

Confucianism and corporate greenwashing: Evidence from China

Wanbin Pan^{1*}, Ruijie Wang^{1*}✉, and Jie Feng²

¹*School of Management, University of Science and Technology of China, Hefei 230026, China;*

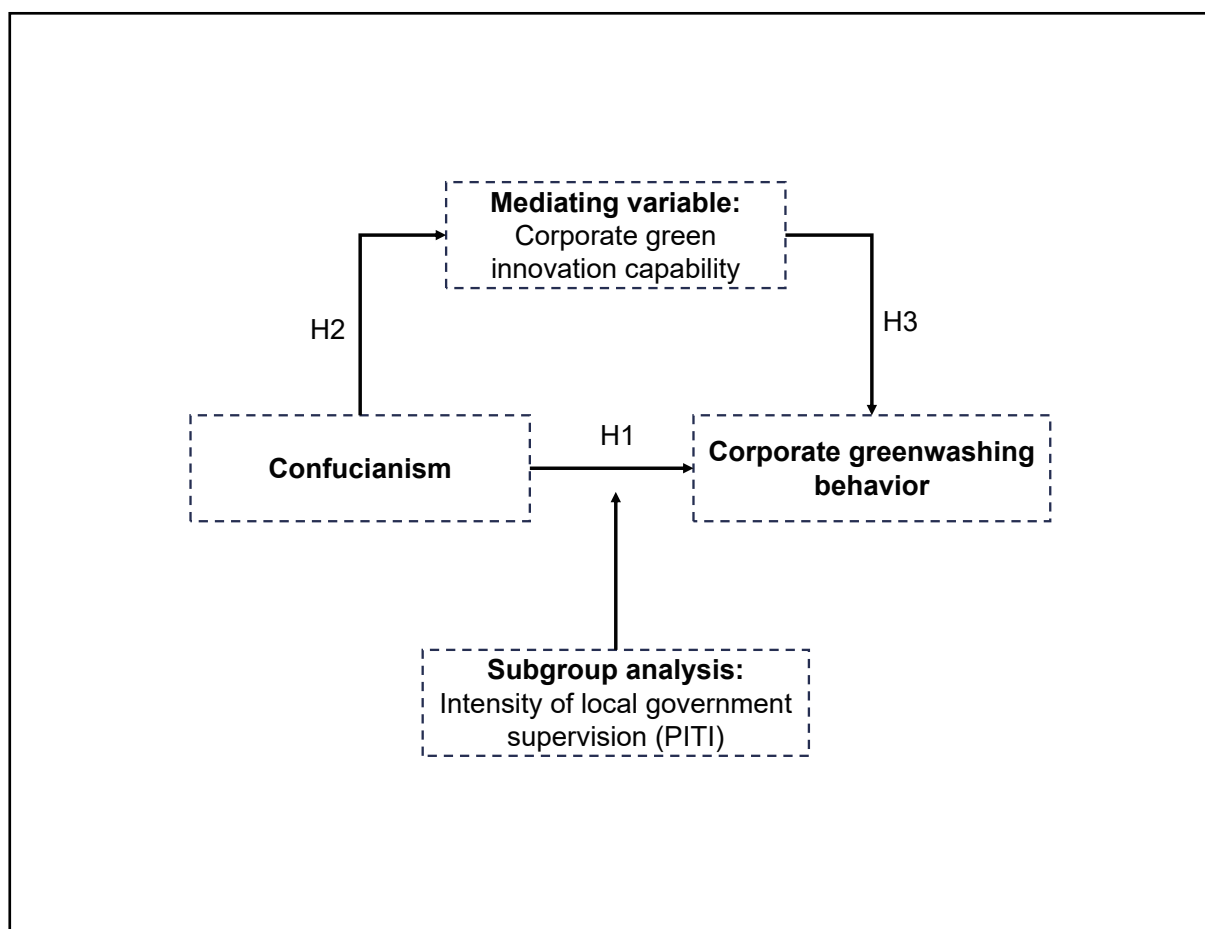
²*Guanghua School of Management, Peking University, Beijing 100871, China*

* These authors contributed equally to this work

✉ Correspondence: Ruijie Wang, E-mail: wangruijie369@mail.ustc.edu.cn

© 2025 The Author(s). This is an open access article under the CC BY-NC-ND 4.0 license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Graphical abstract



Theoretical framework of the Impact of confucianism on corporate greenwashing behavior.

Public summary

- Confucianism significantly reduces corporate greenwashing.
- Corporate green innovation capability serves as a mediating variable in the relationship between Confucianism and greenwashing.
- The impact of Confucianism on greenwashing is pronounced in regions with weak regulatory environments but not in areas with strong regulation.

