

THE RELATIONSHIP BETWEEN INTERNAL CONTROL AND COMPLIANCE, AND THE MODERATING EFFECT OF MAJOR PUBLIC EVENTS——BASED ON RESEARCH OF A-SHARE LISTED COMPANIES IN THE YANGTZE RIVER DELTA REGION

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ABSTRACT: Given the rising incidence of non-compliance and the severity of internal control compliance issues among listed companies in China, this study investigates the factors influencing corporate compliance. The implementation of the Sarbanes-Oxley (SOX) Act in the United States has contributed, to some extent, to improving corporate internal control compliance. This article analyses the relationship between internal control and corporate compliance, utilising notable public events in the Yangtze River Delta region in recent years, and investigates the moderating influence of these large public events on this relationship. The research utilises a sample of A-share listed firms in the Yangtze River Delta from 2015 to 2022. The results demonstrate that internal controls affect corporate compliance, but significant public events can mitigate the relationship between internal controls and corporate compliance.

Keywords: Internal Control, Compliance, Major Public Events, Yangtze River Delta Region.

1. Introduction

Despite continuous scrutiny, the illegal activities of listed companies have become increasingly prevalent, with frequent violations severely disrupting market order. Scholars outside China have extensively examined the effects of the SOX Act. Doyle, Ge and McVay (2007) and Ashbaugh-Skaife et al. (2008) found that the implementation of the SOX Act enhances accrual quality, while Goh and Li (2011) demonstrated that it strengthens financial reporting robustness. Barger, Lehn and Zutter (2010) observed a reduction in risk-taking behaviours following the Act's enforcement, and Kim (2011) found that it lowers corporate financing costs. More recently, Ilori, Nwosu and Naiho (2024) highlighted that the Act also contributes to improved operational performance among enterprises.

Sitanggang et al. (2022) used Roychowdhury's (2006) earnings management measuring approach to show that internal control quality and high-quality auditors mitigate real earnings management behaviour. Li and Shi (2023) tested the Xiamen University internal control index and found that weaker internal controls are associated with more financial restatements, proving that internal control prevents them. Wang et al. (2024) found a substantial negative association between internal control quality and financial restatements using the DiBo Index from Shenzhen DiBo Company. Additionally, Chen and Chen (2024) examined the relationship between internal control and legal risk using corporate litigation as a proxy. They found that organisations with superior internal controls have lower legal risk.

The Overall Emergency Plan for National Public Emergencies (2006), approved by the 79th Executive

Meeting of the State Council of China, defines public emergencies as sudden events that cause or may cause significant casualties, ecological damage, property losses, severe social disruption, and threats to public safety. These emergencies are classified into four categories: social security incidents, public health incidents, accident-related disasters, and natural disasters. Given the relatively limited impact of accident-related disasters and socio-economic security issues, this study focuses on natural disasters and public health events. Shen et al. (2018) examined the impact of natural disasters as a form of operational risk and compared their effects on enterprises with other types of operational risks. Similarly, Shan (2011) integrated financial and stock trading data to analyse the long-term stock performance of corporations in disaster-affected regions following the Wenchuan earthquake. The findings indicate that listed companies located closer to the earthquake's epicentre experienced more severe abnormal losses in market value.

Therefore, this study examines the relationship between internal control and corporate compliance. Given the economic challenges posed by the COVID-19 pandemic and the frequent floods in the Yangtze River Delta in recent years, it further explores the moderating effect of major public events on this relationship. The research aims to raise awareness among enterprises and society regarding the importance of strengthening internal control quality and corporate compliance, as well as understanding the impact of major public events on both. Ultimately, this study seeks to identify pathways for enterprises to achieve sustainable development.

2. Theoretical Analysis and Research Hypotheses

The Fraud Triangle Theory and Internal Control Theory examine corporate infractions and internal control. The 2008 Chinese Basic Norms for Internal Control define internal control as maintaining asset security, financial information dependability, legal compliance, corporate efficiency, and strategic objectives. These functions are achieved by properly implementing the internal environment, control activities, risk assessment, internal supervision, and information and communication.

A robust internal environment fosters a strong corporate culture, enhances governance structures and power distribution, raises employees' awareness of legal compliance, and mitigates violations stemming from imbalanced authority. Risk assessment and control activities facilitate the identification and management of risks in alignment with business operations, thereby reducing the likelihood of litigation and regulatory penalties. Effective information and communication systems ensure the authenticity, reliability, and timeliness of information while improving communication efficiency, enabling the prompt detection and rectification of errors. Lastly, internal supervision plays a critical role in identifying and addressing deficiencies in internal control by continuously evaluating its design and operational effectiveness.

