

The Impact of Corporate Social Responsibility to Government on Organizational Performance: The Mediating Role of Green Tax Incentives and Green Technology Innovation

Huang Dongmei

Universiti Tun Abdul Razak

huang.dongmei@ur.unirazak.edu.my

ABSTRACT

This study analyzes the impact of corporate social responsibility toward government (CSRG) on organizational performance in Guangdong's manufacturing industry and explains why green tax incentives and green technology innovation influence this relationship. Using secondary panel data from 4,488 firm-year observations, this research applies a panel data regression model estimated with Stata software. Descriptive statistics, correlation analysis, and variance inflation factor (VIF) tests confirm the reliability of the variables and indicate no multicollinearity problems. The empirical results show that CSRG has a significant positive impact on organizational performance. Firms that actively fulfill their responsibilities toward government institutions achieve higher financial performance. In addition, CSRG has a significant positive impact on green tax incentives, while its effect on green technology innovation is not statistically significant. Further regression results indicate that green tax incentives positively affect organizational performance and partially mediate the relationship between CSRG and organizational performance. However, the mediating effect of green technology innovation is not significant. Robustness tests using ROE instead of ROA confirm the stability of the results. These findings explain why government-oriented CSR contributes to sustainable corporate performance and provide policy implications for promoting green development in the manufacturing sector.

Keywords: Corporate social responsibility to government, Green tax incentives, Green technology innovation, Manufacturing industry, Organizational performance

1. INTRODUCTION

Corporate social responsibility (CSR) has become a central topic in global economic governance and sustainable development. Firms are increasingly expected to balance economic objectives with social and environmental responsibilities. Governments, investors, and other stakeholders have paid growing attention to the role of CSR in shaping firm performance and long-term sustainability (Boubakri et al., 2021; Li & Wang, 2023; Zhang et al., 2022). In emerging economies, government institutions play a particularly important role in influencing corporate behavior, as regulatory frameworks and fiscal policies strongly affect firms' strategic decisions and performance outcomes (Wang & Ye, 2024; Yu et al., 2024).

China's manufacturing sector represents one of the largest industrial systems globally and serves as a key driver of national economic development. However, rapid industrialization has also led to significant environmental challenges, including high carbon emissions, excessive resource consumption, and pollution. In response, the Chinese government has implemented a series of environmental governance policies aimed at promoting sustainable development among firms (Huang et al., 2024; Zhao & Sun, 2024). Among these policy instruments, green tax incentives and support for green technology innovation have emerged as important mechanisms for encouraging environmentally responsible corporate behavior (Wu et al., 2024; Liu et al., 2023).

Corporate social responsibility toward government (CSRG) refers to firms' responsibilities in complying with government regulations, supporting public policies, and contributing to social and economic development. Firms that actively fulfill these responsibilities are more likely to gain policy support, regulatory legitimacy, and financial incentives, which can significantly enhance their performance and long-term competitiveness (Wang & Ye, 2024; Boubakri et al., 2021). Environmental policy instruments, such as green tax incentives and green innovation support, further explain why CSRG may influence firm performance through institutional channels (Wu et al., 2024; Zhao et al., 2024).

Empirical studies indicate that CSR activities improve corporate reputation, reduce regulatory risks, and enhance financial performance (Zhang et al., 2022; Li & Wang, 2023). At the same time, government policies play a critical role in promoting corporate green transformation, influencing firms' environmental behavior and innovation activities (Huang et al., 2024; Liu et al., 2023; Hao & He, 2022). Moreover, green innovation and policy support are increasingly recognized as important drivers of corporate competitiveness and sustainable development.

Despite these advances, existing research primarily focuses on the overall impact of CSR or environmental policies on corporate performance, while limited attention has been paid to the specific role of corporate social responsibility toward government. In addition, the mechanisms explaining why CSRG influences corporate performance through policy-related incentives remain insufficiently examined. In particular, the mediating roles of green tax incentives and green technology innovation in the relationship between CSRG and organizational performance remain unclear.

Addressing this gap is particularly important in the context of China's manufacturing sector, where government institutions play a dominant role in resource allocation and environmental governance. Firms that actively fulfill responsibilities toward government institutions may obtain greater access to fiscal incentives and policy support, which can significantly affect financial performance and sustainable development outcomes.

Therefore, this study analyzes the impact of corporate social responsibility toward government on organizational performance in Guangdong's manufacturing industry. Using panel data and a panel regression model estimated with Stata software, this study explains why green tax incentives and green technology innovation influence the relationship between CSRG and corporate performance.

This study contributes to the literature in three ways. First, it extends CSR research by focusing on the government dimension of corporate social responsibility and its impact on firm performance. Second, it provides empirical evidence on the role of environmental policy instruments, particularly green tax incentives, in shaping corporate financial outcomes. Third, it identifies the mechanisms through which CSRG affects organizational performance by incorporating green technology innovation and policy incentives into the analytical framework.

