

## Retraction

# Retracted: Relationship between Capital Allocation Efficiency and Diversification Strategy from the Perspective of Internal Control

### Discrete Dynamics in Nature and Society

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

### References

- [1] J. Wang and W. Xia, "Relationship between Capital Allocation Efficiency and Diversification Strategy from the Perspective of Internal Control," *Discrete Dynamics in Nature and Society*, vol. 2022, Article ID 5081126, 14 pages, 2022.

## Research Article

# Relationship between Capital Allocation Efficiency and Diversification Strategy from the Perspective of Internal Control

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Received 24 February 2022; Accepted 4 April 2022; Published 30 April 2022

Academic Editor: Zaoli Yang

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Based on the quality of internal control, this study discusses the impact of internal control quality on resource allocation in the internal capital market and how capital allocation efficiency affects strategic decision-making. If the quality of internal control can be correctly evaluated and included into the management's strategic decisions, the enterprise can improve the efficiency of capital allocation and formulate an appropriate development strategy. Using panel data from the Shanghai and Shenzhen stock markets from 2013 to 2017, we investigate the relationship among overall internal control information quality, capital allocation efficiency, and enterprise strategic decision-making. The results show that when the level of free cash flow is high, the incentive mechanism of corporate governance increases the possibility of diversification; the lower the quality of internal control information is, the more likely it is for enterprises to pursue diversification; improving the quality of internal control helps management to allocate internal resources reasonably. When the efficiency of capital allocation is high, it can effectively prevent diversification. This study contributes by revealing the mechanism of the impact of internal control quality on strategic decision-making and expands the relationship between internal control and corporate strategic management.

## 1. Introduction

With the rapid changes in the economic and political environment, there are increasingly greater requirements for enterprise specialization and globalization. Traditional enterprises started with profit maximization as the economic goal and gradually moved towards a sustainable development goal. Many Chinese companies have accelerated the process of transformation and enterprise reengineering to promote the sustainable development of listed companies. Diversification is one way to realize this transformation. Many studies in the field of corporate strategy and behavioral finance have pointed out that the motivation for diversification stems from the internal and external environments faced by enterprises. To create a regional economy, enterprises try to enter related industries, which is a low-cost attempt. The motivation for these stems from trying to find a simple retreat for enterprises [1]. According to the theory of diversification motivation,

there are three main reasons for diversifying: individual, organizational, and economic rational motivation. Among them, rational organizational motivation seeks to reduce the overall risk of the enterprise, while individual rational motivation mostly pursues personal interests of managers. In recent years, studies have found that diversification strategy is mainly the result of the pursuit of value maximization by organizations and personal interests by managers [2, 3]. From the perspective of principal-agent theory, large shareholders or managers often consider diversification strategy to appropriate the interests of small and medium-sized shareholders [4]. The traditional bureaucratic management mode separates cash flow rights and enterprise control rights [1]. Diversification does not reduce the risk of enterprises. On the contrary, agency problems such as on-the-job consumption are more likely to occur, and accounting performance reduces [1]. Hence, a diversified development is not applicable to all enterprises.

The release of “basic norms of internal control” and “supporting guidelines” provides an institutional guarantee for the standardization and legalization of internal control information for Chinese enterprises and demands higher requirements for internal control and management of enterprises. The standards clearly state that improvement of internal control system should serve the goal of enterprise development and effective utilization of internal capital. Whether a diversification strategy is suitable for Chinese enterprises and whether it can provide a path for their transformation and sustainable development is an urgent question to be answered. However, there are only a few studies on internal control behavior and internal capital allocation, and there is not much information on the impact of their relationship on enterprise strategic decision-making. There is also very little research on whether improvements in internal control quality provide a good basis and guarantee for business decision-making and development planning. Hence, this study explores the relationship between enterprise internal control and resource allocation efficiency and its impact on enterprise strategic decision-making, which has practical significance for enterprise management.

## 2. Review of Related Research

The literature on the impact of internal control in western countries mainly focuses on the quality of accounting information, agency cost, and enterprise value, and many scholars have discussed the relationship between corporate governance and capital allocation efficiency. There are only a few studies on the relationship between information quality of internal control, efficiency of capital allocation, and strategic decision-making. Fang and Jin [5] pointed out that the role of corporate governance and internal control is different, and the focus of the company’s business decision-making and internal management is also different. Corporate governance is only one aspect of the internal environment in internal control (as shown in Figure 1), while internal control is a part of all activities of internal governance, operation, execution, and supervision. Internal control is a comprehensive management system. In empirical studies, the representative variables of corporate governance and internal control are easily confused with each other, which leads to deviations in the design and measurement of internal control [6]. Skaife et al. [7] used the internal control deficiency disclosure under the Sarbanes-Oxley Act (SOX 302) to study the failure of disclosure control and discussed the problems and causes of internal control. They found that the business of companies with internal control disclosure deficiency is more complex than that of undisclosed enterprises and that there are many organizational structure adjustments, lower capital allocation efficiency, higher accounting risks, and auditors before disclosure deficiency. Employee turnover is also high. Deumes and Knechel [8] found that the degree of disclosure of internal control is negatively correlated with the shareholding ratio of management and major shareholders because the management weighs the possible economic cost of disclosing the deficiencies in internal control. Li [9] believed

that the quality of internal control information should play a role in value creation, and not just in issuing reports. Internal control information quality should be considered from multiple levels of corporate governance, company operation, and execution. In addition to functioning as an internal auditor, internal control should also have the functional attributes of corporate management [10]. Therefore, it is important to explore whether the level of internal control has an impact on the efficiency of enterprise capital allocation.