Confucianism and corporate greenwashing: Evidence from China

Wanbin Pan^{1*}, Ruijie Wang^{1*}✉, and Jie Feng²

¹*School of Management, University of Science and Technology of China, Hefei 230026, China;*

²*Guanghua School of Management, Peking University, Beijing 100871, China*

* These authors contributed equally to this work

✉Correspondence: Ruijie Wang, E-mail: wangruijie369@mail.ustc.edu.cn

© 2025 The Author(s). This is an open access article under the CC BY-NC-ND 4.0 license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



Cite This: *JUSTC*, 2025, 55(X): (7pp)



Read Online

Abstract: With the ongoing promotion of ecological civilization, the factors driving corporate green decision-making and behavior have attracted significant attention. Using data from Chinese listed companies between 2009 and 2022, this study provides strong evidence that Confucianism, as an informal cultural system, plays a significant role in reducing corporate greenwashing. These findings suggest that the moral framework established by Confucianism profoundly influences corporate ethics, serving as a crucial social norm to curb unethical greenwashing practices. Further analysis confirms the mediating role of corporate green innovation capabilities in the relationship between Confucianism and greenwashing. Sub-sample regressions indicate that Confucianism significantly reduces greenwashing in regions with weaker regulations, whereas its effect is insignificant in areas with stronger regulations. The results remain robust across various sensitivity tests. These findings not only contribute to the theory of “culture and corporate decision-making” within an Eastern cultural context but also offer a new perspective for curbing unethical corporate behaviors, including greenwashing and promoting sustainable development.

Keywords: ESG; Confucianism; greenwashing; green innovation

CLC number: F270

Document code: A

1 Introduction

Environmental issues are becoming increasingly common, and public concern for environmental protection and sustainable development continues to grow. The concept of environmental, social and governance (ESG) proposed by the United Nations in 2003 has gradually received widespread attention from governments, enterprises and the public. ESG plays an important role in alleviating corporate financing constraints^[1], improving investment efficiency^[2] and reducing stock price crash risk^[3]. However, the absence of clear regulations and standardized guidelines for ESG information disclosure gives companies significant discretion in presenting environmental information. This discretion allows firms to selectively conceal or embellish their actual environmental practices, manipulate a more favorable “green” image and lead to greenwashing^[4, 5]. Greenwashing erodes investor and consumer trust, distorts the allocation of green credit and investments, and impedes sustainable market development^[6]. As a result, it has attracted increasing interest from governments and the public.

Informal systems, such as culture, also play a crucial role in shaping business decisions^[7, 8]. For example, companies in regions with strong religious affiliations tend to have lower risks of financial misrepresentation^[9]. In China, Confucianism serves as a deeply rooted moral code and behavioral guide for individuals and organizations and has a significant influence on business activities^[10–12]. As an informal institution, Confucianism has gained increasing recognition in the literature for its significant influence on business activities.

For example, it has been shown to impact corporate R&D investment^[13], green innovation efficiency^[8] and green information disclosure^[14]. While pursuing profit maximization, owners and managers are constrained by ethical norms. Confucian principles, such as integrity and the balance between righteousness and profit, shape individuals’ beliefs, values, and moral standards, thereby regulating and supervising behavior^[14]. This ethical framework allows companies to pay more attention to the interests of others and corporate reputation in the process of operation. It also increases the psychological cost and moral pressure of corporate executives when engaging in self-serving actions, such as greenwashing, ultimately influencing corporate decision-making. However, to the best of our knowledge, no empirical study has yet examined Confucianism’s impact on corporate greenwashing. In the context of China’s active development of the green economy and preservation of traditional culture, a targeted study of the intrinsic connection and transmission mechanism between Confucianism, as a typical representative of traditional culture, and corporate greenwashing behavior can provide new ideas from the perspective of the informal system. This exploration can promote the governance of greenwashing behavior and the green development of enterprises.

Using data from all listed companies in China between 2009 and 2022, we examine the effects of Confucianism on corporate greenwashing. Our results show that Confucianism significantly reduces greenwashing activities among Chinese listed firms and that corporate green innovation capacity plays

a mediating role between Confucianism and greenwashing, contributing to the existing ESG literature. Additionally, we investigate the moderating role of regulation in this relationship. We find that Confucianism significantly reduces greenwashing in regions with weaker regulatory frameworks but has no significant effect in regions with stronger regulation, suggesting that Confucianism can serve as a substitute for formal regulation.

Compared with existing studies, we make new contributions in the following aspects. First, our study broadens the perspective of research related to corporate greenwashing behavior. Unlike market competition^[15], political economic policies^[16, 17] and external supervision^[18, 19], we examine the impact and mechanism of Confucianism on greenwashing from the perspective of culture. Our results show that Confucianism significantly reduces greenwashing activities among Chinese listed firms. This study deepens the theoretical understanding of the influence of Confucianism on the strategic decision-making of corporate managers and highlights the important role that culture plays in the development of companies. Second, we investigate the moderating role of regulation in this relationship. We find that Confucianism significantly reduces greenwashing in regions with weaker regulatory frameworks but has no significant effect in regions with stronger regulation, suggesting that Confucianism can serve as a substitute for formal regulation. These findings provide new evidence on culture and corporate decision-making, particularly within the context of Eastern culture.

