THE CORRELATION BETWEEN SHAREHOLDING STRUCTURE, CORPORATE COMPLIANCE AND IMPACT OF CRISIS EVENTS: RESEARCH FROM THE YANGTZE RIVER DELTA REGION

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ABSTRACT: This study examines the increasingly stringent penalties imposed on enterprises for non-compliance and their consequent impact on corporate development, market order, and China's economic growth. It investigates the factors influencing corporate compliance and incorporates an analysis of major public events that have occurred in the Yangtze River Delta region in recent years. The objective is to identify strategies for enhancing corporate compliance management, particularly in mitigating corporate losses during societal crises. The study utilises a sample of A-share listed companies in the Yangtze River Delta region from 2015 to 2022. The findings indicate that shareholding structure influences corporate compliance, while the occurrence of crisis events moderates the relationship between shareholding structure and corporate compliance.

Keywords: Shareholding Structure, Corporate Compliance, Crisis Events, Yangtze River Delta Region.

1. Introduction

As China's capital market continues to expand, regulatory violations by listed companies have become increasingly prevalent, significantly disrupting market order. External incentives serve as a crucial driving force in strengthening corporate compliance; thus, various external incentive mechanisms can be employed to foster compliance and establish a stable market environment (Liu, 2024). However, for both corporations and regulatory authorities, completely eradicating corporate violations remains a challenge. Instead, institutional frameworks can only serve to minimise opportunities for such infractions rather than eliminate them entirely. Existing literature has primarily examined the determinants of corporate violations from the perspective of internal and external governance. Notably, corporate violations exhibit a clear causal relationship with ownership structure. Unlike the highly dispersed ownership models prevalent in Western markets, Chinese listed companies typically feature a concentrated ownership structure, often characterised by the dominance of a single major shareholder.

Issa et al. (2022) analyzed the relationship between board diversity and corporate social responsibility disclosure based on the situation of the Arab Gulf Bank industry. The results showed that board diversity has a significant correlation with corporate social responsibility disclosure. Jibril and Isa (2025) studied the board structure, environmental compliance, and safety disclosure, and the results showed that the board structure has a direct correlation with safety disclosure. Chijoke-Mgbame, Boateng and Mgbame (2020) mainly explored the impact of board diversity on financial performance in the context of weak institutions in Nigeria, Africa. The results showed that female director representation has a positive and significant impact on corporate financial performance. The above is mainly the research conducted by scholars in the past five years on the relationship between board structure and corporate social responsibility, safety disclosure and financial performance. The conclusions are that there is a correlation.

Ji and Weil (2009) found through a study of franchise organizations and compliance with U.S. regulations that franchisees only seek to maximize their own interests, there is a phenomenon of free riding, and they do not care about the reputation of the company, which will increase non-compliance with laws and regulations. Therefore, it is concluded that the ownership structure will have an impact on the legal compliance of the company. Anum Mohd Ghazali (2010) analyzed the correlation between corporate governance, equity structure and company performance, and the results found that there is a significant correlation between equity structure and company performance. Henry (2010) mainly studied the relationship between corporate governance compliance and corporate equity structure. The study found that corporate governance compliance has no impact on corporate equity structure. The above are mainly earlier studies on equity structure and compliance, which may be related to a certain extent, but the relationship between equity structure and compliance can also be inferred indirectly. These documents are mainly related to the earlier research on corporate ownership structure and corporate compliance. Some of the variables are not exactly the same as the corporate compliance variable, but they can reflect the situation of the variable. The

research results of these scholars show that there should be a correlation between ownership structure and corporate compliance.

Chen, Zhao and Lin (2005) argued that a concentrated shareholding structure, particularly that of the largest shareholder, serves as a deterrent to corporate violations. Similarly, Zhao et al. (2021) concluded that the control rights held by the largest shareholder exhibit a significant negative correlation with a company's propensity to breach regulations, highlighting the influence of shareholding structure. However, research on corporate violations remains relatively underdeveloped. Using data from listed companies in their respective country from 2001 to 2002, Chen, Lin and Wang (2005) found that an increase in shareholding concentration significantly reduces the likelihood of regulatory violations, whereas reputation mechanisms fail to serve as an effective deterrent. This section is a study by Chinese scholars on the correlation between equity structure and corporate compliance. The conclusion of the study is that there is a correlation between equity structure and corporate compliance or non-compliance. Although these documents cover a large time span, they directly study the correlation between the two variables of ownership structure and corporate compliance. The specific research environments are different, but the final research results are basically the same, that is, there is a significant correlation between the ownership structure of a company and its compliance.