The existing research on internal control can be roughly divided into the following two different viewpoints: Scholars in the theory of internal control inhibition believe that internal control will destroy the innovation environment of enterprises to a certain extent [11, 12], inhibits employees’ enthusiasm and innovative spirit [13], and dampens the enthusiasm of management to increase investment in innovation [14]. Therefore, internal control will adversely affect the efficiency of capital allocation. Li et al. [15] hold that the higher the quality of internal control, the less the capital investment of enterprises. Ni and Wang [16] found that high-quality internal control inhibited the ability of enterprise management, led to the reduction of R&D investment, and finally reduced the R&D performance of enterprises, so they believed that strict internal control limited the resource allocation of enterprises. Barger et al. [17] found that the institutionalization of internal control reduced the ability of enterprises to take risks, which was not conducive to the development of innovative strategies. At the same time, scholars of “internal control promotion theory” think that internal control can help improve the management level of enterprises and provide goals, guidelines, and structured support for enterprise development [18–21]. Some scholars have found that the higher the quality of internal control is, the stronger the binding force on the management’s on-the-job consumption is, and the better it can promote the fulfillment of corporate social responsibility and attract R&D talents, which in turn helps to improve the level of corporate capital allocation; papers [22–24] empirically found that the implementation of internal control norms promoted the disclosure and repair of internal control defects, reduced the risk level of enterprises, and enabled companies to establish and improve internal control systems.

From the perspective of maximizing enterprise value, management usually considers only those investment projects with an expected net present value greater than zero. Investment risk is seldom considered in achieving optimal allocation of capital [25]. Due to agency problems and the pursuit of private interests, management often chooses projects with low investment risk, which leads to underinvestment. Faccio’s study shows that enterprises with female CEOs are more obviously underinvested, and their capital allocation efficiency is lower than that of enterprises with male CEOs. High returns are accompanied by high risks, and a high capital allocation efficiency means that companies choose projects with higher returns and abandon those with lower returns [26]. Other studies have shown that improving the quality of accounting information disclosure

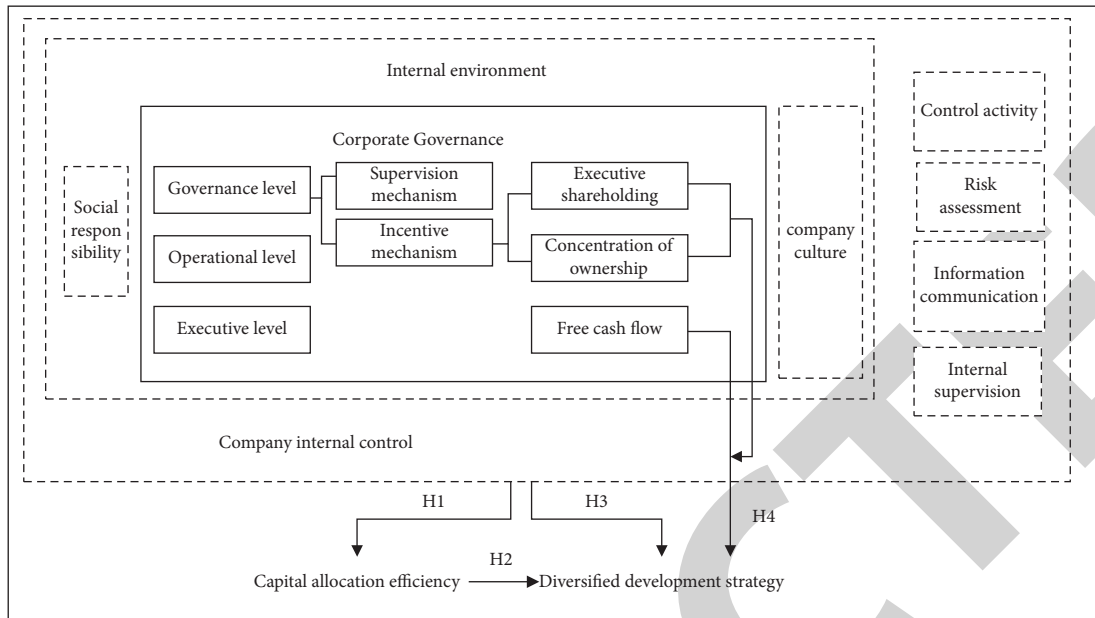


FIGURE 1: Relationship between internal control, internal capital allocation efficiency, and diversification.

and internal control can avoid information asymmetry, thus, reducing the cost of capital financing and agency costs and achieving an effective allocation of capital. Therefore, the level of accounting information disclosure is inseparable from the level of internal control quality [7]. The present study investigates whether enterprises with high levels of internal control can reasonably avoid risks and achieve effective utilization of resources.

How management allocates internal resources is closely related to the enterprise development strategy. Initially, diversification strategy was mostly considered to maximize enterprise value [27] and reduce enterprise risk [28]. The research on the determinants of diversified operation of listed companies mainly focuses on corporate governance characteristics, such as company value, company growth [29], operational risk, consistent design of management interests, company size, listing years, and industry category [30]. Jensen’s principal-agent theory has provided the theoretical support for the explanation of enterprise management behavior. Amihud and Dennis and other studies on the diversification of companies before the 1990s showed that the reasons for diversification are on-the-job consumption, empire building, diversified M&As, and cross-subsidization of interdepartmental performance. Diversification was used as a business model by the company’s management to seek nonmonetary private interests, which damages the interests of shareholders and incurs agency costs [31]. Chintrakarn et al. showed that when the controlling power of shareholders is weak, management is more likely to carry out diversification [32]. Goranova et al. showed that the incentive mechanism of corporate governance induces enterprises to implement diversification [33]. Chen and Yu conducted an empirical analysis of Taiwanese enterprises to test the relationship between management control mechanisms, diversification, and accounting performance. Their findings show that the relationship between management

equity incentives and diversification is U-shaped and that diversification improves the short-term performance of enterprises but has little impact on medium- and long-term performance [34]. Combining the concepts of resource relevance and economic cost, Lieberman et al. evaluated the impact of resource reallocation potential on the entry and exit of diversified businesses [35] and concluded that correlated operations reduce the sunk cost of new businesses and help in exiting poorly performing new businesses. Due to the difficulty in redeploying resources, diversification can reduce entry “error.” Their findings show that there is a negative correlation between efficiency of capital allocation and the degree of diversification. Jin Xiaobin found that diversification strategy in China is not vicious but neutral. It is a rational organizational behavior to maximize company value in a market economy. Diversified companies in China generally command a premium with a high market value and book value, high investment level, and excess value [36]. The above study analyzes the reasons and consequences of a diversification strategy from different angles but does not analyze the impact of internal control on the efficiency of capital allocation or the possible degree of diversification. The present study attempts to explore the influence and role of internal control level on the strategic decision-making of management and examines whether capital allocation efficiency can be improved by improving the level of internal control, to guide enterprises in making correct strategic decisions.