2 Theoretical analysis and research hypotheses

2.1 Confucianism and corporate greenwashing decisions

Imprinting theory suggests that formative experiences and cultural contexts leave deep, lasting impressions on individuals' cognition and value preferences, which continue to influence the behavior of both individuals and organizations over time^[20]. As the cornerstone of Chinese culture and philosophy, Confucianism promotes moral norms and behavioral standards that regulate individual conduct and inspire aspirations for harmony, integrity, and contentment^[12]. This creates an external environment for enterprises that emphasizes altruism, imposing strong moral constraints on managers and reducing opportunistic motivations. As *The Analects* states, "Riches and honors acquired by unrighteousness are to me as a floating cloud." The Confucian principles of righteousness and honesty may inhibit deceptive behavior, both in companies' dealings with society and in executives' relationships with shareholders^[21, 22]. According to Du^[10], Confucianism serves as an important informal institution that helps curb unethical corporate behavior, playing a key role in mitigating agency conflicts and reducing the expropriation of minority shareholders by controlling shareholders. A study by Yan et al.^[13] revealed that Confucianism effectively regulates market behavior, reduces innovation risk, and increases corporate R&D investment. While companies pursue profit maximization, they are also bound by social ethics. Greenwashing, which involves exaggeration and fraud in environmental disclosures, is inherently immoral, as it severely infringes upon the in-

terests of investors^[19, 23]. The moral environment shaped by Confucianism encourages companies to prioritize the interests of others in their operations, thereby increasing the social pressure on executives when considering greenwashing. Thus, in regions where the green disclosure system is underdeveloped and greenwashing governance is relatively weak, Confucian business ethics may act as a regulatory force, reducing the risk of greenwashing.

On the basis of this analysis, we propose the following hypothesis:

Hypothesis 1: Confucianism is negatively related to corporate greenwashing behavior.

2.2 Confucianism, green innovation capability and corporate greenwashing decisions

Green innovation refers to innovative activities aimed at reducing energy consumption and environmental pollution through the development and upgrading of products, technologies, or business models^[24]. The ecological ethics promoted by Confucianism, such as the harmony between humanity and nature and the importance of sustainable development, can shape the value orientation of corporate managers toward green development and environmental protection. Under the influence of Confucianism, business executives may be driven more by moral consciousness and national sentiment to actively engage in green innovation^[25]. In terms of stakeholder pressure, companies deeply rooted in Confucian values are likely to face stronger expectations from their stakeholders. As a result, these companies are less likely to focus solely on economic profits and are more inclined to assume greater green responsibilities, pursue green technological innovations, and enhance their green innovation capacity^[11]. In summary, Confucianism may positively influence corporate innovation capabilities.

Green innovation plays a crucial role in balancing environmental protection with economic development^[26]. A low level of green innovation leads to insufficient technologies for green transformation, which, in turn, causes environmental harm during production and operations. This deficiency is a key factor driving companies toward greenwashing. Research has shown that a high level of green innovation encourages companies to adopt substantive green practices and reduces greenwashing^[27]. On the basis of this analysis, we propose the following hypotheses:

Hypothesis 2: Confucianism enhances corporate green innovation capacity.

Hypothesis 3: Corporate green innovation capacity mediates the relationship between Confucianism and corporate greenwashing decisions.

3 Data and methodology

3.1 Data sources

Given the availability of ESG data, we select all A-share listed companies in China from 2009 to 2022 as the research sample. The data are processed as follows: ① companies in the financial industry are excluded; ② ST and *ST companies are excluded; ③ samples with missing or abnormal financial data are excluded; and ④ all continuous variables are

winsorized at the 1% and 99% levels. Corporate ESG disclosure and practice scores are obtained from the Bloomberg and Huazheng databases, respectively, whereas the remaining financial data are sourced from the WIND database.

3.2 Variables

3.2.1 Greenwashing (GW)

Following Zhang^[17], we quantify the level of greenwashing (GW) via Eq. (1).

$$GW_{it} = \frac{ESG_Disclosure_{it} - \text{mean}(ESG_Disclosure)}{\text{std}(ESG_Disclosure)} - \frac{ESG_Practices_{it} - \text{mean}(ESG_Practices)}{\text{std}(ESG_Practices)}. \quad (1)$$

Here, *mean*, *std*, *min*, and *max* represent the average value, standard deviation, minimum value, and maximum value, respectively. We measure companies' ESG disclosure (*ESG_Disclosure*) and practice (*ESG_Practices*) scores via Bloomberg ESG scores and Huazheng ESG scores, respectively^①.