Ramalingegowda, Utke and Yu (2021) investigated the relationship between earnings management and the ownership of major shareholders in peer companies within the same industry, managed by common institutional investors. Their findings indicate that high shareholding concentration undermines earnings management. Ko and Feng (2019) further posited that the greater the concentration of shareholding, the lower the likelihood of regulatory violations. Additionally, Wang, Jie and and Xu (2022) demonstrated that ultimate control exerts a restraining effect on corporate violations, regardless of differences in entity type, structure, and severity of infractions.

Indonesian scholars have examined the impact of the COVID-19 pandemic on individual tax compliance (Khalimaturrosyida, 2022), raising the question of whether the pandemic similarly affects corporate compliance. Furthermore, beyond public health emergencies, the extent to which other sudden public events influence corporate compliance remains unclear. The National Comprehensive Emergency Plan for Public Emergencies (2006), approved by the 79th Executive Meeting of the State Council of China, defines public emergencies as unforeseen incidents that result in, or have the potential to cause, significant casualties, property loss, ecological damage, or serious social harm, thereby endangering public safety. Public emergencies are classified into four categories: public health incidents, natural disasters, social security incidents, and accidents or calamities. Given that accidents, disasters, and social security incidents tend to exert a comparatively minor economic impact, this study focuses on public health events and natural disasters.

Variations in ownership structure fundamentally reflect differences in stakeholder composition. In response to crises such as the COVID-19 pandemic, shareholder configurations determine firms' capacity to withstand economic shocks, leading to disparities in corporate value recovery. Zhao (2022) suggested that firms with more concentrated equity ownership are better positioned to make swift decisions, respond proactively to crises, and recover more rapidly than their counterparts. Building upon the aforementioned background, this study analyses the correlation between shareholding structure and corporate compliance, while also examining the economic impact of crisis events, particularly the COVID-19 pandemic and recurrent floods in the Yangtze River Delta region in recent years. Furthermore, it explores the moderating effect of crisis events on the relationship between shareholding structure and corporate compliance. This research aims to highlight the significance of shareholding structure, corporate compliance, and crisis events for enterprises and society, ultimately contributing to the development of strategies that promote corporate sustainability.

2. Theoretical Analysis and Research Hypotheses

The impact of equity structure on corporate behaviour and governance has drawn significant academic interest, particularly in explaining corporate misconduct. Chen et al. (2006) demonstrated through univariate analysis that shareholder concentration plays a crucial role in corporate fraud. Choi, Gam and Shin (2020) found a correlation between equity structure and fraud in central enterprises, with regulatory reforms reducing misconduct. However, this contrasts with Liang, Wang and Li (2004), who reported a negative correlation between equity concentration and misconduct. Nguyen (2011) identified a positive correlation between ownership concentration and risk-taking, suggesting that stronger monitoring can mitigate behavioural bias and enhance performance. Lukason and Camacho-Miñano (2020) further supported the role of shareholder concentration in reducing corporate violations, as firms with higher ownership concentration face greater external scrutiny.

Akinkoye and Olasanmi (2014) based on the actual situation of Nigerian enterprises, an analysis was conducted on the equity structure of enterprises and their compliance with laws and regulations and it was found that there is a correlation between the two. Kabbach de Castro, Aguilera and Crespí-Cladera (2017) studied the relationship between family business ownership and corporate compliance. The results were complex. The authors believed that the ownership structure of family businesses and corporate compliance were in an inverted U relationship. The reason is that family businesses may violate regulations due to power relations, but reduce compliance due to the need to maintain corporate image and reputation. Udin, Khan and Javid (2017) studied Pakistani listed companies, mainly studying the relationship between the ownership structure of enterprises and financial distress. The author's results are relatively complicated. On the one hand, the author found that there is no significant correlation between institutional ownership and corporate financial distress, but foreign shareholding is significantly negatively correlated with corporate financial distress. Lepore et al. (2018) analysed the equity ownership concentration of Italian companies and the compliance and adequacy of information disclosure of companies. The results showed that there is a significant negative correlation between ownership concentration and information disclosure, and that higher ownership concentration will reduce corporate compliance.