### 3. Theoretical Analysis and Research Hypotheses

To expedite the transformation and upgrading of enterprises, while preventing improper management behavior and low capital allocation efficiency, enterprises usually formulate a series of systems and policies to supervise and

restrict internal management activities and the business activities handed over to the outside world. As a long-term qualitative internal control management, enterprises form an invisible “ecosystem” influence. The development and growth of enterprises form the corporate culture. Therefore, internal control is a kind of institutional arrangement to monitor the various operations and activities within the company. It provides a good “ecological environment” not only for the better realization of financial transparency, but also for efficient management operation. Li Wanfu, Lin bin, and Song Lu emphasized the role and status of internal control in the company’s investment decision-making and found that low-quality internal control exacerbates inefficient investment, both overinvestment and underinvestment [37]. At the same time, the level of internal control also affects the quality of company’s financial reports. The financial report information is the main reference material for the enterprise’s shareholders and stakeholders. Low information quality of financial reports leads to information asymmetry and affects the decision-making of the company and other stakeholders [38]. Anna Costello et al. showed that if there are deficiencies in the internal control disclosures of the company, banks and financial institutions might require the company to pay a higher loan interest rate. When the company corrects the disclosure deficiencies in its internal control, lending institutions reduce the loan interest rate [39]. It can be seen that the quality of internal control reduces the degree of information asymmetry of the management, plays an important role in rational allocation of capital, and is conducive for avoiding enterprise risks. According to the signal transmission theory, when there is asymmetric information, the management, which has the advantage of information resources, transmits internal information to potential external investors through the capital structure or dividend policy [40]. External investors then participate in and influence the decision-making of internal resource allocation and future strategies. If corporate governance fails in its regulatory role, it becomes necessary for enterprises to compensate for its deficiencies by improving internal control. When the shareholding ratio of the management is high, the signal is stronger, indicating that management would not encroach on the company’s resources and shareholders’ rights and interests and strive for more resources [41, 42]. As a reliable signal, the quality of internal control is conducive for improving capital allocation efficiency and plays the role of an internal auditor [43]. The internal control system provides internal control and supervision not only for financial and accounting behavior but also at all levels of the whole enterprise [6]. The information parameters of internal control quality can directly quantify this governance role. With continuous improvements in an enterprise’s risk-taking ability, improving internal control provides guarantees for enterprises to control risks and optimize resource allocation. Therefore, this study proposes the following hypothesis.

**H1:** The higher the quality of internal control, the higher the efficiency of capital allocation.

Li and Zhu found that the wealth loss of shareholders of M&A companies was significant in 1–3 years after the M&A,

with a loss rate of 6–9% [44]. Zhang and Gao suggest that diversification without a synergistic effect reduces the efficiency of capital allocation in the internal capital market of the enterprise, and the transfer of capital from departments with strong profitability to those with poor profitability damages enterprise value [45]. The diversification is likely to result from a decrease in capital allocation efficiency. Lamont and Polk examined the diversification of a company’s discount situation and found that, with an increase in investment opportunities, the discount phenomenon is more significant, and improper investment behavior directly affects the efficiency of capital allocation. More opportunities for enterprise transformation are likely to induce the management to choose diversification. Yang [46] believes that low efficiency of capital allocation increases the possibility of value loss in corporatized companies. Inefficient or ineffective capital allocation strategies usually advocate “equalitarianism.” Due to the presence of more businesses, inefficient departments are likely to allocate more capital, while efficient departments get less capital. When enterprises are in nonrelated fields, the investment prospect gap between departments is large, which leads to cross-subsidization among departments. Wang [47] believes that the efficiency of capital allocation tends to increase when enterprises move from specialization to diversification. However, any further increase in diversification after attaining a certain degree reduces allocation efficiency in the internal capital market. The effective allocation of internal capital can drive enterprises to improve their accounting performance, while diversification has a negative correlation with accounting performance. For example, Lu [48] showed that the stronger the business relevance of subdepartments, the lower the efficiency of capital allocation, and the higher the degree of diversification, the lower the efficiency of resource allocation in the internal capital market. In their study, enterprises developed diversification strategies. The index is not accurate enough for measuring diversification degree. It can be measured more accurately from the composition of the operating environment. Therefore, this study proposes the following hypothesis.

**H2:** The higher the efficiency of capital allocation is, the less likely it is for enterprises to implement diversification.

Internal control is an important mechanism to ensure the effective implementation of the internal contract, and in modern enterprise system, it is particularly important to act according to contract rules. Rajesh et al. found that if there is an efficient incentive contract within the enterprise, the low capital efficiency of the enterprise would be controlled and the possibility of diversification would be reduced [49]. We believe that the effect of capital allocation efficiency on diversification is regulated and influenced by the quality of internal control. Theoretically speaking, when there is no investment opportunity, management cannot obtain direct benefits from a reasonable distribution of capital or obtain the corresponding returns, or the returns are indirect or invisible. If the internal control is deficient, it would directly affect the strategic decision-making of the management and make them more motivated to carry out diversification to

achieve on-the-job consumption or empire building. Therefore, we propose the following hypotheses.

