

The impact of internal controls on quality corporate development

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Abstract. Internal control is a crucial corporate internal governance tool that aids in improving total factor productivity and the high-quality growth of businesses. This article examines the connection between internal control and superior corporate growth using a research sample of A-share listed businesses from 2003 to 2020. The effectiveness of internal control has been demonstrated to support high-quality corporate development. The quality development of enterprises has some regional heterogeneity and the quality of internal control of enterprises in the western region plays a stronger role in promoting the quality development of those enterprises, according to further research. Additionally, there is some geographical variability in the quality of company development, and the western region's quality of internal control of businesses has a bigger influence on this development. The most immediate policy implication of this article is how to strengthen internal control effectiveness in order to support high-quality firm development and contribute to Chinese modernization.

Keywords: Internal Control; Total Factor Productivity; High-quality Development.

1. Introduction

High-quality development, which includes high-quality development concept, high-quality development drive, high-quality economic structure and supply system, high-quality social security support system, high-quality social security system, and high-quality comprehensive benefits, is the main task of building a modern socialist country in an all-around manner. From a macro perspective, high-quality development should meet stable economic growth, balanced regional urban and rural development, and innovation as the driving force, achieving green development and ensuring that the fruits benefit all people more and more fairly; from an industrial perspective, high-quality development should meet the optimization of industrial layout and reasonable structure, achieving transformation and upgrading and economic efficiency; and from the micro perspective, high-quality development should meet the optimization of industrial layout and reasonable structure, achieving transformation and upgrading and economic efficiency; from the enterprise level, high-quality development should have quality assurance and competitive advantage, achieving brand continuous innovation and advanced quality management concepts and methods, etc. Among them, micro enterprises are the subject of macroeconomic and social development, the basic organization of meso-industry and industrial development, and the foundation and starting point for achieving high quality industrial and economic development. The current high-quality development of enterprises tends to be diversified, with the aim of creating more specialization, refinement, specialization and novelty, emphasizing the principle of "quality first and efficiency first". However, they are still facing problems such as financial pressure, shortage of talents, increased market competition, irregular management and insufficient technological innovation. Internal control, as an important internal governance mechanism, ensures the efficiency of law enforcement within the enterprise, the

reliability of financial reports, the truthfulness and accuracy of accounting information, and plays a key role in maintaining the security of enterprise property and promoting the high-quality development of the enterprise. How does the quality of internal control contribute to the high-quality development of the enterprise? What factors influence this role?

The marginal contributions of this paper are: first, from the perspective of high-quality enterprise development, the existing main studies take the perspective of factors affecting high-quality enterprise development; some studies start from the external environment and study the development of artificial intelligence [1], economic policy uncertainty [2] on high-quality enterprise development, on the other hand, study the impact of digital transformation of enterprises [3] and corporate social responsibility [4] on the high-quality development of enterprises and their paths, and fewer articles study the impact of the quality of internal control of enterprises on high-quality development; Secondly, from the perspective of the quality of internal control, the existing studies mainly deal with the mechanism of the impact of internal control quality on the employment of employees within enterprises [5], the degree of tax avoidance [6]. In addition, there are also studies on the impact of internal control quality on the digital transformation of enterprises [7]. Existing studies have less considered the direct impact of internal control quality on the high-quality development of enterprises and its mechanism of action and heterogeneity. Therefore, we take A-share listed companies from 2003 to 2020 as a research sample to explore the impact of internal control quality on the high-quality development of enterprises, and try to analyze its specific impact mechanism from the perspectives of board size, nature of equity, their own operating conditions and regional heterogeneity, to explore specific paths to promote the high-quality development of enterprises, and to put forward conclusions and recommendations.

2. Theoretical analysis and research hypothesis

High-quality development is the comprehensive performance of an enterprise in terms of social value driven, outstanding resource capacity, first-class products and services, efficient operation, standardized management system, and enterprise profit quality [8]. The key to improving the quality of internal control is to grasp the following five elements: excellent internal environment, accurate risk control, standardized control activities, efficient information communication, and strict business monitoring. Based on the above five elements, the influence path of internal control quality and high-quality development is analyzed.

