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Analysis of the Mechanism by Which Corporate Social Responsibility Affects Corporate Performance in Manufacturing Enterprises under the Regulation of Corporate Governance

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Abstract

Against the backdrop of economic globalization and the growing acceptance of sustainable development concepts, China's economy has gradually transformed its development model. However, it still faces numerous challenges, with issues such as product quality and environmental protection becoming increasingly evident. In recent years, many enterprises have undergone transformations due to national policy adjustments, with their development models continuously evolving and internal management repeatedly tested by governance strategy adjustments. For the vast majority of enterprises, whether they can fulfill social responsibilities and ensure healthy, sustainable development remains the key to their long-term growth and profitability. Based on the above background, to further explore corporate social responsibility, this paper takes A-share companies listed in China between 2019 and 2023 as research samples. Based on the relationship between corporate governance and corporate performance, it is found that the degree of corporate social responsibility practices in listed companies is positively correlated with corporate performance. From the perspective of corporate governance, the increase in equity concentration can strengthen the positive correlation between corporate social responsibility and corporate performance. This indicates that a sound corporate governance system significantly promotes corporate operations and social responsibility, with various elements of corporate governance playing a key role in coordinating these two aspects. This paper proposes corresponding suggestions for the development and operation of listed companies regarding improving the social responsibility system, enhancing product competitiveness, and optimizing corporate governance structures.

Keywords

Corporate Social Responsibility; Corporate Governance; Corporate Performance.

1. Introduction

1.1. Research Background

As China's economy transitions from rapid growth to high-quality development, this marks a new era in economic progress. Meanwhile, the nation's industrial structure is undergoing profound restructuring and upgrading, with enterprises demonstrating vigorous growth momentum. Therefore, the importance of corporate social responsibility (CSR) cannot be overstated. It not only impacts a company's public image and social recognition but also serves as the cornerstone for achieving long-term sustainable development and enhancing core competitiveness.

Corporate governance plays a vital role in ensuring stable and efficient business operations while enhancing overall performance, serving as a robust foundation for enterprises to

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effectively fulfill their social responsibilities. After over three decades of corporate governance reforms, China has made significant progress yet still faces certain challenges. A well-established corporate governance framework can significantly optimize resource allocation, resolve internal conflicts, and strengthen control mechanisms, thereby substantially improving operational efficiency. In the face of new economic conditions and market challenges, the management models and internal governance systems of Chinese listed companies should keep pace with the times through in-depth exploration, rigorous analysis, and practical testing. High-quality corporate governance mechanisms not only help enterprises achieve outstanding operational performance but also lay a solid foundation for fulfilling their social responsibilities.

1.2. Significance of the Study

1.2.1. Theoretical Implications

This study is based on a systematic review of previous academic achievements and reconstructs the core theories regarding corporate governance, corporate social responsibility, and corporate performance. Under this solid theoretical framework, we employ actual data from China-listed companies to empirically investigate the interrelationships among these three factors. It is hoped that the subsequent research in this paper will provide a reference for future studies on the relationships between corporate social responsibility, corporate governance, and corporate performance.

1.2.2. Practical Implications

This study aims to help enterprises deeply understand and properly handle the inherent connection between internal governance, social responsibility, and business performance. By strengthening internal governance structures and actively fulfilling social responsibilities, companies can enhance operational efficiency and economic benefits, thereby ensuring long-term vitality and dynamism.