**H3:** The lower the quality of internal control is, the more likely the enterprise will implement diversification.

In the literature on enterprise development strategies, the level of free cash flow is an important factor in strategic decision-making. The failure of internal control provides managers with the opportunity to invest the internal free cash flow in projects that are beneficial to some managers but are expensive for shareholders. When a company has more free cash flow, managers or CEOs are more likely to engage in self-interested pursuits [32], such as empire building, on-the-job consumption, diversified M&As [50], and cross-subsidization between departments. The possibility of implementing diversification is related to the level of free cash flow held by the enterprise during the current period or the previous period. If the proportion of management shareholding is high, it may lead to the possibility of an interest convergence effect to stimulate the development of a diversification strategy for the enterprise, thus, damaging the interests of creditors or other stakeholders [51]. When ownership concentration is high and there are few active parties to collect information and monitor management, the management is more likely to implement diversification to disperse the supervision of large shareholders. Therefore, the following hypothesis is put forward:

**H4:** When the level of free cash flow is high, the convergence effect of management interests increases the possibility of implementing diversification.

## 4. Research Design

**4.1. Research Samples and Data Sources.** This study selected A-listed companies on the Shanghai and Shenzhen stock exchanges from 2013 to 2017 and sorted the sample data according to the following criteria: ① exclude financial and insurance listed companies; ② exclude ST and ST\* companies; and ③ eliminate missing data and abnormal samples. After the above screening, 9012 valid samples were obtained. The financial data are taken from the China Stock Market and Accounting Research database, Wind-Economic database, and DIB internal control and risk management database of the Chinese stock market. We used Stata 11.0 software for the statistical analysis.

### 4.2. Design of Main Variables

**4.2.1. Diversification.** From the relevant literature, we compared and analyzed business counting, HHI, HDI, and entropy methods and finally decided to use the HDI method. Refer to Herfindahl index,

$$HHI = \sum_{i=1}^n Pi^2. \quad (1)$$

$Pi$  is the proportion of the income of each industry in the total income. Referring to the Herfindahl method of calculating income, for example, enterprises A and B operate in two industries, in which the composition of main business

income of enterprise A is 80:20 and that of enterprise B is 50:50. Then, the HHI index of enterprise A is 0.68 and that of enterprise B is 0.5.

Referring to C.H. Berry's findings, this study uses the weighted average HDI index to measure diversification. It is calculated as

$$HDI = 1 - HHI = 1 - \sum_{i=1}^n Pi^2. \quad (2)$$

When HDI is high, it indicates a more diversified enterprise; when HDI is 0, it indicates a specialized enterprise. In the above example, enterprise B is more diversified than enterprise A.

**4.2.2. Free Cash Flow Level.** According to Richardson [52], free cash flow is the cash flow of an enterprise that is in excess of the funds required to maintain the existing assets and optimal new investment. The cash asset ratio of the previous accounting year is expressed using T-1 period. The calculation formula is

$$FCFF_{i,t-1} = \frac{(CFO - I1 - I2)_{t-1}}{TotalAsset}. \quad (3)$$

CFO is the net cash flow of operating activities,  $I1$  is the cash expenditure required to maintain production and operation and asset scale, and  $I2$  is the new investment in the current year cash paid for in the net cash flow.

**4.2.3. Efficiency of Capital Allocation.** Referring to McLean's method [53], the efficiency of capital allocation is measured by the sensitivity of the company's investment to marginal Q, mainly involving the company's investment level (investment) and investment opportunity (Tobin's Q). In the regression of investment level to investment opportunity, the regression coefficient of investment opportunity in the previous period represents the sensitivity to the efficiency of capital allocation. In the model, the interaction between the internal control index and the last investment opportunity represents the influence of the quality of internal control on the efficiency of capital allocation. A positive coefficient indicates that the quality of internal control can promote the sensitivity of the company; that is, improving the level of internal control is conducive to the management's control of investment opportunities and efficiency of capital allocation. The investment level of the company is measured by the ratio of current net cash flow to total assets, and Tobin's Q is used to measure investment opportunities.

**4.2.4. Internal Control Index.** Following Yang Deming [54] and other studies, this study uses the "internal control index" of DIB Risk Management Technology Co., Ltd., to measure the internal control quality of listed companies. The lowest score on the original index is 0, while the highest is 1000. In this study, the internal control level of a company is calculated by adding 1 logarithm after converting the index into a percentage. In addition, internal control dummy variables were used for the robustness test.

**4.2.5. Corporate Governance Indicators.** Referring to Beatty and Zajac [55], we use the ratio of the number of shares held by the company's senior managers to the total number of shares of the company and use the ratio of the number of shares held by the largest shareholder to the total number of shares of the company to measure the degree of ownership concentration.

**4.2.6. Control Variables.** Referring to Goranova [33], the following nine control variables were selected. Accounting performance is expressed as the rate of return on assets; enterprise scale is expressed as the natural logarithm of total assets; financial leverage is expressed as the year-end total asset liability ratio; enterprise growth is measured by the increment rate of the main business income of the accounting year; the period of listing is measured by the listing period; company risk is expressed as the top three of net profit rate of total assets; and ownership nature is divided according to the type of the ultimate controller in the annual report of listed companies, in which 1 is state-owned holding, while 0 is other. In addition, there are industry dummy and annual dummy variables. A summary of each variable is shown in Table 1.