The internal control theory discussed above can be compared with the Fraud Triangle Theory, which attributes corporate misconduct to three key elements: opportunity, pressure, and self-rationalisation. According to this theory, misconduct occurs only when all three factors are present. Firstly, a strong corporate culture that emphasises legal compliance and integrity plays a crucial role in mitigating self-rationalisation. Employees' sense of responsibility and solidarity is largely shaped by a well-established internal environment, making it more difficult for them to justify unethical behaviour or violations of rules and regulations. Secondly, managerial misconduct often arises from pressure or overconfidence. Zhang and Wu (2014) found that effective internal controls encourage organisational stakeholders to prioritise collective interests, thereby discouraging managers from engaging in activities that conflict with the enterprise's objectives. Their findings demonstrate that well-functioning internal controls can significantly reduce managerial incentives to violate legal and corporate regulations. Finally, Yang and Chen (2015) observed that robust internal control mechanisms enhance the balance of internal and external information flows within an organisation, establishing a comprehensive supervisory system that operates before, during, and after business activities. This rigorous

oversight framework strengthens corporate governance by identifying and rectifying potential violations in a timely manner, ultimately limiting opportunities for misconduct.

Yang et al. (2020) conducted an empirical study to assess whether the implementation of internal control systems effectively achieves their intended objectives, particularly in relation to business compliance, using a sample of A-share listed companies from 2014. Their findings indicate that well-implemented internal controls can better constrain earnings management and financial restatements, thereby significantly reducing the likelihood of illegal and irregular corporate behaviour. Similarly, Chang et al. (2021) found that deficiencies in a company's internal controls increase the probability of regulatory violations. Wang, Cui and Jin (2023), through empirical research, demonstrated that higher internal control quality is associated with a lower incidence of corporate irregularities. Furthermore, Wu (2023) examined non-financial listed companies that engaged in non-compliant behaviour on the Shanghai and Shenzhen A-share markets between 2008 and 2017. The study concluded that, holding other factors constant, internal control is negatively correlated with both the probability and severity of corporate misconduct. In summary, the following assumptions can be proposed:

H1: There is positive correlation between Internal Control of enterprises and Compliance behaviour of listed companies.

Taqi et al. (2024) examined the impact of the COVID-19 pandemic on internal control from two perspectives: its effect on the overall internal control framework of organisations and its influence on internal control implementation at the business level. Abouelghit and Gan (2024) focused on small and medium-sized enterprises (SMEs) in a city in Egypt, analysing the challenges faced by businesses during the pandemic and proposing solutions for improving internal control. Similarly, Singh and Rastogi (2022) investigated the internal governance of SMEs during COVID-19, while Arianpoor, Valirouh and Sahin (2024) provided a brief analysis of the pandemic's effects on internal control construction and potential countermeasures.

Huang and Liu (2024) found that earthquake disasters can disrupt the efficiency of enterprises in adjusting their factor allocation structures. In general, uncertain events significantly impact production. Recent global crises, such as the Sino-US trade war, the COVID-19 pandemic, and the Russia-Ukraine conflict, have caused substantial losses to enterprise operations

worldwide. Tang, Zhao and Wu (2024) highlighted that, due to its geographical location, China experiences a high frequency of natural disasters, ranking among the most affected countries globally. These disasters not only pose threats to human life, health, and daily activities but also hinder economic development. From a microeconomic perspective, natural disasters affect business operations, particularly in terms of financing. Research indicates that such disasters reduce corporate liquidity and short-term debt financing levels while having no significant impact on long-term debt financing.

Shen et al. (2018) compared the impact of natural disasters as a form of operational risk with other types of operational risks. Additionally, Shan (2011) analysed the long-term stock performance of enterprises in disaster-affected areas following the Wenchuan earthquake, using financial and stock trading data. The findings revealed that listed companies located closer to the earthquake's epicentre suffered more severe abnormal losses in market value. Based on the preceding, the following hypotheses are proposed:

H2: There is a moderating effect of major public events on the relativity between Internal Control and Compliance behaviour of listed companies.

3. Research Design
3.1. Sample Selection and Data Sources

This study examines the factors influencing corporate compliance. The data utilised in this research are sourced from the CSMAR database and the Wind database. Additionally, some data are obtained from the Juchao Information Network, Zhongcai Network, and the DIB Internal Control and Risk Management Database. The primary dataset is derived from the CSMAR database, encompassing listed companies in the Yangtze River Delta region of China over an eight-year period from 2015 to 2022. While certain data can be directly retrieved from the database, some variables require further computation based on relevant data before they can be utilised. To ensure data accuracy and reliability, the initial sample is processed according to the following criteria: (1) Exclusion of observations from the financial industry; (2) Removal of observations with missing data; and (3) If a company has multiple violations within the same year, only the first instance is recorded.