Alkurdi and Mardini (2020) mainly studied the relationship between the ownership structure of companies in Jordan's primary listed market and corporate tax avoidance behaviour. The authors found that there is a negative correlation between corporate tax avoidance behaviour and ownership structure. Ke (2021) analysed the ownership structure and legal compliance of enterprises in Beijing, and found that there is a correlation between the two. Raza and Ashraf (2020) took Malaysian companies with Islamic background as the research object and empirically analyzed the relevance of corporate ownership structure to corporate compliance. The results found that the impact of ownership structure on Sharia compliance is important. Arsad et al. (2020) conducted a study on companies with an Islamic background in Malaysia, mainly analysing the ownership structure and the social responsibility fulfillment of these companies. The results showed that there is a correlation between the two.

Overall, research suggests that concentrated ownership strengthens internal control and reduces violations, whereas dispersed ownership presents governance challenges. Optimising equity structure and enhancing shareholder oversight are crucial for corporate governance and sustainability, offering valuable insights for policymakers and management. In light of these findings, this study proposes the following hypotheses.

H1: There is a major positive correlation between Shareholding Structure and the Corporate Compliance behaviour of listed companies.

Since the outbreak of COVID-19 in 2020, the global economy and social structures have experienced profound disruptions. Enterprises have faced significant challenges, with varying equity structures influencing their performance and recovery during the pandemic. Perwitasari et al. (2022) examined the relationship between equity concentration and corporate performance under COVID-19 conditions, finding that firms with higher shareholding concentration experienced more severe negative impacts. This suggests that rigid decision-making processes in highly concentrated ownership structures may hinder effective crisis responses, exacerbating financial losses. Similarly, Zhao (2022) found that firms with a balanced equity structure and higher institutional investment shareholding exhibited stronger crisis resilience. By contrast, enterprises dominated by a single major shareholder faced increased agency costs and strategic rigidity, potentially leading to extreme decision-making and failure during sudden crises.

These findings suggest that the pandemic has had both positive and negative moderating effects on the role of equity concentration in corporate performance. The mechanisms and extent of this impact have shifted pre- and post-pandemic, highlighting the need for optimised equity structures and improved decision-making capabilities to enhance corporate resilience against future crises. This research provides theoretical insights for corporate governance and practical guidance for policymakers in crisis management. Building on the study's previous hypotheses, the following hypothesis is proposed.

H2: Crisis events have a moderating effect on the relationship between Shareholding Structure and Corporate Compliance.

3. Research Design

3.1. Sample Selection and Data Sources

This study investigates the factors influencing corporate compliance, focusing on A-share listed companies in the Yangtze River Delta region of China from 2015 to 2022. Observations with missing variables have been excluded to ensure data integrity. Financial data is sourced from the CSMAR database, and all continuous variables have been winsorised at the upper and lower 1% quantiles. Data analysis is conducted using STATAMP18.

3.2. Variable Definition

3.2.1. The Corporate Compliance (COM)

The variable COM is used as the dependent variable to indicate the compliance trend of enterprises. If a company commits a violation in a given year, it is assigned a value of 1; otherwise, it is assigned a value of 0. Since violations are not directly observable and can only be identified following regulatory penalties and official notifications, the data is sourced from information published by CSMAR.

3.2.2. Shareholding Structure (SC)

This study employs SC as the explanatory variable, defined as the sum of the squares of the shareholding ratios of the top three shareholders. The shareholding ratios, as published by CSMAR, are used to calculate this measure, providing an indicator of equity concentration.

3.2.3. Methods for Detecting Moderating Effects

The moderating variable in this study is the occurrence of crisis events. There are two approaches to testing its effect: constructing an interaction term or conducting a group test. Given the limitations in China's current measurement methods and statistical data for crisis events, this study adopts the group test method to examine the moderating effect of crisis events on the relationship between shareholding structure and corporate compliance.

3.2.4. Control Variables

In addition to the independent, dependent, and moderating variables, this study incorporates control variables based on existing research by domestic and international scholars. These include board size (Board), company growth (Growth), company profitability (ROA), and the number of years since the company was listed (Listage), as it's shown in Table 1.