### 4.3. Research Model

**4.3.1. Internal Control and Capital Allocation Efficiency.** This study uses feasibility generalized least squares regression analysis to test the relationship between internal control quality and capital allocation efficiency.

$$\begin{aligned} & \text{Invest}_{i,t} \alpha_0 + \alpha_1 \text{Tobin's}Q_{i,t-1} + \alpha_2 \text{ICI}_{i,t} + \alpha_3 \\ & \text{Tobin's}Q_{i,t-1} \bullet \text{ICI}_{i,t} + \alpha_4 \text{Control}_{i,t} + \varepsilon_{i,t}. \end{aligned} \quad (4)$$

Invest represents the investment level of the company, ICI is the allocation efficiency of the internal capital market, ICI is the internal control index of the company, Tobin's Q represents the investment opportunities of the company, Control includes all the control variables,  $\alpha_0$  is the intercept term,  $\alpha_1 \sim \alpha_4$  is the regression coefficient, and  $\varepsilon$  is the residual term. In formula (4), if the coefficient of  $\alpha_2$  is significantly positive, it signifies that the improvement of the company's internal control can promote the resource allocation of the enterprise's internal capital market; thus, H1 will be proven. Referring to Mclean and Pontiff [56], a company's capital allocation efficiency is measured by the sensitivity of the company's investment to marginal Q. Tobin's Q takes the observation value of one lag period. In formula (4), the coefficient of interaction  $\alpha_3$  is significantly positive, indicating that an improvement in internal control has a positive regulatory effect on the resource allocation of the internal capital market.

**4.3.2. Diversification and Capital Allocation Efficiency.** This study uses the following model to test hypotheses H2 ~ H4:

$$\begin{aligned} \text{HDI}_{i,t} = & \beta_0 + \beta_1 \text{Invest}_{i,t} + \beta_2 \text{Deficiency}_{i,t} + \beta_3 \text{Tobin's}Q_{i,t-1} \\ & + \beta_4 \text{FCFF}_{i,t-1} + \beta_5 \text{Internalgovernance} \times \text{FCFF}_{i,t-1} \\ & + \beta_6 \text{Control} + \varepsilon_{i,t}, \end{aligned} \quad (5)$$

where HDI represents the degree of diversification of the enterprise, Invest represents the level of internal capital allocation of the company in the current period, and Deficiency indicates whether there are deficiencies in internal control. Internal governance indicates the ownership concentration of internal governance mechanism and the proportion of senior executives' shareholding; FCFF is the level of free cash flow; Control are all the control variables, and  $\varepsilon$  is the residual item. Formula (5) examines the impact of deficiencies in internal governance mechanism and internal control on corporate diversification and verifies H2 ~ H4. To eliminate outliers and extreme outliers, 1% tailing was applied to all the continuous variables.

## 5. Empirical Analysis

**5.1. Descriptive Statistical Analyses.** Table 2 gives the descriptive statistics of the entire sample. The average diversification index is 0.204. From the standard deviation, minimum value, and maximum value, we see that the degree of diversification of the whole sample is quite different. Average investment level is 0.049, and the overall investment level is not high. Among these, the minimum value is  $-0.002$ , while the maximum value is 0.642, which indicates that there are significant differences among enterprises. Average return on assets is 0.044, and the profitability of the entire sample is not high. The minimum value is  $-1.05$ , while the maximum value is 7.11, which indicates that there are significant differences among enterprises. The growth index shows that the overall growth of China's listed companies is not strong, and there are large differences among the companies. The average value of free cash flow is only  $-0.035$ , the overall level is low, and other data show that the proportion of state-owned holding companies is not high.

**5.2. Correlation Tests.** Table 3 shows the correlation coefficient matrix of the study variables. The indicators reflecting capital allocation efficiency are significantly positively correlated with the quality of internal control and investment opportunities at the 1% level, indicating that an improvement in internal control quality is conducive to improving capital allocation efficiency. Thus, Hypothesis 1 is preliminarily verified. The diversification development index is negatively correlated with investment level, internal control quality, ownership concentration, and management shareholding at the 1% level. This shows that improving the efficiency of capital allocation and level of internal control can prevent enterprises from diversifying. Thus, H2 ~ H4 are preliminarily verified.

Another table shows that there is no significant collinearity between variables.

TABLE 1: Variable definitions.

Variable name	Variable meaning	Calculation method
HDI	Degree of diversification	$1 - \text{HHI}$ , $\text{HHI} = \sum_{i=1}^n P_i^2$ $P_i$ is the proportion of industry income to total income
Invest	Investment level	Purchase and construction of fixed assets and intangible assets cash paid for other long-term assets Cash received from disposal of the above assets Total assets
ICI	Internal control index	Natural logarithm of DIB internal control index percentage
Deficiency	Internal control defects	When there are deficiencies in internal control, the value is 1; otherwise, the value is 0
Tobin's Q	Investment opportunity	$\text{Ln} [(\text{Total liabilities} + \text{current stock market value} + \text{net assets per share} \times \text{number of nontradable shares}) / \text{Total assets}]$
CR1	Ownership concentration	Ratio of the number of shares held by the largest shareholder to the total number of shares of the company
MStock	Shareholding ratio of senior executives	Ratio of the number of shares held by senior managers to the total number of shares in the company
FCFF	Free cash flow level	Proportion of free cash flow to total assets in T-1 period
Size	Company size	Natural logarithm of total assets
Lev	Financial leverage	T-1 liabilities/Total assets
ROA	Accounting performance	Net profit/Average annual total assets
Tenure	CEO tenure	$\text{Ln} (\text{Tenure of general manager})$
Firmrisk	Enterprise risk	Standard deviation of ROA from T-3 years to T-1 years
CEOsuc	CEO succession	1 = General manager changed in the current year, 0 = other
List	Enterprise age	Year of IPO date
State	Nature of ownership	1 = state-owned enterprise, 0 = non-state-owned enterprise
Growth	Growth	$(\text{Main business income of period T-1} - \text{Main business income of phase t}) / \text{Main business income in T-1}$
Indus	Industry dummy variable	If the company is in industry I, the value is 1; otherwise, it is 0
Year	Annual dummy variable	If the company data is for year $n$ , the value is 1; otherwise, it is 0

TABLE 2: Descriptive statistics.