3.2. Variable Definition
3.2.1 Corporate Compliance (COM)

COM serves as the dependent variable, reflecting companies' compliance tendencies. Illegal behaviour, as examined in this study, refers to actions by listed

companies, their shareholders, or management that breach laws and regulations, resulting in penalties from regulatory bodies like the Shenzhen Stock Exchange. Following Guo (2024), this study uses a dummy variable to indicate whether a violation occurred, assigning a value of 1 if a violation was disclosed in the given year, and 0 otherwise. As violations are not directly observable, they are identified only after regulatory sanctions, with data sourced from CSMAR.

3.2.2. Internal Control (IC)

In this study, IC serves as the explanatory variable, representing the overall effectiveness of an enterprise's internal control system. The research employs the Internal Control Index (IC) score to provide a reasonable quantification of internal control quality. To assess the overall standard of internal controls, this study utilises the index calculated by DiBo for Chinese listed companies. The IC index provides a scientifically quantified measure of internal control effectiveness across enterprises. Its evaluation covers various aspects, including the accuracy of financial data, the rationality of resource allocation, market competitiveness, and corporate governance quality. As this index is assessed and published by an independent third-party organisation, it is regarded as both authoritative and objective. Therefore, using this indicator as a measure of internal control quality is a practical and scientifically sound approach.

3.2.3. Methods for Detecting Moderating Effects

The moderating variable in this study is the occurrence of major public events. There are two primary methods for testing the moderating effect: constructing an interaction term or conducting group tests. In a study on learning effectiveness, students may be randomly assigned to one of three instructional groups: a practical operation teaching group, a group discussion teaching group, and a control group. The encoding method involves defining dummy variables such as D1 (where D1 = 1 for the practical operation teaching group and D1 = 0 otherwise) and D2 (where D2 = 1 for the group discussion teaching group and D2 = 0 otherwise). The control group is then analysed separately, and significance tests are conducted to compare coefficients. If substantial differences are observed, this suggests that the moderating effect is significant. Conversely, if no substantial differences emerge, the moderating effect is deemed invalid.

3.2.4. Control Variables

In addition to the three aforementioned variables, this study incorporates several control variables based

on prior research conducted by both domestic and international scholars. These control variables include board size, company growth, company profitability

(measured by return on assets, ROA), the number of years since the company was listed (Listage), company size (Size), and debt leverage (Lev).

Table 1: Variables.

Index	Mark	Meaning
Corporate Compliance	Com	It is assigned a value of 1 depending on it has been administratively punished, otherwise it is 0.
Internal Control of Enterprises	IC	DiBo Internal Control Index
The Occurrence of Crisis	TIME	0 for 2015-2019 and 1 for 2019-2022
Board size	Board	Board size
Company Growth	Grow	Main business income growth rate = (main business income this year - main business income last year) / main business income last year
Company Profitability	Roa	The ratio of net profit to the ending balance of total assets
Company Listage	Listage	The difference between the end of the sample year and the time of listing
Company Size	Size	The natural logarithm of total assets at the end of the period
Debt Leverage	Lev	Asset-liability ratio = total liabilities/total assets

3.3. Model Construction

To test Hypothesis 1, this study constructs the following model: $COM = \alpha_0 + \alpha_1 IC_{i,t} + \gamma Controls + \varepsilon$, where COM is the dependent variable, and IC serves as the independent variable. To assess the moderating effect of crisis events on the relationship between COM and IC, this study employs a grouping and comparative analysis. The analysis is based on the onset of the COVID-19 pandemic and the frequent flooding in the Yangtze River Delta in recent years. If the correlation between COM and IC differs before and after these crises, it would indicate a moderating effect; otherwise, no such effect is present. The COVID-19 outbreak is marked from December 31, 2019, when the Wuhan Municipal Health Commission issued its first notification, and January 20, 2020, when the National Health Commission publicly announced the epidemic. Additionally, the severity of flooding in China intensified in the latter half of 2019. Thus, the study defines the end of 2019 and the beginning of 2020 as the critical time points for grouping. Data from 2015 to 2019 represent the pre-crisis period, while data from 2020 to 2022 reflect the post-crisis fiscal impact.