Liu, Chang and Ji (2019) [9] believes that improving the quality of internal control can optimize the poor internal environment and resource allocation mechanism, build an efficient enterprise structure, strengthen the constraint and supervision of management, and prevent management from carrying out opportunistic behavior, thereby greatly improving the profit quality of enterprises. The high-quality surplus is an important embodiment of the high-quality development of the enterprise. Therefore, the improvement of internal control level can optimize the internal environment and further significantly improve the high-quality development level of enterprises. In addition, there are also scholars who analyze from the perspective of risk control assessment. Wang and Shi (2016) [10] believe that the establishment of a scientific and reasonable internal control risk assessment mechanism can help enterprises identify and assess potential risks, greatly improve risk prevention capabilities, and promote the continuous expansion of effective investment of enterprises. Investment is the core component of enterprise financial management decision-making, and efficient investment decision-making is the key to the high-quality development of enterprises. Therefore, high-quality internal control can enable enterprises to have more complete risk assessment procedures and promote high-quality development of enterprises. Sun and Li (2014) [11] found that an efficient internal control system relies on standardized control activities, and through the rational distribution of power in specific control activities, the contradiction between management and shareholders is greatly alleviated, which is conducive to controlling operating costs and improving economic efficiency.

Therefore, improve the level of internal control, make the control activities continue to be effectively standardized, and promote the realization of high-quality development.

In addition, many scholars analyze from the perspective of information and communication. Li, Zhang and Zhuang (2023) [12] found that improving the level of internal control can improve the authenticity, accuracy and completeness of internal information disclosure, enable investors to have a comprehensive understanding of accounting returns, and effectively alleviate financing constraints. Therefore, an efficient internal control system can minimize the information asymmetry inside and outside the enterprise, and further promote the enterprise to achieve a higher level of quality development. Sheng, Yu and Wang (2023) [13] believes that high-quality internal control can monitor all aspects of the business through audit supervision, discipline inspection supervision and financial supervision, effectively restrain the selfish behavior of management, timely discover management loopholes, and prevent the risk of stock price collapse. Therefore, high-quality internal control enables enterprises to continuously strengthen corporate supervision and promote high-quality development of enterprises.

To sum up, as an important institutional arrangement for enterprise management, internal control can promote high-quality development of enterprises by optimizing internal environment, improving risk control, standardizing control activities, alleviating information asymmetry and strengthening business supervision. Based on the above analysis, this paper proposes following hypothesis.

H1: Improving the quality of internal control can promote the high-quality development of enterprises.

3. Research design

3.1. Study sample and data source

The study sample was derived from data from listed companies in Shanghai and Shenzhen from 2003 to 2020. This paper treats the sample data as follows: (1) excludes the financial industry; (2) remove samples of missing values; (3) The main continuous variable decreased by 1% up and down. After the above processing, 3489 listed companies were included in the sample, with a total of 33184 observations. The internal control index comes from the Dibo database, and the company-level data such as total factor productivity of listed companies are derived from the CSMAR database.

3.2. Variable definition

3.2.1. Explained variable: high-quality development of enterprises

Total factor productivity, a crucial indicator of the quality of business development, is the culmination of all technological advancements, changes in management styles, enhancements to the quality of the products, and improvements to the industrial structure. The total factor productivity (TFP_LP) is measured in this study using the LP method. Enterprise development levels increase with total factor productivity.

3.2.2. Explanatory variable: Quality of internal control

With reference to the use of pertinent research, the sample data uses the Dibo internal control index (Icindex) to reflect the caliber of internal control. A higher Dibo internal control index denotes better internal control quality. In order to better represent the regression coefficient, the quality of internal control is depicted in this study's index by dividing the Dibo internal control index by 100.

3.2.3. Control variables

The following factors will be used as controls in this study: company size (Size), asset-liability ratio (Lev), net profit rate on total assets (ROA), operating income Growth rate (Growth), TobinQ value (TobinQ), top ten shareholders' shareholding ratio (Top10) and Dual. Year and industry are also controlled. Table 1 shows the specific variable definition and description.