From a theoretical perspective, this study is grounded in stakeholder theory, which posits that firms should respond to the expectations of key stakeholders, including governments, investors, and society, in order to enhance legitimacy and performance outcomes (Freeman, 1984; Donaldson & Preston, 1995). In the context of China's policy-oriented economy, government institutions represent a critical stakeholder that significantly influences firms' access to resources, regulatory support, and long-term development opportunities. Accordingly, corporate social responsibility toward government can be understood as a strategic response to stakeholder expectations, which may enhance organizational performance both directly and indirectly through policy-related mechanisms. To address these research gaps, this study investigates the impact of corporate social responsibility toward government (CSRG) on organizational performance in Guangdong's manufacturing industry.

In particular, it examines the underlying mechanisms through which CSRG affects firm performance, focusing on the mediating roles of green tax incentives (GTX) and green technology innovation (GTI). Accordingly, this study is guided by the following research questions:

RQ1: Whether corporate social responsibility toward government significantly impacts organizational performance in Guangdong's manufacturing industry.

RQ2: Whether green tax incentives mediate the impact of corporate social responsibility toward government on organizational performance in Guangdong's manufacturing industry.

RQ3: Whether green technology innovation mediates the impact of corporate social responsibility toward government on organizational performance in Guangdong's manufacturing industry.

2. LITERATURE REVIEW

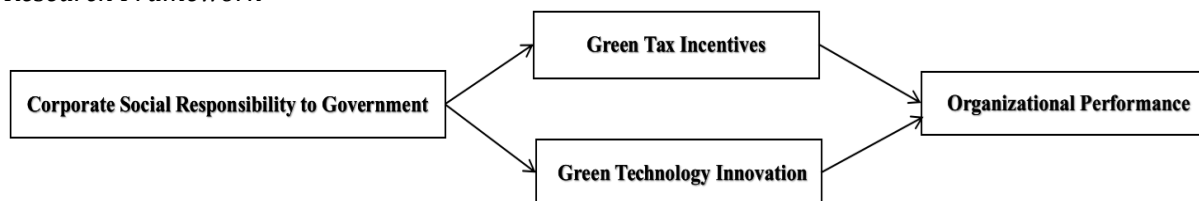
2.1 Theoretical Foundation and Research Framework

This study is grounded in stakeholder theory, which posits that firms must fulfill their obligations to various stakeholder groups in order to achieve sustainable performance. Specifically, stakeholder theory emphasizes the importance of responding to the expectations of key stakeholders, including shareholders, employees, suppliers, customers, and government (Freeman, 1984; Donaldson & Preston, 1995). Among these stakeholders, the government plays a particularly influential role in policy-driven economies such as China, where regulatory frameworks, fiscal policies, and institutional arrangements significantly shape corporate behavior.

Corporate Social Responsibility (CSR), particularly Corporate social responsibility toward government (CSRG), is therefore critical for aligning corporate strategies with public policy objectives. Firms that actively respond to government priorities—such as sustainable development, environmental protection, and green transformation—are more likely to obtain fiscal incentives, subsidies, and regulatory legitimacy. These advantages, in turn, enhance organizational performance by improving resource access, strengthening legitimacy, and promoting long-term competitiveness (Boubakri et al., 2021; Liu et al., 2023).

Based on the above theoretical arguments, this study proposes the research framework illustrated in Figure 1. The framework posits that CSRG influences organizational performance (OP) both directly and indirectly through two mediating mechanisms: green tax incentives (GTX) and green technology innovation (GTI).

Figure 1
Research Framework



Note. This framework illustrates the mediating roles of green tax incentives (GTX) and green technology innovation (GTI) in the relationship between corporate social responsibility toward government (CSRG) and organizational performance (OP). CSRG affects OP both directly and indirectly through GTX and GTI.

2.2 Corporate Social Responsibility toward Government and Organizational Performance

A growing body of literature suggests that corporate social responsibility (CSR) is positively associated with firm performance. From a stakeholder perspective, firms that actively respond to government expectations can enhance legitimacy, reduce regulatory risks, and improve access to critical resources, thereby achieving superior performance (Flammer, 2021; Boubakri et al., 2021; Liu et al., 2023). In policy-driven economies such as China, government support in the form of subsidies, tax benefits, and institutional protection further strengthens this positive relationship (Chen et al., 2022; Xu et al., 2023).

However, an opposing view argues that CSR may impose additional costs on firms and does not necessarily lead to immediate financial benefits. Some studies suggest that CSR investments may divert resources from core business activities, thereby reducing short-term profitability (Liao et al., 2021; Guo et al., 2022). Moreover, the effectiveness of CSR depends on institutional quality and strategic alignment, and may not always translate into improved performance outcomes (Liu et al., 2023).

Despite these mixed findings, in the context of China's manufacturing industry, where government plays a dominant role in resource allocation and policy implementation, CSR toward government (CSRG) is more likely to generate tangible benefits through institutional support and policy incentives.

Therefore, this study proposes that:

H1: Corporate social responsibility toward government positively influences the organizational performance of Guangdong's manufacturing industry.