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.
Shareholding Structure	SC	Shareholding Structure (SC) is the sum of the squares of the shareholding ratios of the top three shareholders
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

3.3. Model Construction

To test H1, this study constructs the following model for analysis:

$$COM = \alpha 0 + \alpha 1 SCi,t + \gamma Controls + \varepsilon$$

Where the DV is COM and the IV is SC.

From the perspective of geographical location, the Yangtze River Delta region is located in the lower reaches of the Yangtze River in China, bordering the Yellow Sea and the East China Sea. It is located at the confluence of the river and the sea. There are many ports along the river and the coast. It is an alluvial plain formed before the Yangtze River enters the sea. It includes Shanghai, Jiangsu Province, Zhejiang Province, and Anhui Province, a total of 41 cities. In terms of importance, as of the end of 2019, the population of the Yangtze River Delta region was 227 million and the regional area was 358,000 square kilometres. In 2023, the GDP of the Yangtze River Delta region was 30,504.5 billion yuan, and the economic scale of all cities in the Yangtze River Delta reached more than 100 billion yuan; the urbanization rate of permanent residents exceeded 60%, and with less than 4% of the land area, it created nearly 1/4 of China's total economic output and 1/3 of the total import and export volume. As of December 2024, the Yangtze River Delta Railway will have 29 high-speed railways, with EMUs covering all prefecture-level cities except Zhoushan, Zhejiang, and a railway operating mileage of over 15,000 kilometres (of which high-speed railway mileage exceeds 7,700 kilometres).

The Yangtze River Delta is one of the regions with the most active economic development, the highest degree of openness, and the strongest innovation capabilities in China. It plays a pivotal strategic role in the overall national modernization drive and the all-round opening-up pattern. Promoting the integrated development of the Yangtze River Delta, enhancing the innovation and competitiveness of the Yangtze River Delta region, and improving economic agglomeration, regional connectivity, and policy coordination efficiency are of great significance to leading the country's high-quality development and building a modern economic system.

To verify the moderating effect of crisis events on the relationship between COM and SC, this study uses a grouping and comparative analysis approach. The onset of COVID-19 and frequent floods in the Yangtze River Delta serve as the basis for grouping. If the correlation between the two changes before and after crisis events, it indicates a moderating effect; otherwise, it does not. For COVID-19, the Wuhan Health Commission's notice on 31 Dec 2019 and the National Health Commission's announcement on 20 Jan 2020 mark the outbreak. Similarly, severe floods increased from mid-2019. Thus, this study sets the end of 2019 and the start of 2020 as division points. Data from 2015–2019 represent the pre-crisis period, while 2020–2022 data reflect post-crisis impact.

4. Empirical Analysis

4.1. Correlation between SC and COM

4.1.1. Descriptive Statistics

Table 2 presents the descriptive statistics of key variables. The mean COM is 0.11, indicating generally low compliance across firms. With values ranging from 0 (non-compliance) to 1 (full compliance), a standard deviation of 0.313 suggests significant variation in compliance management. The minimum COM value is 0, and the maximum is 1, confirming the presence of both fully compliant and non-compliant firms in the sample. The mean SC is 0.261, reflecting a relatively dispersed equity structure. A higher SC indicates greater ownership concentration. The standard deviation of 0.145 highlights differences in equity concentration among firms. SC values range from 0.035 to 0.689, with most firms showing relatively low concentration, though some exhibit higher levels of ownership control.

Table 2: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
id	8842	367352.3	263397.04	35	871981
year	8842	2019.039	2.264	2015	2022
com	8842	.11	.313	0	1
sc	8842	.261	.145	.035	.689
growth	8842	.158	.355	-.547	2.019
lev	8842	.403	.189	.066	.861
board	8842	2.094	.182	1.609	2.485
listage	8842	2.048	.848	0	3.367
mis	8842	0	0	0	0

4.1.2. Correlation Analysis

Table 3 examines the correlation between corporate compliance and key variables, including equity concentration and control factors. The results indicate a significant correlation between corporate compliance and equity concentration, profitability, board size, and listing duration. However, no significant correlation is observed between corporate compliance and corporate growth. The correlation coefficient between corporate misconduct and SC is -0.113, with a p-value below 0.10, indicating a statistically significant negative relationship. This suggests that higher equity concentration is associated with reduced corporate misconduct. Conversely, a positive correlation exists between SC and corporate compliance, implying that firms with higher equity concentration may exhibit stronger compliance due to the enhanced oversight of major shareholders. The findings highlight a clear negative correlation between non-compliance and SC, reinforcing the positive association between SC and corporate compliance. Additionally, SC correlates positively with financial performance, such as return on assets, suggesting its broader influence.