4. Empirical Analysis

4.1. The Correlation Between Internal Control (IC) and Corporate Compliance (COM) in Enterprises

4.1.1. Descriptive Statistics

Table 2 reports a mean COM value of 0.112 with a standard deviation of 0.315, suggesting notable differences in compliance levels among enterprises. The low mean indicates that the majority of firms in the sample exhibit relatively weak compliance. Given that compliance values range from 0 (complete

non-compliance) to 1 (full compliance), the mean of 0.112 suggests that most companies face challenges or deficiencies in compliance management. The standard deviation of 0.315 further highlights significant variability in corporate compliance across the sample. This variation may be attributed to differences in the extent of investment in and performance of compliance management among enterprises. While some firms maintain high compliance standards, others display severe deficiencies. As compliance is measured using a binary variable (0 or 1), the presence of both values in the dataset confirms the existence of both fully compliant and entirely non-compliant enterprises, providing a clear framework for further analysis. Regarding Internal Control (IC), the mean value is 635.294, where a higher value indicates stronger internal control quality. The standard deviation of 124.135 suggests a considerable disparity in internal control effectiveness among the sampled enterprises.

Table 2: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
id	8831	364094.24	263395.28	35	688819
year	8831	2019.036	2.258	2015	2022
com	8831	.112	.315	0	1
ic	8831	635.294	124.135	0	798.12
size	8831	22.213	1.19	20.113	25.812
growth	8831	.157	.354	-.547	2.008
roa	8831	.043	.065	-.231	.213
lev	8831	.405	.19	.067	.869
board	8831	2.095	.183	1.609	2.485
listage	8831	2.095	.799	.693	3.367
mis	8831	0	0	0	0

4.1.2. Correlation Analysis

The second row of the correlation analysis shows a statistically significant association between IC and

COM. This shows that the organization's compliance levels vary with internal control quality.

Table 3: Correlation Analysis.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) com	1.000							
(2) ic	-0.231* (0.000)	1.000						
(3) size	-0.027* (0.013)	0.142* (0.000)	1.000					
(4) growth	-0.006 (0.562)	0.178* (0.000)	0.067* (0.000)	1.000				
(5) roa	-0.171* (0.000)	0.361* (0.000)	0.026* (0.013)	0.276* (0.000)	1.000			
(6) lev	0.086* (0.000)	-0.060* (0.000)	0.496* (0.000)	0.051* (0.000)	-0.330* (0.000)	1.000		
(7) board	-0.023* (0.029)	0.045* (0.000)	0.239* (0.000)	-0.007 (0.485)	0.002 (0.865)	0.103* (0.000)	1.000	
(8) listage	0.052* (0.000)	-0.069* (0.000)	0.463* (0.000)	-0.107* (0.000)	-0.197* (0.000)	0.294* (0.000)	0.156* (0.000)	1.000
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$								

4.1.3. VIF Analysis

Multicollinearity is a critical concern in regression analysis. If present and not adequately addressed, it can lead to unstable estimates of regression coefficients, thereby compromising the explanatory and predictive accuracy of the model. The Variance Inflation Factor (VIF) is a commonly used diagnostic tool to detect multicollinearity in regression models. The magnitude of the VIF value reflects the degree of correlation among independent variables. The following section presents the VIF analysis results for the primary variables, along with their corresponding interpretations.

VIF<5: A VIF value below 5 suggests low collinearity among independent variables, indicating that multicollinearity is not a significant concern.

5<VIF<10: A VIF value between 5 and 10 indicates moderate multicollinearity among independent variables, which should be carefully monitored.

VIF>10: A VIF value exceeding 10 indicates a high degree of collinearity among independent variables, necessitating adjustments or reconsideration of the model specification.

The results of the VIF analysis indicate that collinearity among the primary independent variables in this study is relatively low. All VIF values fall within the acceptable

range (below 5), suggesting minimal correlation between independent variables. This confirms that the regression model exhibits robustness concerning multicollinearity, ensuring the reliability of variable explanations and the accuracy of regression coefficient estimates. Low VIF values enhance the precision of regression analysis and mitigate estimation instability caused by collinearity. Based on these findings, there is no evidence of multicollinearity among the variables.

Table 4: VIF Analysis.

Variable	VIF	1/VIF
SIZE	1.79	0.557247
LEV	1.61	0.621563
roa	1.47	0.678253
LISTAGE	1.37	0.729510
IC	1.19	0.841933
growth	1.13	0.886790
bOARD	1.06	0.938978
Mean VIF	1.38	

4.1.4. Regression Analysis

For the regression analysis, a fixed-effects model was initially selected for testing. According to the results presented in the table, the p-value is less than 0, indicating strong statistical significance. The coefficient of -0.0003727 suggests a negative relationship between IC and corporate misconduct, implying that stronger internal control is associated

with lower levels of misconduct. Furthermore, the analysis reveals a positive correlation between the quality of IC and COM, meaning that enterprises with

higher internal control quality tend to exhibit stronger compliance. Given that the p-value is less than 0, the model is considered statistically valid and reasonable.