2.3 Corporate Social Responsibility toward Government and Green Tax Incentives

Green tax incentives are widely recognized as effective policy instruments for encouraging environmentally responsible corporate behavior. Prior research indicates that such incentives can reduce firms' financial burdens and promote sustainable practices, thereby enhancing firms' environmental and economic performance (Zhao et al., 2024; Liu et al., 2023).

Nevertheless, some scholars argue that the effectiveness of tax incentives is limited by policy inefficiencies, administrative barriers, and uneven implementation across regions (He et al., 2022; Guo et al., 2022). In some cases, firms may engage in symbolic compliance to obtain tax benefits without making substantial environmental improvements (Liao et al., 2021).

These contrasting views suggest that the effectiveness of green tax incentives depends not only on policy design but also on firms' institutional relationships with government. Firms that demonstrate stronger compliance and alignment with government expectations are more likely to access and benefit from these incentives (Chen et al., 2022; Xu et al., 2023).

From the perspective of stakeholder theory, CSRG enhances firms' relationships with government and increases their likelihood of obtaining policy-based resources such as green tax incentives.

Therefore, this study proposes that:

H2: Corporate social responsibility toward government positively influences green tax incentives in Guangdong's manufacturing industry.

2.4 Corporate Social Responsibility toward Government and Green Technology Innovation

Green technology innovation is considered a key driver of sustainable development and long-term competitiveness. Existing studies suggest that CSR can promote green innovation by encouraging firms to invest in environmentally friendly technologies and enhance sustainability performance (Hao & He, 2022; Liao et al., 2021; Zhang et al., 2022).

However, other studies highlight that green innovation requires substantial financial investment, long development cycles, and high levels of technological capability, which may constrain firms' ability to translate CSR into innovation outcomes (Guo et al., 2022; Liu et al., 2024). In addition, firms may prioritize short-term financial returns over long-term innovation investments, especially under pressure from shareholders (Liao et al., 2021).

In the context of China's manufacturing sector, innovation activities are highly dependent on internal resources such as R&D capacity and technological expertise, rather than solely on external institutional support. While CSRG may strengthen firms' alignment with government expectations, it does not necessarily guarantee increased innovation investment.

Despite these uncertainties, firms that actively respond to government environmental policies may still face stronger incentives to engage in green innovation activities.

Therefore, this study proposes that:

H3: Corporate social responsibility toward government positively influences green technology innovation in Guangdong's manufacturing industry.

2.5 Mediating Roles of Green Tax Incentives and Green Technology Innovation

The above discussion suggests that corporate social responsibility toward government may influence organizational performance through multiple pathways. On the one hand, CSRG may enhance firms' access to green tax incentives, thereby reducing costs and improving financial outcomes (Zhao et al., 2024; Liu et al., 2023). On the other hand, CSRG may promote green technology innovation, which contributes to long-term competitiveness (Hao & He, 2022; Liu et al., 2024).

However, these mechanisms may differ in strength. Green tax incentives are directly linked to government policies and may respond more immediately to CSRG, while green technology innovation depends on internal capabilities.

Taking into account the above theoretical arguments and empirical evidence, it can be argued that green tax incentives and green technology innovation play significant mediating roles in the relationship between corporate social responsibility toward government and organizational performance.

Therefore, the following hypotheses are proposed:

H4: Green tax incentives mediate the impact of corporate social responsibility toward government on the organizational performance of Guangdong's manufacturing industry.

H5: Green technology innovation mediates the impact of corporate social responsibility toward government on the organizational performance of Guangdong's manufacturing industry.

3. MATERIAL AND METHODS

3.1 Sample Selection and Data Sources

This study examines a sample of 623 A-share listed manufacturing firms headquartered in Guangdong Province, China, covering the period from 2015 to 2025, resulting in 4,488 firm-year observations. Guangdong is one of China's most dynamic manufacturing regions, known for its advanced industrial upgrading, export-oriented growth, and strong government support for green transformation (Huang et al. (2024)).

The financial and corporate social responsibility (CSR) data, including green innovation indicators, were sourced from the China Stock Market & Accounting Research (CSMAR) database. The CSMAR database is widely recognized for its reliability and comprehensiveness in providing firm-level data

essential for empirical research on Chinese listed firms. To ensure the robustness of the analysis, the study excludes the following: (1) financial and utility firms, as these differ structurally from manufacturing firms; (2) firms marked as *ST or ST, to avoid the biases introduced by financially distressed firms; and (3) observations with missing key financial or CSR-related indicators.

To mitigate the influence of outliers and extreme values, all continuous variables were winsorized at the 1st and 99th percentiles (Maqbool & Zameer, 2023). The dataset was analyzed using Stata 18, and both firm fixed effects and year fixed effects were included in the regression models to account for unobserved heterogeneity (Tang et al., 2023). This approach minimizes the impact of extreme values and potential measurement errors, enhancing the robustness of the parameter estimates.