3.2.2 Confucianism (CONFU)

Following Du^[10], we collect data on Confucian temples through the China Confucian temple network and historical documents related to Confucian temples. Google Earth is used to search and record the latitude and longitude coordinates of all Confucian temples and the registered addresses of companies. Using these geographic data, we calculate the number of Confucian temples within a 200 km and 300 km radius of the region where listed companies are registered. To create the proxy variables (CONFU200 and CONFU300) for Confucianism, we take the natural logarithm of the number of temples after adding one.

3.2.3 Green innovation (GINO)

Following Wang et al.^[31], corporate green innovation capacity (GINO) is proxied by the total number of green invention patents and green utility model patents applied for by companies in a given year. This measure is normalized by taking the natural logarithm of the green innovation output plus one.

3.2.4 Control variables

We select firm-level variables, including firm size (*SIZE*), firm age (*AGE*), ownership structure (*SOE*), board size (*BS*), firm leverage (*LEV*), return on assets (*ROA*), Tobin's Q (*TQ*), year-on-year operating profit growth (*GROWTH*), stock return (*RET*), and stock volatility (*SV*), as control variables (Xie et al.^[32], Zhang^[17], Gomes et al.^[33]). All the variables are defined as shown in Table 1.

3.3 Model setting

We focus mainly on the impact of Confucianism on corporate greenwashing behavior. To this end, we use the following fixed effects panel regression:

$$GW_{it} = \alpha_0 + \beta_1 CONFU_{it} + \sum_{i=1}^N \gamma_i Control_{it} + INDFE + YEARFE + \varepsilon_{it}, \quad (2)$$

$$GINO_{it} = \alpha_1 + \beta_2 CONFU200_{it} (CONFU300_{it}) +$$

$$\sum_{i=1}^N \gamma_i Control_{it} + INDFE + YEARFE + \varepsilon_{it}, \quad (3)$$

$$GW_{it} = \alpha_2 + \beta_3 CONFU200_{it} (CONFU300_{it}) +$$

$$\lambda_0 GINO_{it} + \sum_{i=1}^N \gamma_i Control_{it} + INDFE + YEARFE + \varepsilon_{it}. \quad (4)$$

The dependent variable in Eq. (2) is greenwashing, whereas the independent variable is Confucianism, measured by CONFU200 and CONFU300. Furthermore, to investigate whether corporate green innovation capacity plays a mediating role between Confucianism and greenwashing, we construct a regression model of Confucianism and green innovation (Eq. (3)) and a regression model of corporate green innovation capacity and greenwashing (Eq. (4)). All of the models control for industry and year effects.

4 Empirical results and analysis

4.1 Descriptive statistical analysis

The descriptive statistics for all the variables are presented in Table 1. The minimum values of CONFU200 and CONFU300 are both 0, whereas their maximum values are 4.0604 and 4.6821, respectively, indicating substantial variation in the intensity of Confucianism among companies. The mean values of CONFU200 and CONFU300 are 2.6386 and 3.2196, respectively, suggesting that, on average, companies are located near a relatively high number of Confucian temples and are significantly influenced by Confucianism. The extreme values of the control variables differ markedly, with all the statistical measures falling within a reasonable range. This suggests that the selected samples cover a wide range and accurately reflect the diversity of their circumstances. The findings of this study are, therefore, of practical significance. To account for potential multicollinearity, we calculated the variance inflation factor (VIF) for all the variables. The maximum VIF value is 2.55, indicating that multicollinearity is not a concern.

4.2 Benchmark regression

Table 2 presents the results of the benchmark regression. The findings indicate that the coefficients for CONFU200 and CONFU300 are both negative at the 1% significance level across all specifications, suggesting that companies registered in areas with strong Confucian influence are less likely to engage in greenwashing. Confucianism, recognized as the backbone of Chinese culture and philosophy, emphasizes virtuous traits such as loyalty, honesty, obedience, and sincerity^[34]. Chinese business ethics, rooted in this cultural

① Bloomberg ESG scores are based on publicly disclosed data, such as annual reports, and can be seen as a reflection of both voluntary and mandatory corporate disclosures. However, these scores do not capture the actual green performance of companies^[29, 30]. In contrast, Huazheng ESG scores assess the actual efforts made by firms in environmental protection, providing a more accurate measure of ESG performance^[17, 28].

Table 1. Descriptive statistics of all the variables.

VarName	N	Mean	SD	Min	Median	Max
GW	13000	-0.0037	1.2674	-2.4801	-0.1228	3.5674
CONFU200	13000	2.6386	0.8268	0.0000	2.7726	4.0604
CONFU300	13000	3.2196	0.8286	0.0000	3.3673	4.6821
GINO	13000	1.1330	1.3674	0.0000	0.6931	7.3038
SIZE	13000	23.0435	1.2701	20.3454	22.9685	26.5456
AGE	13000	2.9524	0.3367	0.0000	2.9957	4.0431
SOE	13000	0.4817	0.4997	0.0000	0.0000	1.0000
BS	13000	2.2848	0.1777	1.6094	2.3026	2.9444
LEV	13000	47.2900	20.2811	6.1029	48.3385	91.4512
ROA	13000	8.8994	14.2703	-68.4537	9.1782	46.6049
TQ	13000	2.0563	1.3901	0.8254	1.5828	8.6150
GROWTH	13000	1.8318	306.0309	-1996.9680	13.4425	1205.1824
RET	13000	0.0841	0.2130	-0.2889	0.0487	0.9589
SV	13000	2.7729	0.9025	1.1785	2.6314	6.1653

Table 2. Benchmark regression results.