1.3. Literature Review

Multiple studies have explored the relationship and influencing factors between corporate social responsibility (CSR) and corporate performance: Regarding the direct impact of CSR on corporate performance, Pandiangan et al. (2019) based on data from listed companies on the Indonesian Stock Exchange; Xindong et al. (2018) combined stakeholder perspectives with data from companies listed on the China Growth Enterprise Market; He et al. (2019) focused on enterprises in industries such as mining in China; and Chang et al. (2018) utilized data from companies listed on the Shanghai Stock Exchange. All these studies have confirmed through methods such as regression analysis and panel data models that CSR has a positive promoting effect on corporate performance [1][2][3][4]. In the context of corporate governance and related factors: Anugrah et al. (2020) found that good corporate governance can drive CSR implementation, enhance corporate performance, and reinforce their positive correlation, while both factors directly or indirectly influence performance [5]. Agustia (2018) noted that effective managers can strengthen the positive relationship between CSR and financial performance through their capabilities [6]. Fuadah et al. (2019) studied Indonesian food and beverage companies and revealed that corporate financial scale and CSR have a significant positive impact on operational performance, but the specific roles of boards/committees show a negative correlation with performance [7]. Alden (2019) discovered through partial least squares regression that board characteristics (independence, size, gender diversity) significantly affect both CSR and corporate performance [8]. Aamir (2024) validated from an international perspective that CSR committees, as governance mechanisms, can significantly improve the conversion efficiency of CSR into financial performance [9]. Elisabete et al. (2023) emphasized that synergizing improved corporate governance with proactive CSR practices serves as a dual driver for enhancing corporate performance [10]. Regarding regulatory and

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contextual effects: Akhter et al. (2023), using BRICS enterprises as a sample, proposed that CSR exerts moderating effects between corporate governance and performance, where good governance can indirectly enhance performance through high-quality CSR [11]. Faiza et al. (2023) further emphasized that robust corporate governance and firm reputation serve as key contextual factors enabling CSR disclosures to exert positive market effects and improve performance, while governance quality also impacts the credibility and effectiveness of CSR communication[12].

Through systematic review and analysis of relevant literature, current research in this field has accumulated substantial academic groundwork, establishing a comprehensive and mature theoretical framework. This theoretical system not only demonstrates solid academic foundations but also provides enterprises with all-around practical guidance and robust theoretical support for strategic development.Most academic experts widely agree that corporate social responsibility (CSR) can significantly enhance business performance.

1.4. Methodology

The literature synthesis method. Through systematic collection and in-depth analysis of research findings from domestic and international scholars, this approach aims to achieve dual academic objectives. Throughout the process, we will meticulously examine various scholars 'perspectives and insights, distilling core consensus and contentious issues regarding corporate social responsibility fulfillment, corporate governance system construction, and their impact on operational efficiency. Furthermore, we will synthesize and clarify existing literature's narrative models and quantitative measurement methods concerning the relationship between corporate social responsibility, corporate governance, and corporate performance. This provides precise theoretical guidance and methodological support for subsequent empirical analysis, ensuring the entire research is grounded in rigorous and solid theoretical foundations.

Empirical Research Method. Leveraging the Guotai An Database, we systematically collected relevant data from listed companies to conduct rigorous empirical analysis through hypothesis testing. We meticulously selected all required variables and indicators, followed by efficient correlation analyses using Stata software. After thorough preprocessing of the sample data, we adhered to scientific research protocols: descriptive statistics revealed fundamental data characteristics; correlation analysis explored variable interdependencies; multiple linear regression established predictive models with validation; and robustness tests ensured result reliability. This rigorous workflow comprehensively validated the constructed research model, ultimately yielding conclusions grounded in solid empirical evidence.

2. Theoretical Basis and Hypothesis Study

2.1. Definition of Relevant Concepts

2.1.1. Corporate Social Responsibility

Corporate social responsibility (CSR) is an advanced business philosophy that advocates for companies to actively fulfill their obligations to diverse stakeholders while pursuing economic benefits and faithfully fulfilling shareholder duties. These stakeholders include employees, consumers, local communities, and the ecological environment. The core objective lies in driving sustainable development through comprehensive social accountability. CSR emphasizes that businesses should not only pursue economic gains but also pay attention to their societal and environmental impacts, achieving coordinated development across economic, social, and environmental dimensions. This framework primarily encompasses responsibilities towards employees, consumers, the environment, communities, and all stakeholders.