3.2 Variable Measurement

Table 1 Variable Definitions and Measurement

Variable Type	Variable Name	Abbreviation	Description and Measurement
Dependent variable	Organizational Performance	OP	Net profit divided by total assets (Chu et al., 2023)
Independent variable	Corporate Social Responsibility to Government	CSRG	Income tax / Operating income (Li & Wang, 2022)
Mediating variables	Green Tax Incentives	GTX	Green tax savings / Operating income (Zhao et al., 2024)
	Green Technology Innovation	GTI	Green R&D expenditure / Total assets (Zhang et al., 2022)
	Firm Age	Age	Natural logarithm of years since establishment (Xie et al., 2019)
Control variables	Asset Growth Rate	Growth	Three-year average growth rate of main business revenue (Hao & He, 2022)
	Leverage	Lev	Total liabilities / Total assets (Han et al., 2025)

Table 1 summarizes the definitions, abbreviations, and measurement methods of the variables used in this study. The dependent variable is organizational performance (OP), measured as return on assets (ROA), calculated as net profit divided by total assets. ROA is a commonly used proxy for firm performance, reflecting profitability and the efficiency with which a firm utilizes its resources (Chu, Zhang, & Zheng, 2023).

The key independent variable is corporate social responsibility toward government (CSRG), which is measured as the ratio of income tax to operating income. This metric captures a firm's fiscal contributions to the government and reflects its compliance with governmental expectations within the CSR framework (Li & Wang, 2022).

This study includes two mediating variables to examine the mechanisms through which CSRG influences organizational performance. Green tax incentives (GTX) are measured as the ratio of green tax savings to operating income. This variable reflects how firms utilize government-supported environmental tax policies to reduce their costs and improve their environmental sustainability (Zhao et al., 2024). Green technology innovation (GTI) is measured as the ratio of green R&D expenditure to total assets, representing the firm's investment in environmentally sustainable innovation activities (Zhang, Liu, & Wang, 2022).

In addition, the following control variables are included to account for firm-specific characteristics. Firm Age (Age) is calculated as the natural logarithm of the number of years since the firm's establishment, indicating its organizational maturity (Xie, Luo, & Chen, 2019). Asset Growth Rate (Growth) is the three-year average growth rate of the firm's main business revenue, which captures the firm's expansion potential (Hao & He, 2022). Leverage (Lev) is measured as the ratio of total liabilities to total assets, reflecting the firm's capital structure and financial risk.

3.3 Model Specification

To examine the relationship between CSRG and organizational performance (OP), this study employs panel regression models. The Hausman test ($\chi^2 = 90.01$, $p < 0.001$) rejects the null hypothesis that coefficient differences are not systematic, confirming that the fixed effects model is more appropriate than the random effects model for this analysis (Sun, Liu, & Ma, 2022; Wu & Xie, 2021). Fixed-effects models are consistent and preferred when unobserved heterogeneity is correlated with the regressors in panel data models (Baltagi, 2021).

The baseline model for examining the impact of CSRG on OP is specified as follows:

$$OP_{it} = \alpha_0 + \beta_1 CSRG_{it} + \sum Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (1)$$

To explore the mediating mechanisms, mediation analysis follows Zhao, Lynch, & Chen (2010), estimating the indirect effects of CSRG through green tax incentives (GTX) and green technology innovation (GTI). The following equations represent the mediation analysis models:

$$GTX_{it} = \alpha_3 + \beta_3 CSRG_{it} + \sum Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (2)$$

$$GTI_{it} = \alpha_1 + \beta_2 CSRG_{it} + \sum Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (3)$$

Finally, the full mediation model is expressed as:

$$OP_{it} = \alpha_2 + \beta_4 CSRG_{it} + \gamma_1 GTX_{it} + \sum Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (4)$$

$$OP_{it} = \alpha_4 + \beta_5 CSRG_{it} + \gamma_2 GTI_{it} + \sum Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (5)$$

Robust standard errors are clustered at the firm level to correct for heteroskedasticity and autocorrelation.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 2 Descriptive Statistics

VarName	Obs	Mean	SD	Median	Min	Max
ROA	4488	0.047	0.072	0.048	-0.253	0.242
CSRG	4488	0.017	0.016	0.012	0.000	0.087
GROWTH	4488	0.158	0.195	0.135	-0.304	0.882
LEV	4488	0.381	0.180	0.379	0.057	0.835
AGE	4488	20.614	7.013	20.000	8.000	42.000
GTI	4488	0.035	0.023	0.030	0.002	0.133
GTX	4488	0.012	0.012	0.009	0.000	0.074

Table 2 summarizes the descriptive statistics of the variables. Firm performance (ROA) exhibits noticeable dispersion, with a mean of 0.047 and a standard deviation of 0.072. The minimum value of -0.253 indicates that some firms experienced losses during the sample period, reflecting the heterogeneous performance conditions within the manufacturing sector.

Regarding the key explanatory variable, Corporate social responsibility toward government (CSRG) shows a relatively low average level (mean = 0.017) with limited variability. This suggests that while most firms engage in government-related CSR activities, the intensity of such engagement remains generally modest and does not vary substantially across firms.