Variables	(1)	(2)	(3)	(4)
	GW	GW	GW	GW
CONFU200	-0.033*** (-3.07)	-0.030*** (-2.80)		
CONFU300			-0.044*** (-3.98)	-0.039*** (-3.64)
SIZE		0.040*** (3.88)		0.040*** (3.87)
AGE		0.037 (1.13)		0.037 (1.12)
SOE		-0.175*** (-9.26)		-0.174*** (-9.17)
BS		0.230*** (4.50)		0.234*** (4.59)
LEV		0.008*** (13.56)		0.008*** (13.59)
ROA		-0.006*** (-7.20)		-0.006*** (-7.16)
TQ		0.037*** (4.77)		0.037*** (4.78)
GROWTH		0.000*** (4.34)		0.000*** (4.35)
RET		-0.038 (-0.55)		-0.036 (-0.53)
SV		0.067*** (4.10)		0.066*** (4.06)
Constant	0.084*** (2.82)	-1.963*** (-6.96)	0.137*** (3.75)	-1.921*** (-6.81)
Observations	13000	13000	13000	13000
R-squared	0.393	0.418	0.394	0.418
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

t statistics in parentheses are based on robust standard errors. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. The same below.

tradition^[35], are heavily influenced by Confucian values. Therefore, Confucianism plays a crucial role in shaping business ethics and can serve as an important ethical framework to mitigate corporate greenwashing behavior.

4.3 Mediation effect test

We further explored the channels through which Confucianism influences corporate greenwashing behavior. Table 3 presents the empirical results of the mediating effect analysis. Using corporate green innovation capability as the dependent variable, columns (1) and (3) report the estimation results of Eq. (3), where the coefficients of CONFU200 and CONFU300 are both significantly positive at the 1% confidence level. This finding indicates that Confucianism significantly enhances corporate green innovation capability. Columns (2) and (4) present the estimation results of Eq. (4), showing that the coefficients of GOIN and CONFU200 (CONFU300) are both significantly negative. Moreover, the absolute value of the coefficients for CONFU is smaller when the GOIN is introduced than when it is not. These findings confirm that when companies are strongly influenced by Confucianism, they are more active in green innovation. Shaped by Confucian cultural values, CEOs are more inclined to support long-term investment projects that benefit society, aligning closely with the firm's green innovation strategy^[25]. Furthermore, a higher level of green innovation makes corporate environmental performance meet expectations, which in turn increases corporate willingness to make true environmental information disclosure. In contrast, companies with insufficient green innovation tend to reduce the disclosure of environmental information or even disclose false information, leading to the occurrence of greenwashing. Hypotheses 2 and 3 proposed in the theoretical analysis above are supported.

4.4 Subgroup analysis

We further examine the effect of Confucianism on greenwashing under varying levels of regulatory strength. Local governments are responsible for guiding and supervising environmental protection efforts and the disclosure of environmental information by local companies. The influence of Confucianism may diminish when companies under strong

Table 3. Results of the mediation effect test.

Variables	(1)	(2)	(3)	(4)
	GION	GW	GION	GW
GINO		−0.029*** (−3.66)		−0.029*** (−3.61)
CONFU200	0.072*** (6.84)	−0.028*** (−2.61)		
CONFU300			0.073*** (7.15)	−0.037*** (−3.45)
SIZE	0.498*** (41.74)	0.054*** (4.94)	0.498*** (41.76)	0.054*** (4.91)
AGE	−0.066* (−1.81)	0.035 (1.07)	−0.066* (−1.81)	0.035 (1.06)
SOE	−0.023 (−1.09)	−0.176*** (−9.30)	−0.025 (−1.20)	−0.174*** (−9.21)
BS	−0.140** (−2.32)	0.226*** (4.42)	−0.151** (−2.51)	0.230*** (4.50)
LEV	0.001** (2.02)	0.008*** (13.66)	0.001** (2.00)	0.008*** (13.68)
ROA	0.004*** (4.41)	−0.006*** (−7.09)	0.003*** (4.36)	−0.006*** (−7.05)
TQ	0.025*** (3.29)	0.038*** (4.86)	0.025*** (3.29)	0.038*** (4.87)
GROWTH	−0.000** (−2.42)	0.000*** (4.27)	−0.000** (−2.41)	0.000*** (4.28)
RET	0.068 (0.97)	−0.036 (−0.52)	0.066 (0.94)	−0.034 (−0.50)
SV	0.021 (1.23)	0.068*** (4.14)	0.023 (1.32)	0.067*** (4.10)
Constant	−10.200*** (−33.18)	−2.260*** (−7.70)	−10.234*** (−33.32)	−2.215*** (−7.55)
Observations	13000	13000	13000	13000
R-squared	0.370	0.418	0.371	0.419
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