Furthermore, the listing duration significantly affects corporate compliance and growth, indicating that more established firms tend to demonstrate greater stability in these aspects.

Table 3: Pairwise Correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) com	1.000						
(2) sc	-0.113*	1.000					
	(0.000)						
(3) growth	-0.006	0.022*	-0.073*	1.000			
	(0.597)	(0.039)	(0.000)				
(4) roa	-0.169*	0.200*	-0.092*	0.275*	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)			
(5) board	-0.022*	-0.024*	0.208*	-0.013	-0.005	1.000	
	(0.036)	(0.024)	(0.000)	(0.231)	(0.652)		
(6) listage	0.062*	-0.257*	0.464*	-0.105*	-0.217*	0.158*	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
*** p<0.01, ** p<0.05, * p<0.1							

4.1.3. VIF Analysis

Table 4: VIF Analysis.

Variable	VIF	1/VIF
Board	1.05	0.950627
Listage	1.47	0.681805
Roa	1.16	0.865021
Sc	1.16	0.863204
Growth	1.09	0.919880
Mean VIF	1.22	

In regression analysis, multicollinearity can cause instability in coefficient estimates, affecting the model's explanatory and predictive accuracy. The Variance Inflation Factor (VIF) is used to assess multicollinearity, where:

- VIF < 5: Low collinearity, no significant issue.
- 5 < VIF < 10: Moderate collinearity, requires attention.
- VIF > 10: High collinearity, model adjustments may be needed.

The VIF results indicate that collinearity among independent variables in this study is low, with all values below 5. This suggests that the regression model is robust, with minimal collinearity issues. Low VIF values enhance the reliability of variable estimates and improve regression accuracy by reducing instability caused by multicollinearity. In regression analysis, these results confirm the model's stability and the independence of variables. Based on these findings, further regression analysis can be conducted to examine the relationships between variables and their impact on corporate compliance.

4.1.4. Regression Analysis

Table 5: Regression Statistics.

com	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
sc	-.125	.071	-1.76	.079	-.265	.014	*
growth	.023	.01	2.29	.022	.003	.042	**
roa	-.552	.071	-7.75	0	-.691	-.412	***
board	.041	.039	1.06	.29	-.035	.116	
listage	-.016	.011	-1.47	.141	-.038	.005	
Constant	.111	.089	1.25	.212	-.063	.286	
Mean dependent var		0.110	SD dependent var		0.313		
R-squared		0.009	Number of obs		8842		
F-test		13.276	Prob > F		0.000		
Akaike crit. (AIC)		637.924	Bayesian crit. (BIC)		680.448		
*** p<.01, ** p<.05, * p<.1							

The coefficient of SC is -0.125, with a standard error of 0.071, a t-value of -1.76, and a p-value of 0.079. Although the p-value slightly exceeds 0.05, the coefficient remains statistically significant at the 0.1 level. The negative coefficient suggests an inverse relationship between SC and corporate misconduct, implying that a one-unit increase in SC reduces the likelihood of violations by 0.125. Conversely, this indicates a positive correlation between SC and COM, meaning higher SC strengthens corporate compliance.

4.1.5. Model Inspection Hausman Test

Table 6: Model Inspection Hausman Test.

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
sc	-.1254434	-.1622562	.0368129	.0661484
growth	.02285	.0339078	-.0110578	.0035862
roa	-.5517313	-.7161714	.1644401	.0438286
board	.040789	-.0296989	.070488	.0328763
listage	-.0162102	.0071509	-.023361	.0100165
Test of H0: Difference in coefficients not systematic chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)= 36.54, Prob > chi2 = 0.0000				

Test of H0: Difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 36.54

Prob > chi2 = 0.0000

The Hausman test is a statistical method used to compare fixed effects (FE) and random effects (RE) models, assessing whether individual effects are correlated with explanatory variables. This test determines the more appropriate model by analysing differences in estimated coefficients between the two approaches. The results present the coefficient differences (b-B) and standard errors (Std. Err.) between the models. Notably, variables such as SC, ROA, and Board show significant coefficient differences, particularly ROA, with a difference of 0.1644 and a standard error of 0.0438. This suggests a clear disparity between the estimation results of the two models.

