index was changed to ROA, and the sample range of enterprises was controlled to be the total group and the equity dispersed group, respectively. The interaction coefficient of SA and OC was 0.078 and 0.099, which were significant and verified the effectiveness of the adjustment effect.

The above results are consistent with the above results. Therefore, the research results are persuasive.

V.3.4 The mechanism of ownership concentration

The goals pursued by shareholders and managers are inconsistent. Shareholders want to maximize the value of the equity they hold, while managers want to maximize their own utility. Therefore, there is moral hazard between shareholders and managers, which need to be guided by incentive and restraint mechanisms. This is also the principle of equity incentives.

Based on previous studies, the structural equation model (SEM) was used to explore the influence mechanism of ownership concentration on corporate performance: ownership concentration has direct and indirect influence on corporate performance. Among them, the indirect path includes "free rider behavior" and "operation efficiency", which successively reflect the "responsibility consciousness" and "supervision consciousness" of major shareholders.

The fitting values of Table 10 and Table 11 were obtained by Amos24.0 software and maximum likelihood method. At the same time, the probability P value of chi-square statistics is 0.71 (a fitting standard greater than 0.05), that is, under the probability of 5%, the Chi-square statistics is not significant, and there is no significant difference between the sample data and

the theoretical model. For these set potential variables :(1) total asset turnover (TAT) and operating income growth rate (GRI) for "operating Efficiency", this path is simplified as OE (Operational Efficiency); (2) "Free Ride" is expressed by the number of senior executives (CEO) and the size of the board of directors, and the action path is simplified as FR (free-ride). The selected variables are used as the mediating variables for regression analysis, and the variable group of the original equation remains unchanged.

Table 10 Structural equation model (SEM) estimation results

Effect of Path	Coefficient	Standard Error	Critical Ratio	P-Value	Standardized Coefficient
OE←OC	0.246	0.024	10.12	0.000	0.067
ROE←OE	0.018	0.002	8.47	0.000	0.062
FR←OC	-0.159	0.017	-9.39	0.000	-0.067
ROE←FR	0.002	0.003	2.68	0.011	0.005
ROE←OC	0.027	0.007	3.68	0.000	0.025

According to the results in Table 10 and Table 11, the path coefficient of direct effect of ownership concentration on performance is 0.027, and this effect is significant at 1% of the probability, with the contribution reaching 85.05%. Indirect effects mainly function through "inhibiting free-rider effect" and "improving operation efficiency", indicating that there are some mediating effects reaching a total of 14.95%.

Table 11 Path decomposition of the equity trend of the largest shareholder affecting corporate performance

Equity adjustment trend	Paths Types	Influence Paths	Influential Effect	Contribution Degree	Relative Rate
Ownership concentration	Direct	OC→ROE	0.027	0.027	85.05%
	Indirect	OC→FR→ROE	-0.159*0.002=-0.000318	0.000318	1.00%
		OC→OE→ROE	0.246*0.018=0.004428	0.004428	13.95%
		Sum	0.00411	0.004746	14.95%
	Total		0.03111	0.031746	100%

Note: The contribution degree is the absolute influence of a certain path on the performance under the trend of concentration of shareholders' equity. It does not distinguish the direction.

According to the regression results: (1) from the perspective of corporate governance, ownership concentration can strengthen the power and enterprise management of the controlling shareholders. It is reflected on simplifying and optimizing the organizational structure, which make the management perform their duties more seriously and reduce free-rider behavior. As can be seen from the regression coefficient in Table 10, the increase of ownership concentration can significantly reduce the size of CEO and board of directors, inhibit the psychology of "free rider", and enhance the sense of responsibility of management, but the mediating effect contribution rate is only 1%. (2) Secondly, from the perspective of operational efficiency, under the trend of ownership concentration, major shareholders who are driven by the "sense of supervision", would pay more attention to the operation and construction of enterprises. This phenomenon would strengthen the professional labor division and process optimization, improve the efficiency of income generation of assets. The contribution rate of this effect is 13.95%, which plays a major role in the mediating effect. Thus it can be seen that driven by the "supervision consciousness" will be the main factor for the improvement of enterprise performance.

VI Conclusion and inspiration

VI.1 Main conclusion

The innovation of this study is to compare the effect of equity structure adjustment on enterprises under different shareholding states, as well as the intermediary/regulatory effect of financial constraints in the transmission process, and to

explore the influence mechanism of ownership concentration inside enterprises on operation and financing. According to the characteristics of the real estate industry, it is supposed to consider the reasonable shareholding range of the largest shareholder, so as to provide useful reference for the academic circle.

VI.1.1 Financial constraints and Ownership concentration are negatively correlated

If other conditions remain unchanged, the financial constraint is inversely proportional to the ownership concentration degree. The increase of ownership concentration degree will effectively alleviate the financial constraint. At the same time, it is found that this relationship is significant in the group with relatively concentrated and highly concentrated ownership, but not significant in the group with dispersed ownership.