For the environmental variables, both green technology innovation (GTI) and green tax incentives (GTX) are observed at relatively low levels. GTI has a mean of 0.035, whereas GTX is lower at 0.012, indicating that green transformation activities, although present, are still at an early or moderate stage across the sample.

Among the control variables, firm growth displays considerable variation, implying differences in expansion dynamics across firms. Financial leverage averages 0.381, suggesting a moderate reliance on debt financing. Firm age averages approximately 20 years, indicating that the sample includes both mature firms and relatively younger enterprises.

Overall, the variation across variables provides a suitable basis for subsequent regression analysis.

4.2 Correlation Analysis

Table 3 Pairwise correlations

Variables	ROA	CSRG	GROWTH	GTI	GTX	LEV	AGE
ROA	1.000						
CSRG	0.243***	1.000					
GROWTH	0.336***	0.074***	1.000				
GTI	0.143***	-	0.168***	1.000			
GTX	0.041***	0.052***	0.012	0.269***	1.000		
LEV	-	-	0.096***	-0.006	-	1.000	
AGE	0.319***	0.189***	-	0.140***	-	-	1.000
	0.142***	0.052***	-0.197***	-	-	0.166***	-
				0.170***	0.091***		

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

Table 4 Multicollinearity Test Results (VIF)

Variable	VIF	1/VIF
GTX	1.170	0.852
GTI	1.150	0.869
CSRG	1.120	0.894
AGE	1.100	0.908
LEV	1.100	0.912
GROWTH	1.090	0.915
Mean	VIF	1.120

Table 3 reports the pairwise correlations among the variables.

CSRG is positively correlated with ROA (0.243, $p < 0.01$), providing preliminary support for Hypothesis H1. This suggests that firms with stronger engagement in government-oriented CSR tend to achieve better performance outcomes.

In addition, CSRG shows a positive association with green tax incentives (0.238, $p < 0.01$), indicating that firms aligning more closely with government expectations may benefit from policy-related support. In contrast, the relationship between CSRG and GTI is slightly negative (-0.052 , $p < 0.01$), suggesting that government-oriented CSR does not necessarily translate into increased innovation efforts.

Both GTI and GTX are positively correlated with ROA, implying that environmental strategies—whether through technological innovation or policy incentives—may contribute to improved firm performance.

Multicollinearity does not appear to be a concern. As reported in Table 4, all VIF values are close to 1 and well below the conventional threshold, indicating that the regression estimates are unlikely to be affected by collinearity issues.

4.3 Regression Results and Main Effect Analysis

Table 5 Baseline Regression Results

	ROA
CSRG	1.025*** (0.116)
GROWTH	0.112*** (0.007)
LEV	-0.139*** (0.011)
AGE	-0.003 (0.004)
_cons	0.117 (0.073)
N	4488
R ²	0.619
Adj. R ²	0.56
F	124.229

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Robust standard errors in parentheses.

The baseline regression results provide clear evidence that CSRG is positively related to firm performance. The estimated coefficient (1.025) is statistically significant at the 1% level, indicating that firms with stronger engagement in government-oriented CSR tend to perform better. This finding supports Hypothesis H1 and suggests that aligning corporate behavior with government expectations can generate tangible economic benefits. In practice, such alignment may improve access to resources, enhance legitimacy, or reduce regulatory uncertainty. The control variables behave largely as expected. Firm growth is positively associated with performance, while leverage shows a negative effect, reflecting the burden of financial risk. Firm age, however, does not exhibit a significant influence, implying that maturity alone does not guarantee better outcomes. Overall, the model demonstrates a reasonably strong explanatory power, with statistically significant joint effects. These results provide support for Hypothesis H1.

4.4 Robustness Check

Table 6 Robustness Check Results

	ROE
CSRG	1.552*** (0.260)
GROWTH	0.219*** (0.017)
LEV	-0.256*** (0.035)
AGE	0.001 (0.008)
_cons	0.087 (0.173)
N	4488
R ²	0.477
Adj. R ²	0.39
F	60.015

Note: *p<0.1; **p<0.05; ***p<0.01. Robust standard errors in parentheses.

To verify the stability of the results, ROA is replaced with ROE as an alternative performance measure. The positive effect of CSRG remains statistically significant, and the direction of all key variables is unchanged.

This consistency suggests that the observed relationship between CSR and performance is not sensitive to how performance is measured, reinforcing the reliability of the main findings.