The Hausman test statistic is 36.54, calculated as the weighted sum of squared coefficient differences in the covariance matrix. The p-value of 0.0000, far below the 0.05 threshold, indicates that these coefficient differences are statistically significant, suggesting systematic variations in the effects between the models. Since the p-value is below 0.05, the hypothesis of the RE model, which assumes no correlation between explanatory variables and individual effects, is rejected. Consequently, the FE model is deemed more appropriate as it effectively controls for individual effects, providing more reliable coefficient estimates.

Based on the Hausman test results, as the p-value remains below 0.05, the RE model hypothesis is rejected. Thus, the FE model is adopted for this analysis, allowing for a more precise evaluation of the impact of equity concentration on corporate compliance while accounting for individual differences.

4.2. The Moderating Effect of Crisis Events on the Relationship between SC and COM

4.2.1. Descriptive Statistics

The descriptive statistics here are basically the same as the descriptive statistics in the previous paper, but a dummy variable called time variable has been added, so here we mainly focus on this newly added dummy variable of time.

Table 7 presents the descriptive statistics of the key variables. Following data processing, the sample consists of 9,041 observations. A time variable is introduced to facilitate group analysis, dividing the dataset into two periods: 2015–2019 and 2020–2022. This segmentation allows for an examination of temporal effects, particularly in the post-COVID-19 period (2020–2022), which may have significantly influenced corporate compliance and other economic indicators. Overall, the descriptive statistics offer a foundational understanding of the dataset, highlighting key characteristics and variations among variables. These insights serve as the basis for subsequent regression analysis, correlation analysis, and other statistical tests. A thorough understanding of the data enhances the accuracy of model interpretations and informs the development of relevant policy recommendations.

Table 7: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
id	9041	367468.8	263319.83	35	871981
year	9041	2019.048	2.263	2015	2022
com	9041	.11	.313	0	1
sc	9041	.257	.146	.031	.686
growth	9041	.158	.354	-.547	2.008
roa	9041	.044	.065	-.231	.217
board	9041	2.094	.183	1.609	2.485
listage	9041	2.05	.846	0	3.367
time	9041	.472	.499	0	1
mis	9041	0	0	0	0

4.2.2. Regression Analysis

Table 8 presents the correlation analysis between SC and COM for the period 2015–2019 (time = 0). The results indicate a significant relationship, with a correlation coefficient of -0.182 between SC and corporate misconduct and a p-value of 0, signifying strong statistical significance. This finding suggests a clear negative relationship between SC and corporate misconduct, implying that higher equity concentration is associated with increased misconduct. Conversely, there is a strong positive correlation between SC and COM, indicating that firms with higher equity concentration tend to exhibit stronger compliance. These results align with the initial hypothesis, suggesting that high SC during 2015–2019 contributed positively to corporate compliance development.

Table 8: Regression Statistics (time=0).

com	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
sc	-.182	.035	-5.19	0	-.251	-.113	***
growth	.053	.013	3.95	0	.027	.079	***
roa	-1.089	.08	-13.58	0	-1.247	-.932	***
board	-.031	.027	-1.18	.236	-.083	.021	
listage	.002	.006	0.31	.758	-.01	.014	
Constant	.279	.057	4.92	0	.168	.39	***
Mean dependent var		0.130	SD dependent var		0.337		
R-squared		0.053	Number of obs		4778		
F-test		53.268	Prob > F		0.000		
Akaike crit. (AIC)		2903.932	Bayesian crit. (BIC)		2942.763		
*** p<.01, ** p<.05, * p<.1							

Table 9: Regression Statistics (time=1).