supervision are more likely to disclose accurate green information because of the higher costs and risks of noncompliance^[36]. To explore whether government regulation affects the relationship between Confucianism and greenwashing, we use the pollution information transparency index (PITI)^① as a proxy of regulatory intensity. We divide the sample into two groups, strong regulation (Reg_high) and weak regulation (Reg_low), on the basis of the median PITI score for year^②. Table 4 presents the results of the subgroup regression. The findings indicate that Confucianism significantly reduces greenwashing in regions with weak regulation but not in regions with strong regulation. This suggests that when external supervision is limited, Confucianism, as an informal institution, complements the formal system by curbing corporate greenwashing through ethical constraints.

Table 4. Results of the subgroup regression.

Variables	(1)	(2)	(3)	(4)
	Reg_low GW	Reg_high GW	Reg_low GW	Reg_high GW
CONFU200	−0.055*** (−2.70)	0.012 (0.66)		
CONFU300			−0.056*** (−2.69)	−0.021 (−1.07)
SIZE	−0.041* (−1.81)	0.094*** (7.04)	−0.040* (−1.74)	0.093*** (7.00)
AGE	−0.081 (−1.14)	0.080** (1.99)	−0.079 (−1.11)	0.076* (1.89)
SOE	−0.267*** (−5.34)	−0.172*** (−6.97)	−0.264*** (−5.28)	−0.169*** (−6.83)
BS	0.271** (2.22)	0.192*** (3.08)	0.285** (2.34)	0.190*** (3.06)
LEV	0.010*** (7.15)	0.005*** (6.96)	0.009*** (7.10)	0.005*** (6.95)
ROA	−0.004* (−1.91)	−0.008*** (−6.50)	−0.004* (−1.88)	−0.007*** (−6.48)
TQ	0.037** (2.08)	0.036*** (3.53)	0.038** (2.14)	0.036*** (3.53)
GROWTH	0.000 (0.29)	0.000*** (4.12)	0.000 (0.29)	0.000*** (4.11)
RET	−0.049 (−0.29)	0.002 (0.02)	−0.042 (−0.24)	0.001 (0.02)
SV	0.064 (1.55)	0.064*** (3.16)	0.060 (1.47)	0.064*** (3.16)
Constant	0.322 (0.51)	−3.266*** (−8.92)	0.296 (0.47)	−3.139*** (−8.50)
Observations	2224	8121	2224	8121
R-squared	0.439	0.400	0.439	0.400
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

5 Robustness test

5.1 Endogeneity test

The Confucianism variables in this study are based on company addresses and proximity to Confucian temples. While

① Based on the *Measures for the Disclosure of Environmental Information (Trial)* issued by the Ministry of Ecology and Environment of the People's Republic of China in 2007, the pollution information transparency index (PITI) evaluates the level of environmental information disclosure and regulation in 120 Chinese cities using seven indicators, including 'regulatory information' and 'emission data'. The index reflects the intensity of government supervision over the environmental disclosure practices of local companies.

② We also divide the sample by mean PITI, the regression results are robust.

Table 5. Robustness test (alternative measures of CONFU).

Variable	1st	2nd	1st	2nd	1st	2nd	1st	2nd
	CONFU200	GW	CONFU300	GW	CONFU200	GW	CONFU300	GW
LNTAX	0.406***		0.407***					
	−40.23		−33.78					
POPULATION					0.335***		0.414***	
					−27.27		−30.52	
CONFU200		−0.107***				−0.182***		
		(−3.81)				(−4.81)		
CONFU300				−0.107***				−0.147***
				(−3.81)				(−4.83)
Control	YES	YES	YES	YES	YES	YES	YES	YES
Observations	13000	13000	13000	13000	13000	13000	13000	13000
Kleibergen–Paap rk LM statistic	665.814		505.487		465.365		534.919	
Cragg–Donald Wald F statistic	2149.858		2131.78		1090.709		1727.917	
Ind FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

address choice is largely exogenous, some firms may still be located in Confucian-influenced areas for social reasons. To address possible endogeneity, following Du^[10], we use tax factors (LNTAX) and population size (POPULATION), which influence corporate location decisions and are associated with Confucianism, as instrumental variables for a two-stage least squares (2SLS) regression. LNTAX is measured as the natural logarithm of local tax revenues (in million RMB), whereas POPULATION (in thousands) is measured as the natural logarithm of the year-end resident population. Table 5 presents the 2SLS regression results. The first-stage regression shows that the coefficients for the instrumental variables are significantly positive, satisfying the correlation criteria. The second-stage regression results indicate that, even after controlling for potential endogeneity, the influence of Confucianism on greenwashing remains significant.