Variable	Observation value	Average value	Standard deviation	Minimum value	Maximum
HDI	9012	0.204	0.239	0	0.965
Invest	9012	0.049	0.049	-0.002	0.642
ICI	9012	-0.418	0.113	-0.852	-0.192
Deficiency	9012	0.356	0.479	0	1
Tobin's Qt -1	9012	0.332	0.861	-2.493	5.449
CR1	9012	0.155	0.130	0	2.210
Mstock	9012	0.045	0.115	0	0.810
FCFFt -1	9012	-0.035	0.933	-87.79	1.027
Size	9012	22.28	1.300	15.58	28.51
Lev	9012	0.464	0.290	-0.195	11.51
ROA	9012	0.044	0.099	-1.052	7.109
Lntenure	9012	1.443	0.561	-2.996	3.081
Firmrisk	9012	0.025	0.085	0	5.880
CEOsuc	9012	0.170	0.376	0	1
List	9012	11.23	6.482	1	26
State	9012	0.462	0.499	0	1
Growth	9012	0.168	0.557	-0.546	4.070

5.3. *Regression Analysis Results of Internal Control Quality and Capital Allocation Efficiency.* From column (1) of Table 4, the regression coefficients of investment opportunity and internal control on capital allocation efficiency of lag one period are 0.002 and 0.03, respectively. Without controlling for other influencing factors, the regression coefficient of investment opportunity is not significant, but investment opportunity and internal control in the previous accounting year are not significant. The interactive items of

internal control level in this period are significantly positively correlated at the 1% level. It can be seen from column (2) that, after adding control variables, the regression coefficient of investment opportunity in the last accounting year is significant at the 1% level, which indicates that when a company has more investment opportunities, the greater is the company's investment expenditure. The regression coefficient of the interaction between investment opportunity and internal control quality in the previous accounting year



TABLE 3: Pearson's correlation coefficient analysis of main variables.

Variable	HDI	Invest	ICI	Deficiency	Tobin's Qt-1	CR1	Mstock
HDI	1						
Invest	-0.071***	1					
ICI	-0.034***	0.080***	1				
Deficiency	0.113***	-0.078***	-0.047***	1			
Tobin's Qt -1	-0.018*	0.072***	-0.054***	-0.066***	1		
CR1	-0.031***	0	0.133***	0.00500	-0.135***	1	
Mstock	-0.091***	0.129***	0.027**	-0.157***	0.210***	-0.053***	1
FCFFt -1	-0.0110	-0.055***	0.00200	0.0120	-0.063***	0.0170	-0.00800
Size	0.085***	-0.024**	0.236***	0.107***	-0.595***	0.276***	-0.181***
Lev	0.074***	-0.093***	-0.025**	0.132***	-0.369***	0.028***	-0.196***
ROA	-0.039***	0.102***	0.125***	-0.062***	0.214***	0.037***	0.074***
Tenure	-0.00300	0.052***	0.048***	-0.026**	-0.058***	-0.025**	0.028***
Firmrisk	0.00100	0.021**	-0.086***	0.0150	0.155***	-0.032***	-0.00300
CEOsuc	0.028***	-0.038***	-0.048***	0.046***	0.00300	0.0130	-0.056***
List	0.225***	-0.240***	-0.070***	0.241***	-0.191***	-0.076***	-0.410***
State	0.095***	-0.098***	0.037***	0.164***	-0.321***	0.175***	-0.345***
Growth	0.018*	0	0.00600	0.0140	0.048***	0.00900	-0.00400
	FCFFt -1	Size	Lev	ROA	Tenure	Firmrisk	
FCFFt -1	1						
Size	0.0160	1					
Lev	0.023***	0.305***	1				
ROA	-0.741***	-0.00200	-0.290***	1			
Tenure	0.0120	0.00900	-0.0100	0.0110	1		
Ltenure	0.0100	0.00300	-0.050***	0.030***	0.030***	1	
Firmrisk	-0.500***	-0.117***	0.366***	0.313***	-0.042***	0.042***	1
CEOsuc	-0.022**	0.023**	0.065***	-0.035***	-0.207***	0.052***	0.052***
List	0.00300	0.198***	0.286***	-0.098***	-0.023**	0.034***	0.034***
State	0.022**	0.310***	0.201***	-0.084***	0.046***	-0.040***	-0.040***
Growth	-0.00400	-0.00800	0.214***	-0.097***	-0.0110	0.062***	0.062***
	CEOsuc	List	State	Growth			
CEOsuc	1						
List	0.081***	1					
State	0.043***	0.412***	1				
Growth	0.024**	0.00800	0.0110	1			

Note. \*\* and \*\*\* are significant at the 1% and 5% levels, respectively.

is significantly positive at the 1% level, which indicates that the sensitivity of capital allocation efficiency to investment opportunities is enhanced. Improving internal control is conducive to improving the internal resource allocation of enterprises. Thus, H1 has been verified.

**5.4. Regression Analysis Results of Capital Allocation Efficiency and Diversification Degree.** Using formula (5), we conducted multiple regression analysis on the sample data and the regression results are shown in Table 5. Column (2) gives the regression result of the control variable and main independent variable, and column (3) is the regression result after adding the interaction item. The results show that there is a significant negative correlation between the efficiency of capital allocation and the diversification strategy of enterprises (all significant at the 5% level). There are deficiencies in the internal control of enterprises, and enterprises are more likely to implement diversification. Thus, H2-H3 have been verified. According to the principal-agent theory, an increase in the proportion of managerial ownership improves the level of diversification of enterprises, and our

results show that an increase in the proportion of senior management shares reduces the level of diversification of enterprises, which may be caused by the overall low proportion of senior executives' shareholding in listed companies in China.