Table 5: Regression Analysis.

Com	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ic	-.0003727	0	-11.54	0	0	0	***
size	.034	.011	2.97	.003	.012	.056	***
growth	.031	.01	3.00	.003	.011	.051	***
roa	-.383	.076	-5.06	0	-.531	-.234	***
lev	-.014	.043	-0.31	.753	-.098	.071	
board	.032	.038	0.84	.402	-.043	.107	
listage	-.048	.013	-3.61	0	-.075	-.022	***
Constant	-.352	.238	-1.48	.138	-.818	.114	
Mean dependent var		0.112		SD dependent var		0.315	
R-squared		0.027		Number of obs		8831	
F-test		28.317		Prob > F		0.000	
Akaike crit. (AIC)		599.359		Bayesian crit. (BIC)		656.047	
*** $p<.01$, ** $p<.05$, * $p<.1$							

4.1.5. Model Inspection Hausman Test

The Hausman test is utilised to evaluate the validity of the random effects model, particularly to determine if individual effects are independent of the explanatory variables. This test evaluates the suitability of each model by contrasting the discrepancies in estimated coefficients between the fixed and random effects models. The findings display the coefficient differences (b-B) and standard errors (Std. Err.) between the two models. The table illustrates significant disparities in the coefficients of specific variables, including LEV and LISTAGE. The coefficient difference for LEV is 0.093857, accompanied by a standard error of 0.0363018, signifying a substantial divergence between the estimation outcomes of the two models.

The Hausman test statistic is 108.22, derived from the weighted sum of squares of the coefficient disparities

in the covariance matrix. The p-value of 0.0000, significantly lower than 0.05, indicates that the coefficient variation is statistically significant, suggesting a disparity between the coefficients of the fixed and random effects models. Since the p-value is below 0.05, the premise of the random effects model—that individual effects are uncorrelated with explanatory variables—cannot be maintained. Thus, the fixed effects model is considered more suitable, as it adeptly accounts for individual effects and yields more dependable coefficient estimates. In light of these findings, the random effects model is dismissed in favour of the fixed effects model, which facilitates a more precise assessment of the relationship between equity concentration and corporate compliance, while considering individual variations. The comparison further substantiates that the fixed effects model is more appropriate, as evidenced by the p-value being smaller than 0.

Table 6: Hausman Inspection Form.

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
ic	-.0003727	-.0004684	.0000957	.0000152
size	.0338601	-.0088166	.0426768	.0106431
growth	.0305781	.0476416	-.0170635	.0036866
roa	-.3826237	-.4241419	.0415182	.0435056
lev	-.0135803	.0802776	-.0938579	.0363018
board	.0321391	-.0151019	.047241	.0328308
listage	-.0484177	.0119994	-.0604172	.0123921
chi2(7) = 108.22 Prob > chi2 = 0.0000				

4.2. The Moderating Effect of Major Public Events on the Relationship Between Internal Control and Corporate Compliance
4.2.1. Descriptive Statistics

Table 7 presents the descriptive statistics of the main variables, based on a total of 8,831 observations after

data processing. The variable “time” is introduced for grouping purposes, where observations from 2015 to 2019 are assigned a value of 0, and those from 2020 to 2022 are assigned a value of 1.

Table 7: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
id	8831	364094.24	263395.28	35	688819
year	8831	2019.036	2.258	2015	2022
com	8831	.112	.315	0	1
ic	8831	635.294	124.135	0	798.12
size	8831	22.213	1.19	20.113	25.812
growth	8831	.157	.354	-.547	2.008
roa	8831	.043	.065	-.231	.213
lev	8831	.405	.19	.067	.869
board	8831	2.095	.183	1.609	2.485
listage	8831	2.095	.799	.693	3.367
time	8831	.468	.499	0	1
mis	8831	0	0	0	0

4.2.2. Correlation Analysis

The correlation analysis results for IC and COM from 2015 to 2019 (when time = 0) indicate a significant relationship. The p-value is 0, which is less than 0.01, confirming a statistically significant correlation. This suggests that during this period, stronger internal control was associated with lower corporate non-compliance, reinforcing a positive correlation between IC and COM. Moreover, Table 9 presents the correlation analysis results for IC and COM from 2020 to 2022

(when time = 1). The p-value is 0, which is less than 0.01, confirming a statistically significant correlation. This indicates that during this period, stronger internal control was associated with lower corporate non-compliance, reinforcing a positive correlation between IC and COM. A comparison of Tables 8 and 9 suggests that the correlation between IC and COM remains consistent across both time periods, with minimal differences in coefficients and overall similarity in data.