4.5 Mediation Analysis

Table 7 Mediation Analysis Results

	(1) ROA	(2) GTX	(3) GTI	(4) ROA	(5) ROA
CSRG	1.025*** (0.116)	0.110*** (0.020)	-0.027 (0.019)	0.985*** (0.116)	1.043*** (0.114)
GTI					0.650*** (0.101)
GROWTH	0.112*** (0.007)	-0.009*** (0.001)	0.003*** (0.001)	0.115*** (0.007)	0.110*** (0.007)
LEV	-0.139*** (0.011)	0.001 (0.002)	0.020*** (0.002)	-0.139*** (0.011)	-0.152*** (0.011)
AGE	-0.003 (0.004)	0.000 (0.001)	0.000 (0.001)	-0.003 (0.003)	-0.003 (0.003)
GTX				0.367*** (0.103)	
_cons	0.117 (0.073)	0.011 (0.012)	0.025 (0.017)	0.113 (0.071)	0.101 (0.070)
N	4488	4488	4488	4488	4488
R ²	0.619	0.619	0.832	0.620	0.626
Adj. R ²	0.56	0.56	0.80	0.56	0.56
F	124.229	23.489	27.971	103.616	117.674

Note: *p<0.1; **p<0.05; ***p<0.01. Robust standard errors in parentheses.

The mediation analysis provides further insight into the mechanisms through which CSRG influences firm performance.

The results confirm that CSRG maintains a direct positive effect on ROA. However, its indirect effects differ across the two proposed channels.

CSRG is found to have a positive and significant effect on green tax incentives, supporting Hypothesis H2. In turn, green tax incentives are positively associated with organizational performance, and the inclusion of GTX reduces the coefficient of CSRG while remaining significant, indicating a partial mediating effect. Therefore, Hypothesis H4 is supported.

In contrast, CSRG does not have a statistically significant effect on green technology innovation, suggesting that Hypothesis H3 is not supported. Although GTI is positively related to organizational performance, it does not serve as a mediating mechanism due to the absence of a significant relationship between CSRG and GTI. Accordingly, Hypothesis H5 is not supported.

These findings highlight a clear distinction between the two mechanisms. Green tax incentives represent a more immediate and policy-driven pathway that aligns closely with government priorities and provides observable short-term benefits. By contrast, green technology innovation involves longer investment horizons and higher uncertainty, which may limit its responsiveness to CSR in the short term. From a managerial perspective, firms are therefore more likely to prioritize strategies that generate clearer and more immediate returns rather than committing to uncertain long-term innovation investments.

4.6 Instrumental Variables Method

Table 8 IV Regression Results

VARIABLES	IV_CSR
CSRG	0.468*** (0.124)
GROWTH	0.139*** (0.007)
LEV	-0.136*** (0.007)
AGE	0.000* (0.000)
Constant	0.059*** (0.004)
Observations	3,792
R-squared	0.260

*** p<0.01, ** p<0.05, * p<0.1, Robust standard errors in parentheses

To address potential endogeneity concerns, an instrumental variable approach is employed using lagged CSR as the instrument.

The IV results remain positive and significant, suggesting that the main findings are robust to potential endogeneity concerns. After controlling for endogeneity, CSRG remains positively and significantly associated with firm performance, reinforcing the causal interpretation of the results.

The control variables continue to exhibit consistent patterns, and the overall findings remain stable.

This provides additional support for the conclusion that the observed relationship between CSR toward government and firm performance is not driven by reverse causality or omitted variable bias. The IV estimates further strengthen support for Hypothesis H1.

5. CONCLUSION

5.1 Discussion of Findings

This study examines the impact of corporate social responsibility toward government (CSRG) on organizational performance, as well as the mediating roles of green tax incentives (GTX) and green technology innovation (GTI).

With regard to RQ1, the empirical results demonstrate that CSRG has a significant positive effect on organizational performance ($\beta = 1.025$, $p < 0.01$). This finding suggests that firms aligning with government expectations tend to achieve superior financial outcomes. A plausible explanation is that such firms benefit from enhanced access to policy resources, increased institutional legitimacy, and reduced regulatory uncertainty. This result is consistent with prior studies (Boubakri et al. (2021) and Wang and Ye (2024)), which emphasize that CSR contributes to firm performance through legitimacy and resource-based advantages.

With respect to RQ2, the findings indicate that green tax incentives serve as a significant mediating mechanism. CSRG is positively associated with GTX ($\beta = 0.110$, $p < 0.01$), and GTX, in turn, positively

influences organizational performance ($\beta = 0.367$, $p < 0.01$). The reduction in the CSRG coefficient after including GTX suggests a partial mediation effect. This implies that firms engaging in CSR toward government are more likely to obtain policy-related incentives, which subsequently enhance performance. This evidence aligns with Chen et al. (2022), highlighting the role of CSR in facilitating access to government support.

In contrast, regarding RQ3, the mediating role of green technology innovation is not supported. Although GTI is positively associated with organizational performance ($\beta = 0.650$, $p < 0.01$), CSRG does not have a statistically significant impact on GTI ($\beta = -0.027$, $p > 0.05$). Consequently, the indirect effect through GTI is not established. This suggests that CSR toward government does not directly stimulate innovation activities, possibly due to the long-term, uncertain, and resource-intensive nature of innovation investments. This interpretation is consistent with Yu et al. (2024) and Hao and He (2022), who argue that firms facing short-term performance pressures may be reluctant to engage in high-risk innovation.