The regression results show that the level of free cash flow is positively correlated with the degree of diversification, and it is significant at the 1% level, which is consistent with the theoretical expectation. When the interaction item is added, the influence of free cash flow level on the degree of diversification weakens. In addition, the interaction between the level of free cash flow and the shareholding ratio of the largest shareholder is positively correlated with the degree of diversification of the enterprise, and it is significant at the 1% level, which indicates that when management holds more cash, it increases the possibility of inefficient internal capital allocation. The convergence effect of management and the positive regulation of free cash flow are likely to lead to the implementation of diversification in the future. Thus, H4 has been verified.

In the research on the relationship between capital allocation efficiency and diversified development strategy, the existing research found that the information asymmetry of

TABLE 4: Regression analysis of internal control quality and capital allocation efficiency.

Variables	Model 1	Model 2
<i>Tobin's</i> $Q_t - 1$	0.002 (1.330)	0.015*** (6.312)
<i>ICI</i>	0.030*** (6.782)	0.007* (1.675)
<i>Tobin's</i> $Q_i, t - 1 \bullet ICI_i, t$	0.007*** (2.781)	0.007*** (2.807)
<i>FCFF</i> $_t - 1$		0.002 (1.475)
Size		0.004* (1.905)
Lev		-0.007* (-1.649)
ROA		0.035* (1.853)
Growth		0.001 (0.609)
List		-0.008*** (-16.345)
State		-0.004 (-0.774)
Cons	0.062*** (33.09)	0.0470 (1.038)
Year	No	Yes
Industry	No	Yes
N	9012	9012
$r_2$	0.008	0.094

Note. (1) \*\*\*, \*\*, and \* are significant at the 1%, 5%, and 10% levels, respectively. (2) Data in brackets are  $t$  values, adjusted by white heteroscedasticity and processed by cluster at the company level.

diversified operation would lead to agency conflict, resulting in low capital allocation efficiency, thus damaging the enterprise value, that is, the phenomenon of diversified discount existed. A large number of empirical studies found that the reason for discount came from the low capital allocation efficiency. Shin [57] thinks that there is asymmetric information cost between the general manager of the company and the managers of each business unit, which leads to the lower benefit of diversified enterprises than independent single enterprises. Lamont and Polk [58] found that inefficient capital allocation is the main reason for diversification discount, while inefficient internal resource allocation is caused by information asymmetry. Because of information asymmetry, the branch managers of diversified enterprises are endowed with rent-seeking characteristics, and they try to get more remuneration or resource allocation by lobbying the headquarters, which eventually leads to the discount phenomenon of diversified enterprises [59]. Shin and Stulz [57] found that the headquarters of diversified enterprises are similar to each department in general, and the efficiency of capital allocation did not play the role of effective allocation of funds, and the development of middle departments of diversified enterprises depended more on their own funds. Mansi and Reeb [60] found that diversification reduces shareholder value and increases creditor value and comprehensively found that there was no significant correlation between diversification and excess enterprise value.

**5.5. Regression Analysis of Capital Allocation Efficiency and Diversification Degree under Different Levels of Internal Control.** To further test the influence and difference of capital allocation efficiency on diversification under different levels of internal control, we use model 2 to carry out regression analysis on different internal control effect groups. The results are listed in Table 6. We divided the sample companies into three groups according to the quality of internal control: (1) group with low quality of internal control, (2) group with medium quality of internal control, and (3) group with high quality of internal control. The results show that, in the group with higher quality of internal control, the efficiency of capital allocation has a negative correlation with the degree of diversification, which is significant at the 5% level, while the influence of other groups is no longer significant. This shows that a high quality of internal control positively regulates the relationship between the efficiency of capital allocation and the degree of diversification of enterprises. Therefore, improving internal control is helpful for making strategic decisions. Different from previous studies, we found that the quality of internal control played a restraining role in the relationship between the efficiency of capital allocation and diversified development, indicating that internal control affected the capital allocation and strategic choice within enterprises to a certain extent, but previous studies did not find the regulating role of internal control.

TABLE 5: Regression analysis results of internal capital allocation efficiency and diversification degree.

	Model 1	Model 2	Model 3
Invest	-0.353*** (-5.606)	-0.119** (-2.131)	-0.118** (-2.094)
Deficiency	0.034*** (6.072)	0.018*** (3.655)	0.018*** (3.608)
Mstock	-0.123** (-2.271)	-0.086* (-1.683)	-0.093* (-1.831)
Tobin's Qt -1	0.073*** (12.792)	0.012* (1.828)	0.011* (1.792)
CR1	-0.149*** (-2.626)	-0.024 (-0.561)	-0.019 (-0.463)
FCFFt -1	0.003*** (6.747)	0.005* (1.946)	-0.008 (-1.502)
Size		0.03*** (4.066)	0.036*** (4.087)
Lev		0.021*** (2.038)	0.022** (2.221)
ROA		-0.065** (-2.494)	-0.064** (-2.433)
Tenure		0.003 (0.425)	0.004 (0.500)
Firmrisk		0.110* (1.887)	0.101* (1.724)
CEOsuc		0.003 (0.532)	0.003 (0.586)
List		0.004* (1.942)	0.003* (1.735)
State		0.019 (0.833)	0.019 (0.832)
FCFFt -1 • CR1			0.288*** (2.696)
FCFFt -1 • Mstock			-0.131 (-1.217)
Cons	0.214*** (21.657)	-0.619*** (-3.377)	-0.620*** (-3.386)
Year	No	Yes	Yes
Industry	No	Yes	Yes
N	9012	9012	9012
$r_2$	0.05	0.277	0.277

Note. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

TABLE 6: Regression analysis of capital allocation efficiency and diversification degree under different levels of internal control.

Variable	Low	In	High
	-0.04 (-1.041)	0.022 (0.266)	-0.013 (-1.636)
	0.650** (2.445)	0.08 (0.208)	0.234* (1.687)
	0.027 (0.086)	0.066 (0.217)	-0.194 (-1.581)
Invest	-0.117 (-1.059)	0.085 (0.560)	-0.177** (-2.431)
	-0.003 (-0.196)	0.026* (1.837)	0.014 (1.625)
Mstock	-0.208* (-1.906)	-0.225 (-1.249)	-0.037 (-0.625)
CR1	0.082 (1.602)	0.200* (1.721)	-0.139** (-2.358)
	0.005 (0.439)	0.023** (2.145)	0.022*** (3.496)

TABLE 6: Continued.