Table 8: Correlation Analysis (time=0).

com	Coef.	St.Err.	T-Value	P-Value	[95% Conf	Interval]	Sig
ic	-.001	0	-12.26	0	-.001	0	***
size	-.007	.005	-1.32	.188	-.018	.004	
roa	-.704	.093	-7.59	0	-.886	-.522	***
lev	.049	.032	1.55	.122	-.013	.112	
board	-.027	.027	-1.01	.311	-.081	.026	
growth	.066	.014	4.88	0	.04	.093	***
listage	.012	.007	1.64	.102	-.002	.026	
Constant	.648	.112	5.79	0	.428	.867	***
Mean dependent var		0.132	SD dependent var			0.338	
R-squared		0.077	Number of obs			4695	
F-test		55.934	Prob > F			0.000	
Akaike crit. (AIC)		2786.599	Bayesian crit. (BIC)			2838.233	
*** <i>p</i> <.01, ** <i>p</i> <.05, * <i>p</i> <.1							

Table 9: Correlation Analysis (time=1).

com	Coef.	St.Err.	T-Value	P-Value	[95% Conf	Interval]	Sig
ic	0	0	-12.64	0	-.001	0	***

com	Coef.	St.Err.	T-Value	P-Value	[95% Conf	Interval]	Sig
size	-.009	.005	-1.84	.066	-.018	.001	*
roa	-.175	.078	-2.24	.025	-.329	-.022	**
lev	.125	.029	4.35	0	.069	.181	***
board	-.044	.024	-1.80	.071	-.091	.004	*
growth	.017	.014	1.23	.22	-.01	.044	
listage	.009	.006	1.40	.161	-.003	.021	
Constant	.619	.098	6.33	0	.427	.811	***
Mean dependent var		0.089	SD dependent var		0.285		
R-squared		0.064	Number of obs		4136		
F-test		40.132	Prob > F		0.000		
Akaike crit. (AIC)		1109.318	Bayesian crit. (BIC)		1159.938		
*** $p<.01$, ** $p<.05$, * $p<.1$							

4.2.3. Regression Analysis

This analysis employs regression to examine the relationship between IC and COM across two time periods: 2015–2019 (Before19) and 2020–2022 (After19). This time-based approach enables an

assessment of how varying economic conditions influence this relationship. The regression results indicate consistency across both periods, suggesting that the impact of IC on COM remains stable despite changes in the external environment.

Table 10: Correlation Analysis.

	(1) com	(2) com
ic	-0.001*** (-12.257)	-0.000*** (-12.637)
size	-0.007 (-1.316)	-0.009* (-1.842)
roa	-0.704*** (-7.591)	-0.175** (-2.241)
lev	0.049 (1.548)	0.125*** (4.353)
board	-0.027 (-1.013)	-0.044* (-1.803)
growth	0.066*** (4.884)	0.017 (1.227)
listage	0.012 (1.638)	0.009 (1.404)
_cons	0.648*** (5.787)	0.619*** (6.327)
N	4695	4136
R²	0.077	0.064
F	55.934	40.132
***p<0.01, **p<0.05, *p<0.10		

4.2.4. Comparative Test of Regression Analysis

The regression analysis examined the relationship between IC and COM separately for the two time periods (2015–2019 and 2020–2022) and assessed whether significant differences existed before and after major public events, such as the pandemic. The IC coefficient remained consistent at -0.001 across

both periods. Although both coefficients were negative and statistically significant, their absolute values were slightly lower during the pandemic, suggesting a marginal decline in the positive impact of IC on COM.

The comparative test results indicate that the chi-square statistic for the difference in the equity

concentration coefficient between “Before19_cean” and “After19_cean” is 0.06, with a p-value of 0.8134. This suggests that the difference in IC coefficients between the two periods is not statistically significant. Consequently, the hypothesis that IC has the same negative impact on COM before and after the pandemic cannot be rejected. While the pandemic influenced the broader business environment, the relationship

between IC and COM remained largely unchanged, with the negative effect of IC on compliance remaining stable. The findings indicate that major public events, such as pandemics, do not significantly moderate the relationship between IC and COM. This demonstrates the stability of IC quality in influencing COM, while the effects of broader economic and market changes on this relationship appear relatively limited.

Table 11: Comparative Test for Regression Analysis.