Table.1. Variable definition

Variable symbol	Variable name	Variable definition
TFP_LP	Total factor productivity	The calculation was carried out by LP method
Icindex	Internal control index	Dibo Internal Control Index / 100
Size	Company size	The logarithm of annual total assets (to the base e)
Lev	Asset-liability ratio	Total liabilities / total assets (at year-end)
ROA	Net profit rate on total assets	Net profit divided by the average balance of total assets
Growth	Revenue growth rate	The value obtained by dividing current year's operating income by last year's operating income-1
TobinQ	Tobin's Q value	Divid (market capitalization of tradable shares + total number of non-tradable shares multiplied by net assets per share + book value of liabilities) by total assets
Top10	Share of top 10 shareholders	Total number of shares held by top 10 shareholders divided by total number of shares
Dual	Dual function	If the same person holds the positions of chairman and general manager, the value is 1, otherwise 0
Year	year	Annual dummy variable
Industry	Industry	Industry dummy variable

3.3. Model setting

This paper constructs the following model:

$$TFP_LP_{i,t} = \alpha_0 + \alpha_1 Icindex_{i,t} + \alpha \sum Controls + Year + Industry + \varepsilon \quad (1)$$

Among them, the variable TFP_LP reflects the development level of enterprises, the variable Icindex reflects the quality of internal control of enterprises, the variable Controls covers all the control variables in Table 1. The variable Year is set in this paper to control for time effects, the variable Industry is set in this paper to control for industry effects, and the variable ε is the random error term.

4. Empirical results

4.1. Descriptive analysis

Table 2 displays the findings of the descriptive analysis of the key variables. There is a difference in total factor productivity between different companies during the sample period, as shown by the maximum value of listed companies' total factor productivity, TFP_LP, of 11.930, the minimum value of 6.583, the mean value of 8.941, and the standard deviation of 1.108; and the maximum value of the company's internal control index, Icindex, of 9.145, the minimum value of 0.000, the mean value of 6.536, and the standard deviation of 1.248. 1.248, which shows that there is a significant difference in internal control index between various companies.

Table 2. Descriptive statistics results.

Variable	N	Mean	SD	Min	p50	Max
TFP_LP	33184	8.941	1.108	6.583	8.843	11.930
Icindex	33184	6.536	1.248	0.000	6.737	9.145
Size	33184	22.050	1.272	19.240	21.870	26.400
Lev	33184	0.444	0.202	0.027	0.444	0.991
ROA	33184	0.039	0.064	-0.398	0.037	0.245
Growth	33184	0.178	0.428	-0.737	0.113	4.330
TobinQ	33184	1.966	1.348	0.802	1.538	17.730
Top10	33184	0.580	0.149	0.199	0.590	0.916
Dual	33184	0.229	0.420	0.000	0.000	1.000

4.2. Correlation analysis

The primary variables' correlation analysis findings are shown in Table 3, and there is no multicollinearity issue between the variables. The relationship between internal control index Icindex and total factor productivity TFP_LP is significant at the 1% level, with a value of 0.281, indicating that the enterprise's internal control will have a positive impact on total factor productivity. With the improvement of the degree of internal control, the enterprise's total factor productivity will be increased to promote the high-quality development of the enterprise.

Table.3. Correlation analysis of the main variables

	TFP_LP	Icindex	Size	Lev	ROA	Growth	TobinQ	Top10	Dual
TFP_LP	1								
Icindex	0.281***	1							
Size	0.797***	0.202***	1						
Lev	0.404***	0.018***	0.417***	1					
ROA	0.127***	0.437***	0.004	-0.397***	1				
Growth	0.127***	0.324***	0.037***	0.027***	0.339***	1			
TobinQ	-0.312***	-0.067***	-0.420***	-0.378***	0.285***	0.047***	1		
Top10	0.112***	0.162***	0.089***	-0.088***	0.249***	0.112***	-0.110***	1	
Dual	-0.092***	-0.047***	-0.109***	-0.142***	0.066***	0.023***	0.139***	0.030***	1

4.3. Benchmark regression

Table 4 displays the benchmark regression findings after accounting for industry and annual fixed variables. The model regression coefficient index is 0.214, significantly positive at 1% level, which supports hypothesis H1 that improving the quality of internal control can promote the high-quality development of enterprises.