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2.1.2. Corporate Governance

Corporate governance encompasses a framework of rules, controls, policies, laws, and institutions that guide, manage, and regulate corporate conduct. Effective governance ensures management accountability to shareholders and stakeholders while safeguarding long-term interests and sustainability. It enhances operational efficiency and market competitiveness, boosts investor confidence, reduces capital costs, and advances corporate social responsibility initiatives.

2.1.3. Enterprise Performance

Corporate performance refers to the extent to which an enterprise achieves its operational objectives within a specific period, serving as a comprehensive indicator of organizational efficiency and effectiveness. Performance management constitutes a systematic process encompassing goal-setting, planning, execution, monitoring, and evaluation. Through continuous improvement and optimization, companies can enhance overall performance, strengthen competitiveness, and create greater value for stakeholders. Effective performance management enables enterprises to better adapt to market changes, seize opportunities, and effectively address challenges.

2.2. Relevant Theories

2.2.1. Stakeholder Theory

Stakeholder theory is a management philosophy that posits organizational success depends not only on maximizing shareholder returns but also on cultivating positive relationships with all stakeholders. At its core, this theory advocates that organizations should holistically consider all individuals and groups whose activities and outcomes are deeply connected to their operations. Stakeholders encompass any individuals or groups that influence corporate decisions or whose interests are affected by business actions, including employees, customers, suppliers, communities, governments, and even the natural environment. The theory emphasizes balancing diverse interests during decision-making rather than prioritizing shareholder profits alone. Long-term corporate growth relies on collaborative efforts from all stakeholders-such as employee dedication, customer loyalty, and government-protected public environments. Ultimately, businesses operate within a dynamic ecosystem shaped by multiple participants, where their collective fate is molded through the combined efforts of all stakeholders.

2.2.2. Principal-agent Theory

Principal-agent theory, a fundamental concept in economics, management, and law, examines agency issues arising when one party (the principal) engages another (the agent) to perform specific tasks or make decisions on their behalf despite incomplete alignment of interests. These issues manifest in two primary dimensions: First, the relationship between shareholders and management. Given inherent information asymmetry, the party with greater information advantage may conceal unfavorable information to protect its own interests. Second, the dynamics between major shareholders and minority shareholders. While pursuing profit maximization, major shareholders 'decision-making behaviors may significantly threaten minority shareholders' rights. In concentrated equity structures, these influential stakeholders might exploit their control to compromise the interests of weaker minority shareholders.

2.2.3. Social Contract Theory

Social contract theory, a cornerstone of political and moral philosophy, examines the dynamic between individuals and societal entities while establishing their legitimacy. This framework posits that people voluntarily enter social arrangements to safeguard fundamental rights-including life, property, and liberty-through which governments are formed and citizens' rights with authorities are defined. The theory further provides a governance model for corporations,

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recognizing an implicit social contract where businesses contribute to society in exchange for operational support. Beyond fulfilling economic obligations, companies must align their actions with societal expectations, enhance social and economic welfare, and adapt to evolving circumstances. By meeting these demands, enterprises can earn societal respect as modern organizations that truly serve their communities.

2.3. Relevant Assumptions

2.3.1. The Impact of Corporate Social Responsibility on Corporate Performance

Stakeholder theory posits that while pursuing economic benefits, enterprises should regard social responsibility fulfillment as an effective approach to build close connections with stakeholders and achieve mutual development. By comprehensively and actively fulfilling social responsibilities across multiple dimensions-including economic performance, environmental protection, regulatory compliance, customer service, community engagement, employee welfare, government-enterprise collaboration, and partnership maintenance-listed companies can not only gain widespread social recognition and trust but also reap significant benefits at various levels. This approach ultimately facilitates long-term stable development and value appreciation for the enterprise.