	Coefficient	std.	err.	z	P>z	[95% conf.	[interval]
Before19_mean							
ic	-0.001	0.000	-7.070	0.000	-0.001	-0.000	
size	-0.007	0.007	-0.970	0.332	-0.022	0.007	
roa	-0.704	0.131	-5.380	0.000	-0.960	-0.447	
lev	0.049	0.043	1.150	0.249	-0.035	0.134	
board	-0.027	0.036	-0.760	0.447	-0.098	0.043	
growth	0.066	0.017	3.840	0.000	0.032	0.100	
listage	0.012	0.010	1.230	0.220	-0.007	0.030	
_cons	0.648	0.149	4.340	0.000	0.355	0.940	
Before19_Invar							
_cons	-2.246	0.045	-49.690	0.000	-2.335	-2.157	
After19_mean							
ic	-0.000	0.000	-7.680	0.000	-0.001	-0.000	
size	-0.009	0.006	-1.400	0.161	-0.021	0.003	
roa	-0.175	0.108	-1.630	0.104	-0.386	0.036	
lev	0.125	0.036	3.440	0.001	0.054	0.196	
board	-0.044	0.030	-1.430	0.152	-0.103	0.016	
growth	0.017	0.015	1.100	0.270	-0.013	0.047	
listage	0.009	0.007	1.200	0.229	-0.005	0.023	
_cons	0.619	0.128	4.830	0.000	0.368	0.870	
After19_Invar							
_cons	-2.572	0.053	-48.330	0.000	-2.676	-2.467	
[Before19_mean]ic - [After19_mean]ic = 0 chi2(1) = 0.06 Prob > chi2 = 0.8134							

5. Conclusion

This study confirms a positive correlation between IC quality and COM, suggesting that stronger internal controls enhance compliance. However, major public events do not moderate this relationship. While crises may theoretically weaken internal controls, firms tend to reinforce them to maintain compliance, highlighting their role as a governance foundation. To improve compliance, companies should establish robust internal control frameworks, regularly update policies, and conduct employee training. Strengthening internal audits and ensuring senior management oversight further enhances compliance. During crises, firms must adapt internal controls, implement risk management strategies, and establish crisis response mechanisms

to mitigate compliance risks. Future research should explore variations in internal control effectiveness across different enterprise types, industries, and cultural contexts. Examining the long-term impact of public events on internal controls could provide insights into enhancing corporate resilience and governance. Strengthening internal controls and proactive crisis management will ultimately support sustainable corporate compliance.

References

Abouelghit, M. G. M., & Gan, S. (2024). Empirical research on the effects of mandatory auditing for SMEs on their internal control quality and management's perceptions: Evidence from Egypt. *Cogent Business & Management*, 11(1), 2412738. <https://doi.org/10.1080/23311975.2024.2412738>