4.4. Robustness test

4.4.1. Consider provincial fixed effects

Considering that there are obvious differences in the policy support for enterprise development in different provinces, which may further enable enterprises in different provinces to achieve differentiated and high-quality development, this paper tests robustness by adding provincial fixed effects. Column (2) of Table 4 shows the regression results. After adding the provincial fixed effect to the model, the model regression coefficient index is 0.021, which is significantly positive at the 1% level, which is consistent with the results of the study in column (1) of Table 4, which further demonstrates the reliability of the research conclusions.

4.4.2. Increment control variable

In order to avoid missing the control variables and causing great interference to the research results, the cash flow ratio (Cashflow) and fixed asset ratio (FIXED) were added as the control variables to test the robustness of the research results. Column (3) of Table 4 shows the regression results. The model regression coefficient index of 0.021 is significantly positive at the 1% level, consistent with the results in column (1) of Table 4, and further validating hypothesis 1.

4.4.3. Change the explained variable

The total factor productivity is recalculated using the OP method and the results are added to the model as new explanatory variables. Column (4) of Table 4 shows the regression results. The influence of internal control indicators on total factor productivity was still significantly positive at the level of 1%, and the results did not change significantly, indicating that the results of the research still have relative confidence after the change of explanatory variables.

Table.4. Robustness test estimate results.

VARIABLES	Benchmark regression result (1) TFP_LP	Consider provincial fixed effects (2) TFP_LP	Increment control variable (3) TFP_LP	Change the explained variable (4) TFP_OP
Icindex	0.021*** (11.28)	0.021*** (11.05)	0.021*** (11.34)	0.018*** (9.24)
Cashflow	—	—	0.818*** (26.25)	—
FIXED	—	—	-0.864*** (-40.26)	—
Controls	YES	YES	YES	YES
Constant	-5.352*** (-56.72)	-5.209*** (-53.24)	-5.090*** (-55.65)	-4.183*** (-44.02)
Observations	33,184	33,184	33,184	33,184
Number of groups	3,489	3,489	3,489	3,489
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Province FE	NO	YES	NO	NO

4.5. Endogeneity test

4.5.1. PSM propensity score matching method

Considering that sample self-selection will lead to the endogeneity of explanatory variables, this paper converted the internal control index into 0-1 dummy variables according to the size of the median to match the PSM propensity score. Based on the above paired samples, this paper conducts regression again. The column (1) of Table 5 shows the regression results. The regression coefficient of the internal control index is still significantly positive at 1% level, which is basically in line with the research results in column (1) of Table 4, indicating that the endogeneity attributable to sample self-selection will not affect the robustness of the research conclusions.

4.5.2. Instrumental variable method

Considering that missing variables and measurement errors will lead to the endogeneity of explanatory variables, two stage least squares regression (2SLS) was adopted for endogeneity test. Referring to the research of Wang Run (2023) [14], the mean of the internal control index of each province is set as an instrumental variable. The column (2) of Table 5 shows the first stage regression results. The column (3) of Table 5 shows the second stage regression results. For the first stage results, the F statistic is greater than 10, and the regression coefficient of instrumental variable Z is significantly positive at 1% level, which means that the instrumental variable is reasonable; For the

second stage results, the regression coefficient of internal control index is still significantly positive at 1% level after introducing instrumental variable, indicating that the endogeneity attributable to missing variables and measurement errors will not affect the robustness of the research conclusions.

Table 5. Estimated results of endogeneity test.

VARIABLES	PSM propensity score matching (1) TFP_LP	Instrumental variable First stage regression (2) IcindeX	Instrumental variable Second stage regression (3) TFP_LP
IcindeX	0.024*** (10.51)	—	0.922*** (15.18)
Controls	YES	YES	YES
Constant	-5.306*** (-51.31)	0.079 (0.29)	-9.744*** (-34.02)
Z	—	0.667*** (17.21)	—
F statistic of first stage	—	1195.59	—
Observations	25,790	33184	33184
Number of groups	3,443	—	—
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