In today's era of deep digitalization, where resource transmission speeds have dramatically increased and communication channels have diversified, physical assets have become increasingly accessible and replicable. However, the true competitive advantages for enterprises lie in intangible elements-- such as innovative spirit, corporate reputation, business credibility, and core technologies. These form unique barriers that distinguish companies in fierce competition. On one hand, listed companies actively fulfilling social responsibilities sends a positive signal demonstrating their high-quality credibility to external stakeholders. This helps build a solid corporate credit image among investors, thereby enhancing both corporate reputation and intrinsic market competitiveness, injecting strong momentum into business development. On the other hand, from a risk management perspective, proactive corporate responsibility fulfillment actually reduces non-systematic risks. It stabilizes stock prices, mitigates volatility risks, and significantly boosts corporate innovation vitality while strengthening overall competitiveness. This leads to the following hypothesis:

H1: In listed companies, corporate social responsibility has a positive effect on corporate performance.

2.3.2. The Moderating Role of Corporate Governance

The principal-agent theory posits that shareholders, driven by self-interest protection motives, find their presence as major shareholders enhances investors' influence over corporate governance and decision-making. From a stakeholder perspective, major shareholders should therefore support corporate social responsibility (CSR) initiatives, as such activities contribute to long-term organizational growth. While empirical studies indicate that major shareholders often limit CSR efforts to minimum required standards rather than proactive engagement, both supporters and opponents of CSR implementation will monitor management to prevent actions that damage corporate reputation and development. Based on this analysis, the following hypotheses are proposed:

H2: Good corporate governance has a positive impact on the relationship between CSR and corporate performance.

3. Empirical Research Design

3.1. Sample Selection and Data Sources

In accordance with the industry classification standards issued by the China Securities Regulatory Commission (CSRC) in 2012, this study specifically selected valid data from 9,550

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enterprises listed on the A-share market between 2019 and 2023 as research samples. The aim is to conduct an in-depth analysis of the intrinsic connections among corporate social responsibility, corporate governance, and business performance. To ensure the authenticity and objectivity of research findings while minimizing human errors and subjective biases, rigorous pre-screening and processing were first implemented on the aforementioned large-scale dataset:

Screen out those enterprises whose data disclosure is obviously missing or whose financial statements show abnormal data conditions.

To ensure data accuracy and stability, we excluded ST-listed companies and financial institutions from the sample. This decision was made because these listed companies' financial information often contains reliability issues. Including them in the analysis could easily lead to data processing anomalies, potentially causing adverse outcomes such as system errors.

3.2. Selection of Variable Indicators

3.2.1. The Explained Variable

This study employs Return on Assets (ROA) as the core explanatory variable. In evaluating corporate performance, academia typically adopts two approaches: absolute values and relative ratios. However, given that absolute metrics are prone to inaccuracies caused by differences in firm size, relative indicators are preferred to ensure comparability across samples and achieve precise measurement of corporate performance. Based on research by Xindong[2]and He L et al.[3], the ROA calculation formula "ROA = net profit/total assets" is selected to quantify and assess corporate performance.

3.2.2. Interpretation of Variables

Based on scholarly research, this study defines the explanatory variable as the Corporate Social Responsibility Index (CSR). The data we utilize originates from corporate social responsibility evaluation results, specifically the overall CSR index. This index value follows standard interpretation: higher numbers indicate better performance in fulfilling social responsibilities.

3.2.3. Regulating Variables

This study adopts equity concentration (Cr) as a moderating variable. Equity concentration is specifically measured by the proportion of shares held by the top ten shareholders in a company. When this ratio significantly increases, it indicates heightened equity concentration, thereby strengthening the influence of these major shareholders on corporate decision-making processes. Therefore, this research selects "equity concentration (Cr)= total shares held by the top ten shareholders / total share capital" to quantify corporate governance variables through this data.