5.2 Alternative measures of Confucianism

To test the robustness of our findings, we redefine the Confucianism variables using the number of Confucian temples and Confucian academies in the city where companies are registered, divided by the registered household population. These proxy variables, CONFU_CITI1 and CONFU_CITI2, capture the influence of Confucianism in the region. The regression results, presented in Table 6, show that the coefficients of CONFU_CITI1 and CONFU_CITI2 remain significantly negative at the 1% level, confirming the robustness of our conclusions.

6 Conclusions

This paper examines the relationship between Confucianism and corporate greenwashing, revealing three key insights. First, Confucianism significantly reduces corporate greenwashing. Second, corporate green innovation capability serves as an intermediary in this process. Additionally, we find that the impact of Confucianism on greenwashing is pronounced in regions with weak regulatory environments but not in areas with strong regulation. These results remain robust after potential endogeneity is addressed.

On the basis of these findings, we suggest that the government, on the one hand, should actively promote the construc-

Table 6. Robustness test (alternative measures of CONFU).

Variables	(1)	(2)	(3)	(4)
	GW	GW	GW	GW
CONFU_CITI1	−6.665**	−9.231***		
	(−2.36)	(−3.29)		
CONFU_CITI2			−0.863***	−0.869***
			(−4.92)	(−4.95)
SIZE		0.052***		0.047***
		(4.77)		(4.32)
AGE		0.041		0.049
		(1.19)		(1.44)
SOE		−0.169***		−0.188***
		(−8.39)		(−9.23)
BS		0.211***		0.214***
		(3.99)		(4.05)
LEV		0.007***		0.007***
		(11.93)		(11.89)
ROA		−0.007***		−0.007***
		(−7.05)		(−6.78)
TQ		0.033***		0.032***
		(4.08)		(3.86)
GROWTH		0.000***		0.000***
		(3.97)		(3.89)
RET		−0.012		−0.007
		(−0.17)		(−0.10)
SV		0.062***		0.058***
		(3.55)		(3.36)
Constant	0.006	−2.229***	0.019	−2.124***
	(0.48)	(−7.52)	(1.64)	(−7.14)
Observations	11671	11671	11671	11671
R-squared	0.386	0.409	0.386	0.410
Ind FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

tion of a corporate green information disclosure system and strengthen regulatory oversight to increase its standardization and effectiveness. On the other hand, in regions with under-developed institutional frameworks, informal mechanisms

should be leveraged to temporarily address the deficiencies of formal institutions. Additionally, enterprises should harness the strengths of Confucian principles, actively exploring long-term mechanisms rooted in Confucian ethics to optimize corporate governance and improve the quality of green information disclosure.

Acknowledgements

This work was supported by the National Natural Science Foundation of China (72171050).

Conflict of interest

The authors declare that they have no conflicts of interest.

Biographies

Wanbin Pan is an Associate Professor at the University of Science and Technology of China (USTC). She received her Ph.D. degree in Financial Engineering from USTC in 2006. Her research mainly focuses on corporate finance and behavioral finance.

Ruijie Wang is a graduate student under the supervision of Associate Prof. Wanbin Pan at the Department of Statistics and Finance, University of Science and Technology of China. Her research mainly focuses on corporate finance and corporate green behavior.