5. Heterogeneity analysis

5.1. Internal environment perspective

The business conditions may affect the quality of internal control to some extent. When the business conditions are bad, in order to maintain the operating profit and orderly operation, the internal control ability of the enterprise is improved, which will mainly ensure the operating profit of the enterprise and work hard to maintain the existing staff structure of the enterprise; while when the business conditions are good, the enterprise does not have to worry whether it faces extreme situations such as bankruptcy and delisting, so it will pay more attention to its own future. When a company is in good business condition, it does not have to worry about facing extreme situations such as bankruptcy or delisting, so it will focus more on its own future development. Therefore, the impact of internal control quality on the high-quality development of enterprises may be different in different enterprise operating conditions. In this paper, we use whether an enterprise is losing money to measure the enterprise operating conditions, and whether an enterprise is losing money is 1, and no loss is recorded as 0. We conduct group tests based on this indicator, and the results are shown in Table 6. As shown in column (1) of Table 6, the coefficient of influence of internal control on TFP_LP, an indicator of high-quality development of enterprises, is 0.010 at the 5% level when the business condition is poor; as shown in column (2) of Table 6, the coefficient of influence of internal control on TFP_LP, an indicator of high-quality development of enterprises, is 0.023 at the 1% level when the business condition is good. The above study shows that the contribution of improved quality of internal control to the high-quality development of enterprises is more significant when the business condition of enterprises is good.

5.2. Enterprise external environment perspective

According to Liu and Li's examination of the new economic geography, regional development's heterogeneity may also affect how businesses develop [15]. The improvement of internal control quality can quickly encourage the integration of local enterprises' resources and help them more easily find their own economic development path when the region's own economic development level is

low and backward. This will increase total factor productivity more significantly and support the high-quality development of enterprises more strongly; however, when the region's own economic development level is high, the management. A higher level of regional economic development may result in more reasonable management practices and regulatory frameworks for local businesses, but this will not necessarily result in significant increases in productivity for the businesses themselves. As a result, there is less of a focus on supporting high-quality business development than there was previously. Therefore, under various regional distributions of firms, there may be variations in the influence of internal control quality on the high-quality development of enterprises. In this study, we perform group tests based on the district variable, with variable 1 representing the eastern area, variable 2 representing the middle region, and variable 3 representing the western region. The findings are displayed in Table 6.

Table.6. Heterogeneity test

VARIABLES	Bad operating conditions (1) TFP_LP	Good operating conditions (2) TFP_LP	East (3) TFP_LP	Central (4) TFP_LP	West (5) TFP_LP
Icindex	0.010** (2.11)	0.023*** (10.45)	0.019*** (8.02)	0.020*** (5.03)	0.022*** (4.76)
Controls	YES	YES	YES	YES	YES
Observations	3,356	29,828	22,069	6,422	4,693
Year	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES

6. Conclusion

This paper analyzes the data of quoted companies from 2003 to 2020 to study the influence of internal control quality on the high-quality development of enterprises. The following are the findings of this paper. First, the high-quality development of enterprises can be promoted by improving the quality of internal control. Second, the quality of internal control affects the high-quality development of enterprises mainly through the following five influence paths: optimize internal environment, improve risk control, standardize control activities, alleviate information asymmetry and strengthen business supervision. Third, for enterprises with better operating conditions, internal control quality has a more significant impact on promoting enterprise development; high-quality development of enterprises has some regional heterogeneity, so that internal control quality of enterprises in the western region has a more significant impact on promoting enterprise development under the same circumstances. Based on the above three research conclusions, this paper puts forward the following suggestions:

First, enterprise managers should establish and improve the institutional mechanism of internal control to ensure the use of asset safe and efficient, information disclosure open and transparent and the efficiency of enterprise management continuously improved, so as to achieve the steady improvement of enterprise economic benefits and greatly improve the earnings quality of enterprises. Second, enterprise managers should optimize the internal environment, improve risk control, standardize control activities, alleviate information asymmetry and strengthen business supervision by developing a higher quality internal corporate structure. This will prevent management from committing speculative acts by virtue of their privileges, alleviate conflicts between management and employees, effectively control all aspects of production, operation and management, and improve the transparency and disclosure quality of financial information. Furthermore, it will further improve the efficiency of enterprises' investment in human capital and promote continuous increases in economic benefits to achieve high-quality development. Finally, the government should fully recognize the decisive role of the market in resource allocation, continue to encourage, support and guide

enterprises in the western region to achieve high-quality development, so as to facilitate Chinese-style modernization with high-quality development.

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