3.2.4. Control Variables

Asset-liability ratio (Lev)

The debt-to-asset ratio, a crucial financial metric, measures the proportion of total liabilities to total assets. This ratio plays a vital role in assessing corporate financial risks and debt repayment capacity. Companies should prudently manage this ratio based on operational conditions, industry characteristics, market environment, and other factors. By maintaining a healthy financial status through scientific adjustments, businesses can ensure stable operations and sustainable growth.

Growth (Growth)

The foundation of corporate profitability lies in its growth potential, which serves as the core element ensuring long-term sustainable development and enhancing self-sufficiency capabilities. A company's higher revenue growth rate typically indicates more significant

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overall operational performance. Based on this rationale, this paper selects revenue growth rate as the specific indicator for evaluating corporate growth potential.

Enterprise size (Size)

The fundamental reason for disparities in economic strength among enterprises lies in their varying scales. Compared to smaller companies, large-scale enterprises demonstrate significant advantages in comprehensive economic capabilities. They not only invest more heavily but also benefit from scale effects that reduce risks and market competition pressures. Additionally, large corporations face relatively lighter financial burdens when fulfilling social responsibilities. These combined factors enable them to achieve higher operational performance. Following academic conventions, this study adopts the natural logarithm of total assets as a key indicator for measuring enterprise scale.

Total asset turnover (Tat)

Total asset turnover ratio is a key metric that measures a company's operational efficiency over a specific period. It is calculated by dividing net sales revenue by the average total assets during the same period. This ratio reveals a company's ability to generate sales revenue through its full asset base and the efficiency of converting capital investments into operational results. Companies with higher total asset turnover ratios typically demonstrate superior performance. Therefore, businesses should prudently assess their total asset turnover ratios based on their specific circumstances, which contributes to sustainable corporate growth.

Year (Year)

This variable is a virtual category, and its assignment rule is as follows: if the sample corresponds to the specific year, it is assigned a value of 1; otherwise, if the sample does not belong to the year, it is assigned a value of 0.

Industry (Ind)

This variable belongs to the virtual category, and its setting criteria follow the industry category standards listed in the Industry Classification of Listed Companies by China Securities Regulatory Commission.

Table 1. Variable definitions

class	Variable name	variable symbol	variable-definition
explained variable	Corporate performance	Roa	Net profit/total assets*100%
explanatory variable	Corporate Social Responsibility	Csr	The total index of social responsibility in the corporate social responsibility score
regulated variable	Equity concentration	Cr	Total shares held by the top 10 shareholders/total share capital
controlled variable	asset-liability ratio	Lev	Total liabilities/total assets
	Growth	Growth	(Operating revenue of the current year-operating revenue of the previous year)/ operating revenue of the previous year
	scale	Size	Natural logarithm of total assets
	turnover of total capita	Tat	Total sales revenue/average total assets
	a particular year	Year	The virtual variable is 1 if the sample is in that year, otherwise it is 0
	trade	Ind	Set virtual variables according to the industry of listed companies in China Securities Regulatory Commission

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3.3. Construction of Empirical Model

Through the review of relevant literature, it is found that most scholars use multiple regression model for analysis. According to the research ideas and reference research methods proposed in this paper, the model construction of the above variables is carried out in two steps:

Based on hypothesis H1, the following model is constructed:

$$Roa_{i,t} = \alpha_0 + \alpha_1 Csr_{i,t} + \alpha_2 Lev_{i,t} + \alpha_3 Growth_{i,t} + \alpha_4 Size_{i,t} + \alpha_5 Tat_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \quad (1)$$

Based on hypothesis H2, the following model is constructed:

$$Roa_{i,t} = \beta_0 + \beta_1 Csr_{i,t} + \beta_2 Cr_{i,t} + \beta_3\ Csr_{i,t} * Cr_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Growth_{i,t} + \beta_6 Size_{i,t} + \beta_7 Tat_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \quad (2)$$

i represents the i-th firm, and t represents the t-th year; α0 and β0 denote the intercept terms of their respective models; α1 to α5 stand for the regression coefficients of the explanatory variables in the first hypothetical model, while β1 to β7 represent the regression coefficients of the explanatory variables in the second hypothetical model; is the random error term; Roa refers to corporate performance; Csr denotes corporate social responsibility; Cr represents ownership concentration; Lev stands for the asset-liability ratio; Growth refers to firm growth; Size denotes firm size; Tat represents total asset turnover; and is the abbreviation for the sum of year dummy variables, with being the abbreviation for the sum of industry dummy variables.