com	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
sc	-.156	.03	-5.25	0	-.214	-.098	***
growth	.009	.013	0.65	.514	-.017	.035	
roa	-.479	.07	-6.88	0	-.615	-.342	***
board	-.07	.024	-2.94	.003	-.116	-.023	***
listage	.006	.005	1.16	.245	-.004	.016	
Constant	.28	.05	5.62	0	.182	.378	***
Mean dependent var		0.088	SD dependent var		0.284		
R-squared		0.026	Number of obs		4263		
F-test		22.578	Prob > F		0.000		
Akaike crit. (AIC)		1253.509	Bayesian crit. (BIC)		1291.655		
*** p<.01, ** p<.05, * p<.1							

Table 9 presents the correlation analysis between SC and COM for 2020–2022 (time = 1), showing a significant relationship. Comparing Tables 8 and 9, SC remains positively correlated with COM across both periods, with coefficients showing minimal variation. The SC coefficient is -0.156 (SE = 0.03, t = -5.25, p = 0), indicating a continued negative impact on misconduct. For every unit increase in SC, compliance improves by 0.156 units, slightly lower than the -0.182 coefficient from 2015–2019. Although the impact of SC on compliance has weakened post-crisis, the difference is marginal, requiring further regression analysis. These findings suggest that higher equity concentration enhances compliance, reflecting stronger internal governance and shareholder oversight.

This study conducts a regression analysis to examine the relationship between SC and COM across two distinct periods: 2015–2019 (Before19) and 2020–2022 (After19). By assessing the correlation between SC and COM in these time frames, the analysis seeks to determine whether major public events influence this relationship, thereby indicating a potential moderating effect. The regression results for both periods confirm a consistent positive association between SC and COM, suggesting that equity concentration exerts a stable influence on corporate compliance. However, the impact of other variables fluctuates with economic conditions, offering valuable insights into corporate compliance behaviour under different economic environments.

Table 10: Regression statistics (time=0 and time=1).

	time=0	time=1
com		
Sc	-0.182***	-0.156***
	(-5.19)	(-5.25)
growth	0.0531***	0.00868
	(3.95)	(0.65)
roa	-1.089***	-0.479***
	(-13.58)	(-6.88)
board	-0.0314	-0.0696**
	(-1.18)	(-2.94)
listage	0.00190	0.00608
	(0.31)	(1.16)
_cons	0.279***	0.280***
	(4.92)	(5.62)
N	4778	4263
* p<0.05, ** p<0.01, *** p<0.001		

4.2.3. Comparative Test of Regression Analysis

In this analysis, we explored the relationship between SC and COM across two distinct periods: 2015-2019 and 2020-2022. We also performed comparative tests to assess whether significant differences existed in this relationship before and after major public events, such as the pandemic. The coefficients for SC are -0.182 for the 2015-2019 period and -0.156 for 2020-2022. While both coefficients are negative and statistically significant, their absolute values are slightly lower during the pandemic, suggesting that the positive effect of SC on COM weakened during this time.

Table 11: Comparative Test of Regression Statistics.

	Coefficient	std.	err.	z	P>z	[95%]
Before19_mean						
sc	-0.182	0.049	-3.700	0.000	-0.279	-0.086
growth	0.053	0.016	3.220	0.001	0.021	0.085
roa	-1.089	0.121	-8.970	0.000	-1.327	-0.851
listage	0.002	0.008	0.250	0.803	-0.013	0.017
board	-0.031	0.036	-0.860	0.388	-0.103	0.040
_cons	0.279	0.078	3.580	0.000	0.126	0.432
Before19_lnvar						
_cons	-2.231	0.044	-50.170	0.000	-2.319	-2.144
After19_mean						
sc	-0.156	0.033	-4.720	0.000	-0.221	0.091
growth	0.009	0.015	0.590	0.555	-0.020	0.038
roa	-0.479	0.094	-5.100	0.000	-0.662	-0.295
listage	0.006	0.006	1.050	0.295	-0.005	0.017
board	-0.070	0.030	-2.350	0.019	-0.128	-0.011
_cons	0.280	0.062	4.530	0.000	0.159	0.401
After19_lnvar						
_cons	-2.545	0.053	-47.860	0.000	-2.649	-2.441
[Before19_mean]sc - [After19_mean] sc = 0, chi2 (1) = 0.27, Prob > chi2 = 0.6061						