Variable	Low	In	High
Size	0.016 (0.767)	0.024 (1.236)	0.048*** (4.392)
Lev	0.063 (1.119)	0.023 (0.447)	0.023** (2.542)
ROA	-0.099** (-2.126)	-0.098 (-0.527)	-0.059 (-1.578)
Tenure	0.025* (1.762)	-0.017 (-0.855)	-0.003 (-0.264)
Firmrisk	0.129 (1.324)	-0.0200 (-0.069)	-0.061 (-0.594)
CEOsuc	0.001 (-0.031)	0.003 (0.347)	0.004 (0.684)
List	0.006 (1.264)	0.004 (0.973)	0.001 (0.526)
State	-0.025 (-0.655)	0.061 (1.417)	0.032 (0.872)
Cons	-0.212 (-0.507)	-0.447 (-1.032)	-0.837*** (-3.698)
Year	No	Yes	Yes
Industry	No	Yes	Yes
N	1803	1803	5406
	0.273	0.288	0.281

Note. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## 6. Conclusion

This study selects 9012 nonfinancial companies' samples from the Shanghai and Shenzhen stock markets from 2013 to 2017 to explore the impact of internal control quality on capital allocation efficiency and diversification. The results show that improving internal control enables enterprises to seize investment opportunities and implement effective capital allocation. This study also examines the impact of capital allocation efficiency and free cash flow on the diversification level and the differences among the internal control groups. The results show that, first, the internal control is an important guarantee for the daily operation and management of enterprises. Attaching greater importance to internal control promotes efficient resource utilization in the internal capital market. In the long run, the development of internal control is conducive for reducing the short-term behavior of management and eliminating the agency problem, which enables management to make strategic decisions. Second, improving capital allocation efficiency will lead to an improvement in the control of investment opportunities, restrain the company from overdiversifying, and ensure the rights and interests of stakeholders. Third, when the level of free cash flow is relatively high, the convergence effect of management interests will enhance the degree of diversification of enterprises, and a higher quality of internal control environment can restrain this influence. Fourth, in companies with low internal control, the sensitivity of capital allocation efficiency to the degree of diversification is not as significant as that of companies with high internal control. The company's internal control system is a series of activities carried out by managers to better fulfill the entrusted economic responsibility and realize the

company's strategy and objectives. The design of the company's internal control system needs cost, and the implementation of internal control needs to follow the principle of cost-effectiveness. In the weak corporate governance environment, the internal controller, in order to safeguard his own interests or self-interest behavior, causes the implementation cost of internal control to be higher. Therefore, internal control, as a mechanism embedded in the company, should establish a self-reinforcing mechanism. The formulation of the company's internal control system is a common rule endogenous through the interaction of the company's participants, and the implementation of internal control is the principle of "spontaneous order" and "self-implementation." The company's internal control constantly adapts to the environmental changes it faces. This study provides pointers for an in-depth analysis of the relationship among capital allocation efficiency, free cash flow level, internal control governance, and diversification strategy in China's transitional economy.

As Chinese listed companies do not pay enough attention to internal control, this study analyzes the relationship between capital allocation efficiency and diversification from the perspective of internal control, revealing the positive role of internal control on investment decision-making, and points out that there is a difference between the efficiency of capital allocation and the degree of diversification among different internal control quality groups. The same can be said for the impact. The results of the regression analysis show that strengthening internal control management is effective for investment decision-making and capital allocation of the company. It can not only reduce the long-standing agency problem but also help the management in reducing the sunk cost caused by poor

allocation of resources. The results of this study have a practical significance for China's listed companies in standardizing their internal control. It also contributes towards standardizing the evaluation system of internal control, unifying the basic standards of internal control for the whole industry, and attaching importance to the quality of internal control. In this study, internal governance and internal control are introduced into the same empirical research framework, and their impact on strategic decision-making is investigated. The influence of corporate governance and internal control on corporate strategy implementation is clarified. It is found that there is a complementary relationship between them, which has a positive role in promoting research on the quality of internal control and strategic decision-making and points out the potential relationship between capital allocation efficiency and strategic decision-making.

**6.1. Research Limitations.** This study considers only the long-term incentive mechanism effect in the empirical analysis of corporate internal governance factors, and other factors such as supervision mechanism have not been fully considered. In the future, scholars can add external environmental factors and enterprise risk control. Diversification is a long-term development strategy of enterprises. The five-year sample data span considered is too short. Future studies could investigate whether diversification can achieve improvements in resource allocation efficiency and profitability by considering a longer sample period.

**6.2. Future Research Direction.** With the continuous rise of enterprise diversification strategy and the development of M&A business, the efficiency of capital allocation and strategic development have become hot issues in academic circles. In order to cultivate collectivized enterprises, our government advocates improving the efficiency of capital allocation, constantly supports enterprises to set up enterprise groups, takes the road of collectivized development, and encourages groups to be listed on the stock market as a whole. Therefore, the capital allocation efficiency of listed companies, especially conglomerates, has a broad research space. In the future, we can make further research from the following aspects: what kind of internal institutional environment is needed for the capital allocation efficiency of listed company groups, how to better play the allocation role of internal capital market, and how corporate governance factors affect the capital allocation efficiency and strategic decision-making [53, 61].

### Data Availability

Panel data from the Shanghai and Shenzhen stock markets from 2013 to 2017 were used.

### Conflicts of Interest

The authors declare that they have no conflicts of interest.

### Acknowledgments

This research was supported by Key Projects of Doctoral Thesis Innovation Fund of Northwestern Polytechnical University (no. 06120-G2020KY04204), Xi'an, China.

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