4. Empirical Test and Result Analysis

4.1. Descriptive Statistics

This paper selects A-share listed companies as the research sample, and takes the data from 2019 to 2023 as the observation sample. The descriptive statistics are shown in Table.

Table 2. Descriptive statistics

VARIABLES	N	mean	sd	min	max
Roa	9550	0.039	0.066	-0.224	0.195
Csr	9550	71.670	12.410	0	84.780
Cr	9550	0.591	0.152	0.236	0.906
Lev	9550	0.411	0.202	0.055	0.900
Size	9550	22.300	1.312	19.990	26.410
Growth	9550	0.117	0.301	-0.592	1.393
Tat	9550	0.625	0.419	0.063	2.610

As shown in Table 2 descriptive statistical analysis:

Descriptive statistics of the dependent variable reveal that the average Roa stands at 0.039, indicating relatively low performance across many Chinese enterprises. The range of values spans from-0.224 to 0.195, with a standard deviation of 0.066, demonstrating significant variations in corporate performance. Notably, the presence of negative ROA values suggests some companies are operating at a loss, likely due to substantial impacts during the pandemic.

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From the descriptive statistics of explanatory variables, it can be seen that the average value of corporate social responsibility index (Csr) is 71.670, the maximum value is 84.780, and the minimum value is 0, indicating that the overall social responsibility index of A-share listed enterprises is relatively high. Although some corporate social responsibility index is 0, the high average value indicates that the overall situation is also good.

Through descriptive statistical analysis of the moderating variables, we found that the data distribution of equity concentration (Cr) exhibits the following characteristics: its maximum value is 0.906, minimum value is 0.236, and average value is 0.591. These statistical results indicate that the equity concentration levels of the surveyed enterprises are generally at a relatively high level. Further observation of the significant gap between the maximum and minimum values clearly demonstrates substantial individual differences in equity concentration among enterprises.

Through descriptive statistical analysis of control variables, we obtain the following insights: The average enterprise size ranges from 19.990 to 26.410, with a standard deviation of 0.202. This data reveals that the distribution of sample enterprises' sizes is relatively concentrated, indicating that overall scale differences among companies are not significant. The average debt-to-asset ratio (Lev) stands at 0.411, with a maximum value of 0.900 and minimum of 0.055. Overall, most companies maintain similar debt levels. The growth rate averages 0.117 with a standard deviation of 0.301, while extreme values range from 1.393 to-0.592. Although companies generally show growth momentum, the average growth rate remains low, suggesting weak overall growth drivers. Further examination of maximum and minimum values reveals significant disparities in growth speed among enterprises-some demonstrate strong growth momentum, while others face slow development or even negative growth challenges. The average total asset turnover ratio (Tat) reaches 0.625 with a high standard deviation of 0.419, ranging from 2.610 to 0.063. These figures highlight notable differences in sales efficiency and asset utilization effectiveness across companies, indirectly reflecting significant variations in operational performance among enterprises.

4.2. Relevance Analysis

4.2.1. Correlation Analysis

Before conducting multiple regression analysis, we performed detailed correlation analyses on all variables in the study to ensure their relationships held research value. The correlations among these variables are clearly presented in Table 3. As shown in the data, the correlation coefficient between corporate performance and corporate social responsibility (Csr) is 0.085, which is statistically significant at the 1% level. This indicates that Csr plays a positive role in enhancing corporate performance, thereby confirming the validity of Hypothesis H1.