Overall, the findings indicate that government-oriented CSR primarily enhances firm performance through short-term, policy-driven mechanisms rather than long-term innovation pathways. These results are broadly consistent with existing literature while also revealing important differences in the mechanisms through which CSR affects firm performance, particularly in policy-driven institutional contexts.

5.2 Implications of the Study

5.2.1 Theoretical Contributions

The findings of this study extend stakeholder theory by highlighting the differentiated roles of policy-driven and innovation-driven mechanisms in the relationship between Corporate social responsibility toward government (CSRG) and organizational performance. Specifically, the results reveal an asymmetric mediation pattern between green tax incentives (GTX) and green technology innovation (GTI).

Empirical evidence suggests that GTX, as a short-term and policy-oriented mechanism, aligns closely with firms' incentives to obtain immediate and observable benefits, thereby effectively translating CSR engagement into improved performance. In contrast, GTI, characterized by longer time horizons and higher uncertainty, does not serve as a mediating channel in the short run.

This distinction contributes to the CSR-performance literature by incorporating the temporal dimension and risk profile of different environmental strategies, offering a more nuanced understanding of how CSR toward government influences firm outcomes in policy-driven contexts.

5.2.2 Practical Implications

From a managerial perspective, the findings suggest that integrating CSRG into corporate governance and strategic planning can serve as an effective tool for enhancing organizational performance. Firms may prioritize policy-aligned environmental strategies, particularly those linked to green tax incentives, to achieve both compliance and performance gains. At the same time, managers should gradually strengthen investments in green technology innovation to support long-term competitiveness.

From a policy perspective, the results indicate that government-driven incentive mechanisms play a crucial role in shaping corporate behavior. Policymakers may consider incorporating CSR performance into evaluation systems, such as subsidy allocation, credit assessments, and financing

approvals, to encourage firms to align their CSR activities with broader sustainability and performance objectives.

5.3 Limitations and Recommendations for Future Research

This study has several limitations that should be acknowledged.

First, the analysis relies on a quantitative panel data approach, which, while effective for identifying statistical relationships, may not fully capture the underlying behavioral mechanisms driving CSR decisions. In practice, managerial interpretations and strategic considerations often play an important role. Future research could therefore incorporate qualitative or mixed-method approaches, such as interviews or case studies, to provide deeper insights into how firms implement CSR toward government (Rahman & Alam, 2024).

Second, the empirical setting is limited to Chinese A-share listed manufacturing firms. Given that institutional environments and industry characteristics vary across contexts, the findings may not be fully generalizable. For instance, firms in service industries, such as tourism or logistics, or small and medium-sized enterprises may respond differently to CSR and policy incentives. Future studies could explore these alternative contexts to better understand how CSR operates under different conditions (Nguyen et al., 2024).

Third, organizational performance is measured primarily using financial indicators, which may not fully reflect the broader impact of CSR activities. In reality, CSR may also influence non-financial outcomes, such as corporate reputation, employee engagement, and stakeholder trust. Future research could incorporate these dimensions, including ESG-related indicators, to provide a more comprehensive assessment of CSR toward government (Kumar & Sahu, 2024).

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the support provided by Universiti Tun Abdul Razak for facilitating this research. The academic resources and institutional environment have significantly contributed to the completion of this study.

The authors would also like to express their sincere appreciation to Professor Dr. Cheok Mui Yee for her invaluable guidance, constructive feedback, and continuous support throughout the research process.

In addition, the authors acknowledge the contributions of academic staff and colleagues whose insights and assistance have been beneficial to this study.

Finally, the authors extend their gratitude to family and friends for their encouragement and moral support.

CITATION AND REFERENCES

- Boubakri, N., El Ghouli, S., Guedhami, O., & Wang, H. (2021). Corporate social responsibility in emerging market economies: Determinants, consequences, and future research directions. *Emerging Markets Review*, 46, 100758. <https://doi.org/10.1016/j.ememar.2020.100758>
- Chen, X., Li, W., & Zhou, G. (2022). Government subsidies and firm performance. *Journal of Corporate Finance*, 72, 102161. <https://doi.org/10.1016/j.jcorpfin.2021.102161>