Compared with the enterprises in dispersed equity, the willingness to pay cash dividends is usually higher in the shareholder-controlled enterprises, which can effectively alleviate the capital constraint problem of real estate institutions and obtain more attention and support from investors. If the largest shareholder holds a larger share, the supervision effect can be more effectively to reduce the "first type agency cost problem", trigger the "eyeball attraction effect" of enterprises to attract financing, relieve the situation of capital strain, and promote the maximization of shareholders' interests.

VI.1.2 Concentration of equity is positively correlated with enterprise performance

Under the condition of fixed financial constraints, the increase of ownership concentration degree can significantly improve enterprise performance. But in the subsample regression, only ownership concentrated groups are obvious. If the share of the largest shareholder is low, according to the "trench defense effect", the increase of the largest shareholder's shareholding will significantly enhance the motivation and behavior of the minority shareholders to seize the interests and inhibit the benign progress of the enterprise. When the largest shareholder is in the absolute controlling position, the higher control right can promote the managers to meet the shareholders' goals and improve productivity performance to the greatest extent under the existing mechanism.

VI.1.3 In the transmission process of ownership concentration to corporate performance, financial constraints have significant regulatory and mediating effects

The intermediation effect of financial constraint is mainly reflected in the state of absolute holding. The increase of ownership concentration will effectively alleviate financial constraints, "loosen" and "reduce pressure" for enterprise investment/production activities. When the ownership concentration is not high enough, the mediating effect under financial constraints is difficult to emerge due to the inefficiency caused by "trench defense effect", "tunnel effect" and "first type agency problem".

The interaction between the financial constraint index (SA) and the ownership concentration degree (OC) can play a positive regulatory role, that is, the higher the degree of financial constraint, the lower the conduction effect. Meanwhile, it plays a significant role in the equity diversification group. In the state of relatively concentrated and highly concentrated equity, enterprises tend to have good execution efficiency, making financial constraints on its regulatory effect relatively small; in the case of decentralization of equity, minority shareholders are the main body, which plays a large role of restraining among shareholders, so the implementation and supervision effect of major shareholders is weak.

VI.2 Enlightenment on enterprise and industry management

VI.2.1 Appropriately increase Ownership concentration to improve performance

The relative concentration of equity has a good easing effect on the financial constraint of enterprises, which is conducive to raising capital, expanding operation and creating more income. In particular, the real estate industry is such a capital-intensive industry, that the state should attach great importance to its negative impact on sustainable development caused by financing restrictions. The real estate agency should change the cost of the institution under the condition of "dispersed equity", increase the proportion of major shareholders appropriately, and change the proportion into "relatively concentrated" or "highly concentrated" equity. Also, enterprises should give full play to the "supervision effect" and "incentive effect" of major shareholders.

In terms of ownership concentration, the proportion of the largest shareholder should be controlled in the range of "20% to 50%" or above 50%, so as to exercise effective control over the enterprises, ensure the good efficiency and encourage the major

shareholders to participate in the enterprise's activities more actively. As for the specific range, the business performance, financial issues, management system and so on should be considered comprehensively. When an enterprise is faced with certain financial constraints, it could change the state of equity decentralization and strengthen equity control, reduce internal friction caused by power struggle among shareholders and the hidden danger of "excessive control" in the original state, and improve decision-making efficiency to ensure the normal turnover. Under the current financial constraints, real estate enterprises are faced with fierce market competition and have to obtain sustained benefits to support survivals. Therefore, according to the empirical results, major shareholders should maintain a medium-high degree of holding, and maintain the proportion of the largest shareholder close to or over 50%, so as to reduce the incentive and marginal impact of major shareholders being misappropriated.

VI.2.2 Avoid "shareholders-hollowing out" to protect the interests of small and medium shareholders

Moreover, the property sector needs to curb the "tunneling effect" and the "moat effect". Within a certain proportion of shares, the motivation of major shareholders to encroach on property becomes stronger with the increase of shares. The corresponding enterprise management mechanism should be improved to effectively check and balance the rights of the largest shareholder, reduce the possibility of major shareholders' encroachment, limit their irrational behavior of cash dividends, and ensure the legitimate interests of minority shareholders to be protected. The government should also help set up a good ownership structure, improve the information disclosure, prevent enterprises from fighting for control and improve coordination, so as to better cope with market frictions.

VI.3 Research shortcomings and future direction

Limited by the availability of data, it has not considered whether the financial constraints and corporate performance will be affected by geographical, national policies and other congenital conditions. How to reduce arbitrary decision-making errors and avoid corresponding risks, especially in the case of medium and high shareholding? The way to avoid "hollowing out" in the state of "weak holding" will be the next research direction.

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