The results of the comparative tests reveal a chi-square statistic of 0.27 for the difference in the equity concentration coefficient between “Before19_cean” and “After19_cean,” with a p-value of 0.6061. This indicates a difference in equity concentration coefficients before and after major public events; however, the difference is not statistically significant according to STATA regression analysis and comparative testing. From these findings, it can be concluded that there has been no substantial shift in the impact of SC on COM before and after major public events. In other words, while major public events may influence the broader economy and business operations, the relationship between SC and COM has remained largely unchanged. The positive effect of SC on COM has remained relatively stable throughout both periods. Thus, this study concludes that major public events do not significantly moderate the relationship between SC and COM. Despite shifts in the economic environment, the influence of SC on COM remains stable, indicating that shareholder control concentration consistently impacts corporate compliance, while changes in other economic factors have a limited effect on this relationship.

5. Conclusion

Based on the findings of the empirical analysis, several key conclusions can be drawn. First, a positive relationship exists between SC and COM, meaning that a higher concentration of equity correlates with stronger corporate compliance. Second, major crisis events appear to have minimal impact on the relationship between SC and COM, with no significant moderating effect observed between the two variables. The analysis clearly shows a positive correlation between SC and COM. Specifically, as equity concentration increases, so does the level of compliance, suggesting that companies with a higher concentration of equity tend to perform better in terms of legal and regulatory adherence. This implies that companies with a concentrated shareholder base benefit from enhanced compliance and governance. A high level of equity concentration means that a few major shareholders hold significant control, reducing the influence of minority shareholders. This concentrated structure increases accountability and encourages robust monitoring systems to mitigate risks, enhance compliance, and ensure adherence to regulations. Therefore, optimising equity structure can strengthen compliance, governance, and market competitiveness. Regarding the moderating effect of major public events, the study found that although such events impact business operations, the relationship between equity concentration SC and COM remained largely unchanged before and after these events.

The findings have important implications for policymakers and business leaders. In the face of major public events, businesses should not overly rely on short-term reactive measures. Instead, they should prioritise the long-term stability of shareholder structure and corporate governance. Specifically, companies with high SC should recognise the positive impact this structure has on compliance and governance. Even during major public events, this structure continues to support good compliance performance. Based on the results of this study, the following recommendations are offered to help businesses and policymakers enhance corporate governance and compliance:

1. Optimise the equity structure to improve corporate compliance: The positive relationship between SC and COM suggests that companies should consider strengthening shareholder control. Businesses should assess their current shareholder structure and consider reconfiguring it, if necessary, to optimise shareholder concentration and enhance governance.

2. Maintain governance stability during major public events: The study found that the moderating effect of major public events, such as the COVID-19 pandemic, on the relationship between SC and COM was not significant. This suggests that maintaining a stable governance structure during such events is crucial. Companies should avoid drastic changes to their shareholder structure in response to short-term pressures and instead focus on sustaining long-term stability in their governance frameworks.

5.1. Research limitations and Suggestions for further research

This paper has been writing with a rigorous attitude, but there are still some limitations, mainly in the following aspects: First, there are limitations in the definition of corporate compliance. Since the data used in this paper spans a long period of time, the data involved is relatively old. There may be some loopholes in the previous laws and regulations on corporate supervision, and the illegal and irregular behaviors of enterprises cannot be discovered or disclosed in a timely manner. Therefore, the overall accuracy of the data may be limited; second, for corporate compliance, it is only defined from two levels: compliance and non-compliance, but the severity of corporate non-compliance is not quantified, which makes the measurement of data rough, thereby affecting the accuracy of the relationship between variables; third, the definition of the nature of corporate ownership is relatively simple, and there is no detailed classification according to the actual type of ownership, which also makes the data analysis relatively simple.

Suggestions for future research can be addressed from the several limitations raised in this article. First, with the improvement of market laws, regulations and supervision systems, as well as the exposure of corporate non-compliance, the definition of corporate compliance can be more accurate. In addition, corporate compliance can be defined as more than just two values. In addition to defining compliance and non-compliance, the severity of non-compliant companies can be defined in different levels, so that the range of this variable value is increased and the results of the study can be more accurate. Second, with respect to the definition of ownership structure, future research can give different values according to the nature of ownership, so that the ownership structure can be studied not only from the quantitative perspective, that is, the concentration of equity, but also from the perspective of the type of equity.

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