- Chu, X., Zhang, Y., & Zheng, Y. (2023). The relationship between corporate social responsibility and firm performance: Evidence from China. *Journal of Business Research*, 145, 43–59.
<https://doi.org/10.1016/j.jbusres.2022.10.011>
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65–91.
<https://doi.org/10.5465/amr.1995.9503271992>
- Flammer, C. (2021). Corporate green bonds. *Strategic Management Journal*, 42(4), 633–667.
<https://doi.org/10.1002/smj.3256>
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Guo, Y., Wang, L., & Chen, Y. (2022). Financial constraints and green innovation. *Energy Economics*, 110, 106025. <https://doi.org/10.1016/j.eneco.2022.106025>
- Hao, J., & He, F. (2022). Corporate social responsibility performance and green innovation: Evidence from China. *Finance Research Letters*, 48, 102889. <https://doi.org/10.1016/j.frl.2022.102889>
- Huang, Y., Chen, C., & Zhu, Z. (2024). Environmental regulation and green innovation: Evidence from Chinese manufacturing firms. *Technological Forecasting and Social Change*, 198, 122975.
<https://doi.org/10.1016/j.techfore.2023.122975>
- Li, Z., & Wang, Y. (2023). Corporate social responsibility and firm performance: Evidence from emerging markets. *Journal of Cleaner Production*, 382, 135269.
<https://doi.org/10.1016/j.jclepro.2022.135269>
- Liao, Z., Chen, M., & Wang, Y. (2021). Corporate social responsibility and green innovation. *Journal of Cleaner Production*, 281, 124569. <https://doi.org/10.1016/j.jclepro.2020.124569>
- Liu, X., Zhu, Q., & Seuring, S. (2023). Green innovation and firm competitiveness: Evidence from China's manufacturing sector. *Journal of Environmental Management*, 332, 117396.
<https://doi.org/10.1016/j.jenvman.2023.117396>
- Liu, Y., Zhao, X., & Wang, H. (2024). Green innovation and firm competitiveness. *Journal of Business Research*, 170, 114345. <https://doi.org/10.1016/j.jbusres.2023.114345>
- Maqbool, S., & Zameer, M. N. (2023). Corporate social responsibility and financial performance: Evidence from emerging markets. *Sustainability*, 15(3), 2456.
<https://doi.org/10.3390/su15032456>
- Sun, L., Liu, X., & Ma, Y. (2022). Panel data analysis and firm performance: Evidence from China. *Economic Modelling*, 110, 105789. <https://doi.org/10.1016/j.econmod.2022.105789>
- Tang, J., Wang, Y., & Li, X. (2023). Fixed effects models in corporate finance research. *Finance Research Letters*, 52, 103456. <https://doi.org/10.1016/j.frl.2023.103456>
- Wang, X., & Ye, Y. (2024). Government-initiated corporate social responsibility and performance growth: Evidence from China. *Pacific-Basin Finance Journal*, 84, 102284.
<https://doi.org/10.1016/j.pacfin.2024.102284>
- Wu, Q., Wang, Y., & Shen, G. (2024). The green bonus of tax incentives: Evidence from China. *Journal of Economic Behavior & Organization*, 227, 106740.
<https://doi.org/10.1016/j.jebo.2024.106740>
- Xu, N., Chen, Q., & Li, X. (2023). Institutional support and corporate performance. *Finance Research Letters*, 54, 103654. <https://doi.org/10.1016/j.frl.2023.103654>
- Yu, X., Li, Q., & Zhang, L. (2024). Government customers and corporate environmental responsibility. *Journal of Business Research*, 183, 114853. <https://doi.org/10.1016/j.jbusres.2024.114853>
- Zhang, D., Rong, Z., & Ji, Q. (2022). Green innovation and firm performance. *Energy Economics*, 104, 105658. <https://doi.org/10.1016/j.eneco.2021.105658>
- Zhao, A., Zhang, H., Liu, Y., & Guan, H. (2024). Environmental taxes and firm performance. *Heliyon*, 10(10), e31386. <https://doi.org/10.1016/j.heliyon.2024.e31386>

- Zhao, X., & Sun, B. (2024). Green finance and innovation efficiency. *Energy Policy*, 179, 113652.
<https://doi.org/10.1016/j.enpol.2023.113652>
- Zhao, X., Sun, B., & Li, Y. (2024). Environmental tax incentives and corporate environmental performance. *Journal of Environmental Management*, 345, 118765.
<https://doi.org/10.1016/j.jenvman.2023.118765>
- Xie, Y., Luo, W., & Chen, J. (2019). The effects of corporate social responsibility on firm performance: The mediating role of innovation. *Business & Society Review*, 124(4), 489–510.
<https://doi.org/10.1111/basr.12171>
- Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer.
<https://doi.org/10.1007/978-3-030-53953-5>
- Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197–206.
<https://doi.org/10.1086/651257>
- Rahman, M., & Alam, M. (2024). Corporate social responsibility and firm performance: A mixed-methods perspective. *Journal of Business Research*, 172, 114502.
<https://doi.org/10.1016/j.jbusres.2023.114502>
- Nguyen, T. T., Pham, H. T., & Tran, Q. T. (2024). Corporate social responsibility and firm performance: Evidence from service industries. *Sustainability*, 16(4), 2158.
<https://doi.org/10.3390/su16042158>
- Kumar, S., & Sahu, T. N. (2024). Corporate social responsibility and firm performance: The role of ESG dimensions. *Journal of Cleaner Production*, 412, 137256.
<https://doi.org/10.1016/j.jclepro.2023.137256>
- Wu, H., & Xie, X. (2021). Corporate social responsibility, institutional environment, and firm performance: Evidence from China. *Economic Modelling*, 103, 105608.
<https://doi.org/10.1016/j.econmod.2021.105608>