References

- [1] Hao Y, Wu W. Environment, social, and governance performance and corporate financing constraints. *Finance Research Letters*, **2024**, 62: 105083.
- [2] Lian Y, Weng X. ESG performance and investment efficiency. *Finance Research Letters*, **2024**, 62: 105084.
- [3] Bae J, Yang X, Kim M. ESG and stock price crash risk: Role of financial constraints. *Asia-Pacific Journal of Financial Studies*, **2021**, 50 (5): 556–581.
- [4] Walker K, Wan F. The harm of symbolic actions and green-washing: Corporate actions and communications on environmental performance and their financial implications. *Journal of Business Ethics*, **2012**, 109 (2): 227–242.
- [5] Kudlak R. Greenwashing or striving to persist: An alternative explanation of a loose coupling between corporate environmental commitments and outcomes. *Journal of Business Ethics*, **2025**, 197: 355–370. (核)
- [6] Torelli R, Balluchi F, Lazzini A. Greenwashing and environmental communication: Effects on stakeholders' perceptions. *Business Strategy and the Environment*, **2020**, 29 (2): 407–421.
- [7] Li K, Griffin D, Yue H, et al. How does culture influence corporate risk-taking? *Journal of Corporate Finance*, **2013**, 23: 1–22.
- [8] Christensen D M, Jones K L, Kenchington D G. Gambling attitudes and financial misreporting. *Contemporary Accounting Research*, **2018**, 35 (3): 1229–1261.
- [9] Dyreng S D, Mayew W J, Williams C D. Religious social norms and corporate financial reporting. *Journal of Business Finance & Accounting*, **2012**, 39 (7–8): 845–875.
- [10] Du X. Does Confucianism reduce minority shareholder expropriation? Evidence from China. *Journal of Business Ethics*, **2015**, 132 (4): 661–716.
- [11] Dong Z, Li H. The impact of Confucianism on the efficiency of enterprises green innovation. *Finance Research Letters*, **2023**, 58: 104233.
- [12] Kong X, Xu S, Liu M Y, et al. Confucianism and D&O insurance demand of Chinese listed companies. *Pacific-Basin Finance Journal*, **2023**, 79: 101996.
- [13] Yan Y, Xu X, Lai J. Does Confucian culture influence corporate R&D investment? Evidence from Chinese private firms. *Finance Research Letters*, **2021**, 40: 101719.
- [14] Chao S, Wang S, Li H, et al. The power of culture: Does Confucian culture contribute to corporate environmental information disclosure? *Corporate Social Responsibility and Environmental Management*, **2023**, 30 (5): 2435–2456.
- [15] Arouri M, El Ghoul S, Gomes M. Greenwashing and product market competition. *Finance Research Letters*, **2021**, 42: 101927.
- [16] Hu S, Wang A, Du K. Environmental tax reform and greenwashing: Evidence from Chinese listed companies. *Energy Economics*, **2023**, 124: 106873.
- [17] Zhang D. Subsidy expiration and greenwashing decision: Is there a role of bankruptcy risk? *Energy Economics*, **2023**, 118: 106530.
- [18] Yue J, Li Y. Media attention and corporate greenwashing behavior: Evidence from China. *Finance Research Letters*, **2023**, 55: 104016.
- [19] Liu Y, Zhang J, Dai Y. Analyst following and greenwashing decision. *Finance Research Letters*, **2023**, 58: 104510.
- [20] Marquis C, Tilcsik A. Imprinting: Toward a multilevel theory. *Academy of Management Annals*, **2013**, 7 (1): 195–245.
- [21] Li Y, Yao X. Confucian culture, climate risk, and corporate environmental information disclosure quality: Evidence from China. *Journal of Business Ethics*, **2024**: DOI: 10.1007/s10551-024-05845-2.
- [22] Zhang N, Bo L, Wang X. Confucian culture and corporate default risk: Assessing the governance influence of traditional culture. *International Review of Economics & Finance*, **2024**, 94: 103378.
- [23] Liao F, Sun Y, Xu S. Financial report comment letters and greenwashing in environmental, social and governance disclosures: Evidence from China. *Energy Economics*, **2023**, 127: 107122.
- [24] Ho K C, Shen X, Yan C, et al. Influence of green innovation on disclosure quality: Mediating role of media attention. *Technological Forecasting and Social Change*, **2023**, 188: 122314.
- [25] Huang M, Li M, Huang C. Confucianism culture and green innovation: Evidence from Chinese industrial firms. *Corporate Social Responsibility and Environmental Management*, **2024**, 31 (5): 4862–4877.
- [26] Du K, Cheng Y, Yao X. Environmental regulation, green technology innovation, and industrial structure upgrading: The road to the green transformation of Chinese cities. *Energy Economics*, **2021**, 98: 105247.
- [27] Zhang W, Qin C, Zhang W. Top management team characteristics, technological innovation and firm's greenwashing: Evidence from China's heavy-polluting industries. *Technological Forecasting and Social Change*, **2023**, 191: 122522.
- [28] Lu Z, Lin Y, Li Y. Does corporate engagement in digital transformation influence greenwashing? Evidence from China. *Finance Research Letters*, **2023**, 58: 104558.
- [29] Yu E P, Guo C Q, Luu B V. Environmental, social and governance transparency and firm value. *Business Strategy and the Environment*, **2018**, 27 (7): 987–1004.
- [30] Tamimi N, Sebastianelli R. Transparency among S&P 500 companies: an analysis of ESG disclosure scores. *Management Decision*, **2017**, 55 (8): 1660–1680.
- [31] Wang Z, Sun X, Li W. Cultural diversity and green innovation: Evidence from China. *Finance Research Letters*, **2023**, 58: 104379.
- [32] Xie J, Chen L, Liu Y, et al. Does fintech inhibit corporate greenwashing behavior? Evidence from China. *Finance Research Letters*, **2023**, 55: 104002.
- [33] Gomes M, Marsat S, Peille J, et al. Does religiosity influence corporate greenwashing behavior? *Journal of Cleaner Production*, **2024**, 434: 140151.
- [34] Tan D, Snell R S. The third eye: Exploring guanxi and relational morality in the workplace. *Journal of Business Ethics*, **2002**, 41 (4): 361–384.
- [35] Liu X. Business ethics in China. *Journal of Business Ethics*, **1997**, 16: 1509–1518.
- [36] Liu G, Guo L. How does mandatory environmental regulation affect corporate environmental information disclosure quality. *Finance Research Letters*, **2023**, 54: 103702.