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- Arianpoor, A., Valirouh, M., & Sahin, C. (2024). Internal control effectiveness, supply chain management efficiency and capital allocation efficiency: evidence from the COVID-19 pandemic. *International Journal of Productivity and Performance Management*. <https://doi.org/10.1108/IJPPM-05-2024-0338>
- Ashbaugh-Skaife, H., Collins, D. W., Kinney, W. R., Jr., & LaFond, R. (2008). The Effect of SOX Internal Control Deficiencies and Their Remediation on Accrual Quality. *The Accounting Review*, 83(1), 217-250. <https://doi.org/10.2308/accr.2008.83.1.217>
- Bargeron, L. L., Lehn, K. M., & Zutter, C. J. (2010). Sarbanes-Oxley and corporate risk-taking. *Journal of Accounting and Economics*, 49(1), 34-52. <https://doi.org/10.1016/j.jacceco.2009.05.001>
- Chang, Y.-T., Chen, H.-C., Cheng, R. K., & Chi, W. (2021). Misstatements and Internal Control Over Operations and Compliance. *Journal of International Accounting Research*, 20(1), 31-48. <https://doi.org/10.2308/jiar-2020-016>
- Chen, K. C. W., & Chen, S.-f. (2024). Disclosure of Internal Control Weaknesses and Auditors' Litigation Risk. *AUDITING: A Journal of Practice & Theory*, 43(1), 51-71. <https://doi.org/10.2308/ajpt-2021-057>
- Doyle, J. T., Ge, W., & McVay, S. (2007). Accruals Quality and Internal Control over Financial Reporting. *The Accounting Review*, 82(5), 1141-1170. <https://doi.org/10.2308/accr.2007.82.5.1141>
- Goh, B. W., & Li, D. (2011). Internal Controls and Conditional Conservatism. *The Accounting Review*, 86(3), 975-1005. <https://doi.org/10.2308/accr.00000041>
- Guo, M. (2024). The Impact of Business Environment Optimization on Corporate Violations. *Academic Journal of Business & Management*, 6(2), 47-53. <https://doi.org/10.25236/AJBM.2024.060207>
- Huang, L., & Liu, Q. (2024). The Impact of Natural Disasters on Corporate ESG Performance: Evidence from China. *Sustainability*, 16(12), 5252. <https://doi.org/10.3390/su16125252>
- Ilori, O., Nwosu, N. T., & Naiho, H. N. N. (2024). Optimizing Sarbanes-Oxley (SOX) compliance: strategic approaches and best practices for financial integrity: A review. *World Journal of Advanced Research and Reviews*, 22(3), 225-235. <https://doi.org/10.30574/wjarr.2024.22.3.1728>
- Kim, B. J. (2011). A Study on the US Corporate Governance Reform After the Enactment of the Sarbanes-Oxley Act. *International Travel Law*, 2(2), 1-33. <https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE08600319>
- Li, Y., & Shi, G. (2023). Study on the Repair Behavior of Internal Control Defect After Financial Report Restatement. In *2023 4th International Conference on Management Science and Engineering Management (ICMSEM 2023)* (pp. 753-759). Atlantis Press. https://doi.org/10.2991/978-94-6463-256-9_76
- Roychowdhury, S. (2006). Earnings Management Through Real Activities Manipulation. *Journal of Accounting and Economics*, 42(3), 335-370. <https://doi.org/10.1016/j.jacceco.2006.01.002>
- Shan, L. (2011). Psychological or Real? The Effect of the Wenchuan Earthquake on China's Stock Market. *Economic Research Journal*, 46(04), 121-134. <http://www.cnki.com.cn/Article/CJFDTotat-JJYJ201104011.htm>
- Shen, G., Zhou, L., Wu, Y., & Cai, Z. (2018). A Global Expected Risk Analysis of Fatalities, Injuries, and Damages by Natural Disasters. *Sustainability*, 10(7), 2573. <https://doi.org/10.3390/su10072573>
- Singh, K., & Rastogi, S. (2022). Financial Distress, COVID-19 and Listed SMEs: A Multi-methodology Approach. *Vision*, 09722629221096055. <https://doi.org/10.1177/09722629221096055>
- Sitanggang, T., Aryati, T., Pamungkas, B., & Agoes, S. (2022). The role of the audit committee to increase the influence of audit quality and internal control on earnings management. *Technium Social Sciences Journal*, 29(1), 399-418. <https://doi.org/10.47577/tssj.v29i1.6051>
- Tang, R., Zhao, M., & Wu, Y. (2024). The Impact of Natural Disasters on the Financialization of enterprises: Facilitation or Inhibition. *Research Square*. <https://doi.org/10.21203/rs.3.rs-3989469/v1>
- Taqi, M., Kalbuana, N., Abbas, D. S., & Mayyizah, M. (2024). Litigation Risk: Delving into Audit Quality, Internal Audit Structure, Political Connections, and Company Size. *Interdisciplinary Journal of Management Studies (Formerly known as Iranian Journal of Management Studies)*, 17(4), 1217-1232. <https://doi.org/10.22059/ijms.2024.367759.676318>
- Wang, B., Bian, J., Xu, Y., & Liu, D. (2024). The Role of Internal Control on Financial Fraud: Evidence of Pre-Fraud and Post-Punishment from Chinese Firms. *Emerging Markets Finance and Trade*, 1-14. <https://doi.org/10.1080/1540496X.2024.2421913>
- Wang, N., Cui, D., & Jin, C. (2023). The Value of Internal Control during a Crisis: Evidence from Enterprise Resilience. *Sustainability*, 15(1), 513. <https://doi.org/10.3390/su15010513>
- Wu, M. (2023). Research on the Relationship between Internal Control Quality and Earnings Management under the Adjustment of Ownership Structure—Empirical Analysis Based on the A-share Listed Companies in Shanghai and Shenzhen. *Accounting and Corporate Management*, 5(6), 53-67. <https://doi.org/10.23977/acccm.2023.050608>
- Yang, D. G., & Chen, H. W. (2015). Internal Control, Legal Environment, and Law-Abiding Corporate Citizen. *Auditing Research*, 5, 76-83. <https://www.cqvip.com/QK/98204X/201505/666162215.html>

- Yang, L., Qin, H., Gan, Q., & Su, J. (2020). Internal Control Quality, Enterprise Environmental Protection Investment and Finance Performance: An Empirical Study of China's A-Share Heavy Pollution Industry. *International Journal of Environmental Research and Public Health*, 17(17), 6082. <https://doi.org/10.3390/ijerph17176082>
- Zhang, H.-l., & Wu, Y.-h. (2014). Internal Control, Cash Holdings and Economic Consequences. *Accounting Research*, 3, 71-78. <https://doi.org/10.3969/j.issn.1003-2886.2014.03.010>