Table 3. Correlation analysis

	Roa	Csr	Lev	Size	Growth	Tat	Cr
Roa	1						
Csr	0.085***	1					
Lev	-0.374***	0.029***	1				
Size	-0.017***	0.174***	0.508***	1			
Growth	0.326***	0.043***	0.012**	0.028***	1		
Tat	0.219***	0.040***	0.134***	0.064***	0.204***	1	
Cr	0.292***	0.011***	-0.117***	0.074***	0.068***	0.084***	1

* p < 0.1, ** p < 0.05, *** p < 0.01

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Furthermore, the correlation coefficients between five variables-equity concentration, firm size, debt-to-asset ratio, growth potential, and total asset turnover rate-also demonstrate significance at the 1% level. These statistically significant correlations strongly validate the scientific validity and rationality of the variables selected in this study.

4.2.2. Co-linearity Analysis

Through analysis of correlation study results, we have confirmed that no significant multicollinearity exists among the variables used in this paper. It should be noted that correlation analysis serves as an initial exploratory tool to provide fundamental understanding. To enhance the precision of research conclusions, we must conduct deeper analysis on core variables and control variables. Specifically, this step involves rigorous detection and evaluation of multicollinearity using the Variance Inflation Factor (VIF) test. The results are shown in Table 4 above.

As shown in Table 4, the standard variance inflation factors (VIF) for both core and control variables in this study all remain below 2. According to established academic standards, VIF values under 10 indicate no significant multicollinearity among variables. This finding conclusively confirms the absence of multicollinearity issues, thereby establishing a solid foundation for conducting multivariate regression analysis.

Table 4. VIF test

Variable	VIF	1/VIF
Size	1.400	0.716
Lev	1.380	0.727
Tat	1.060	0.940
Growth	1.050	0.956
Csr	1.040	0.963
Mean VIF	1.180	

4.3. Regression Analysis

Based on preliminary validation results, we constructed corresponding regression models and conducted in-depth analysis of relevant hypotheses. During the model selection process, we first performed F-tests and Hausman tests on panel data to ensure model validity and robustness, with results presented in Tables 5 and 6.

Table 5. F-test

model	F statistics	P price
Model 1	4.140***	0.000
Model II	4.060***	0.000

Table 6. Hausman test

model	random effect model	fixed effect model
Hypothesis	Chi2=501.560	Prob > chi2 = 0.000
Scenario 2	Chi2=444.550	Prob > chi2 = 0.000

Analysis of the table reveals that the F-test demonstrates statistical significance at the 1% confidence level, with corresponding P-values precisely calculated as 0.000. This conclusion justifies applying a fixed effects model to both datasets. Furthermore, the Hausman test yielded an identical P-value of 0.000, conclusively demonstrating the inapplicability of random effects and pooled effects models. Both validation results confirm the necessity of adopting a fixed

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effects model. Through rigorous statistical testing and elimination procedures, we have ultimately established the fixed effects model as the appropriate analytical framework.

Table 7. Multiple regression analysis

	(1)	(2)
	Roa	Roa
Csr	0.038***	0.033***
	(4.61)	(9.98)
Cr		-0.130***
		(-13.03)
Cr*Csr		0.004***
		(9.85)
Lev	-0.177***	-0.156***
	(-47.21)	(-42.73)
Size	0.011***	0.009***
	(20.72)	(16.69)
Growth	0.063***	0.060***
	(30.41)	(29.97)
Tat	0.035***	0.031***
	(19.24)	(18.69)
Year	YES	YES
Ind	YES	YES
cons	-0.185***	-0.343***
	(-16.05)	(-17.85)
N	9550	9550
adj. R^2	0.331	0.372

* p < 0.1, ** p < 0.05, *** p < 0.01

After conducting a comprehensive analysis of the model, we now turn to empirical research on the interconnections between corporate social responsibility (Csr), corporate governance (specifically manifested through equity concentration), and corporate performance. The detailed results are presented in Table 4.6 above. Based on the regression analysis data shown in Table 7, we interpret as follows:

First, focusing on Model 1, which primarily examines the impact of corporate social responsibility (Csr) on corporate performance. The data shows an R^2 value of 0.331, with a coefficient of Csr at 0.038, achieving the 1% significance level. This leads to the conclusion that CSR implementation effectively enhances corporate performance, thereby confirming Hypothesis H1. Second, Model 2 investigates whether and how equity concentration strengthens the relationship between Csr and corporate performance. Similarly, this model demonstrates excellent fit with an R^2value of 0.372. Notably, the interaction term Cr*Csr reaches 0.004 at the 1% significance level, while Csr's coefficient remains at 0.033 also at this level. This dual significance evidence reveals that increased equity concentration significantly enhances the positive relationship between CSR and corporate performance, validating Hypothesis H2.

4.4. Robustness Tests

Given that data collected over the past five years might have been affected by exceptional circumstances, potentially compromising the reliability of research conclusions, we decided to incorporate earlier data from 2016 to 2018 in this analysis. This adjustment expanded our dataset to include eight years of observations spanning 2016-2023, totaling 11,320 records.

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Based on this expanded sample size, we conducted a new regression analysis to refine our findings.

Table 8. Robustness tests

	(1)	(2)
	Roa	Roa
Csr	0.035***	0.030***
	(3.91)	(8.98)
Cr		-0.248***
		(-13.17)
Cr*Csr		0.002***
		(8.79)
Lev	-0.159***	-0.141***
	(-44.27)	(-40.24)
Size	0.010***	0.007***
	(18.78)	(14.09)
Growth	0.017***	0.013***
	(0.59)	(0.55)
Tat	0.025***	0.023***
	(7.86)	(7.76)
Year	YES	YES
Ind	YES	YES
_cons	-0.136***	-0.248***
	(-12.45)	(-15.46)
N	11320	11320
adj. R^2	0.226	0.273

* p < 0.1, ** p < 0.05, *** p < 0.01

The results are presented in Table 8: In Model 1, the coefficient of Corporate Social Responsibility (Csr) is estimated at 0.035 and statistically significant at the 1% level, clearly demonstrating that CSR fulfillment has a positive impact on corporate performance, which fully aligns with the regression results predicted by Hypothesis H1. Further examination of Model 2 reveals that the coefficient of Cr*Csr is 0.002, also confirmed at the 1% significance level. This indicates that increased equity concentration enhances the positive correlation between CSR implementation and corporate performance, consistent with Hypothesis H2's regression predictions.

5. Research Conclusion

There exists a positive correlation between corporate social responsibility (CSR) implementation and organizational performance in listed companies. Regardless of whether governance factors are considered, fulfilling CSR obligations consistently demonstrates significant positive impacts on business outcomes. Specifically, when companies actively engage in CSR initiatives, they gain government policy support, attract investor capital inflows, strengthen shareholder trust, and enhance employee satisfaction. These benefits not only boost brand influence and market competitiveness but also effectively mitigate operational risks, creating broader development opportunities. Ultimately, these advantages translate into tangible economic gains that improve financial performance while increasing social value contributions, thereby holistically driving corporate performance enhancement.

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Enhancing equity concentration strengthens the positive correlation between corporate social responsibility and business performance. When ownership becomes more concentrated, major shareholders gain stronger oversight capabilities. This enables effective supervision of managerial conduct, prevents them from exploiting equity privileges for personal gain, and safeguards the company's substantive interests. Such measures establish a solid foundation for the enterprise's long-term stable development.

In summary, social responsibility is becoming increasingly vital for listed companies. Proactively fulfilling social responsibilities not only enhances operational efficiency but also demonstrates that a robust corporate governance system can significantly boost both business performance and social accountability. The various components of corporate governance play a crucial mediating role between social responsibility and organizational effectiveness.

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