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Integrity-based or profit-oriented: Confucian culture and corporate green fraud behaviour

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Abstract

Aim: This study aimed to explore how Confucian culture, as a form of informal institution, influences the incidence of corporate green fraud in China. In the broader context of China's transition toward a green economy, the research sheds light on the governance function of traditional cultural values in promoting environmentally responsible corporate behaviour.

Methodology: Using a panel dataset of A-share listed firms in China from 2008 to 2020, the study employs empirical analysis to examine the relationship between the prevalence of Confucian culture and corporate green fraud. It further conducts mechanism and heterogeneity analyses to identify potential transmission channels and contextual factors influencing this relationship.

Results: The results reveal that Confucian culture significantly reduces the occurrence of corporate green fraud. This relationship is mediated by enhanced green innovation capabilities, greater financial transparency, and improved quality of environmental disclosures. The impact of Confucian culture also varies across companies based on their geographic location, level of external scrutiny, and operational performance. Additionally, the presence of alternative cultural influences moderates the effectiveness of Confucian norms in curbing green fraud.

Implications and recommendations: The research findings suggest that informal institutions can mitigate corporate green fraud. Future studies should investigate the potential influence of other informal institutional factors on corporate green fraud.

Originality/value: This paper contributes to the literature by providing novel empirical evidence on the role of traditional culture in environmental governance. It highlights the value of leveraging cultural heritage in the fight against greenwashing and offers policy insights for promoting corporate environmental integrity during China's green economic transformation.

Keywords: Confucian culture, corporate green fraud, informal institutions, culture shock

1. Introduction

In recent years the concept of green development has emerged as a critical driver of corporate competitiveness and long-term sustainability. Nevertheless, despite policy efforts to promote green development, businesses often encounter substantial challenges in adopting genuinely sustainable practices. While some companies, in responding to external policies and market incentives, have proactively undertaken green innovation and sustainability initiatives, others have resorted to deceptive practices often referred to as 'green fraud' (also known as greenwashing). It is defined as the strategic construction of an environmentally responsible corporate image through misleading advertising or overstated environmental claims – enables companies to obtain market advantages, green certifications, and/or government subsidies without engaging in substantive environmental practices (Laufer, 2003). Such behaviour not only misleads consumers and the broader public, but also undermines the company's long-term sustainability and impedes broader efforts toward ecological civilization.

The extant literature on green fraud primarily highlights the influence of external mechanisms, such as government regulation and media oversight (Lyon & Montgomery, 2013; Sun & Zhang, 2019). By contrast, limited attention has been paid to the role of internal cultural factors, particularly the potential influence of Confucian culture, in deterring green fraud. As a foundational element of traditional Chinese values, Confucian culture exerts a profound influence on behavioural norms in both societal and organizational contexts. Confucian doctrine emphasises principles such as integrity, benevolence, and moral responsibility, advocating that individuals and businesses uphold social obligations and environmental stewardship alongside the pursuit of economic gain. Within corporate decision-making processes, Confucian culture not only shapes the ethical outlook and value orientation of senior executives, but also subtly informs broader corporate philosophies and approaches to social responsibility. Accordingly, this culture may serve as a critical internal normative force that constrains green fraud and fosters authentic corporate engagement in environmentally responsible practices.

Confucian culture, functioning as an informal institutional system embedded within traditional Chinese social governance, highlights a normative framework rooted in the values of benevolence, righteousness, propriety, wisdom, and trust, along with the moral progression of "cultivating the self, regulating the family, governing the state, and bringing peace to the world." This cultural system has demonstrated a form of institutional constraint in shaping corporate managerial behaviour. Some empirical studies suggested that Confucian culture influences the behavioural logic of corporate executives by shaping their value systems and moral cognition, thereby affecting major economic decisions. Du (2015) found that companies located in regions with a stronger Confucian cultural presence were less likely to infringe upon the rights of minority shareholders, indicating that such cultural influence serves to curb managerial opportunism. Yan et al. (2021) noted that Confucian values–particularly those emphasizing sincerity and epistemological inquiry–enhance companies' propensities for R&D investment and reinforce their innovation orientation. Other studies revealed that Confucian culture mitigates corporate risk-taking (Wu & Wan, 2024), increases philanthropic activity (Kanagaretnam et al., 2019), enhances contract enforcement and internal control mechanisms (Tang et al., 2022), and promotes proactive green mergers and acquisitions among heavily polluting operations (Ye et al., 2024). While these findings underline the normative and regulatory roles of Confucian culture in curbing corporate misconduct and fostering ethical behaviour, its specific influence on the incidence of green fraud remains underexplored in the literature.

The issue of corporate green fraud has garnered increasing attention in academic research. Existing studies generally contend that the emergence of green fraud is influenced by a range of factors, including the robustness of formal institutional regulation, the design of corporate governance structures, and the personal characteristics of senior executives(Deng et al., 2025; Zhang, 2023). On the one hand, regulatory ambiguity and selective application of environmental policy instruments create opportunities for companies to engage in information manipulation, and while media oversight, public opinion, and stakeholder pressure serve as potential external constraints (Lyon & Montgomery, 2013), their disciplinary efficacy remains contingent on institutional enforcement and the degree of information transparency. On the other hand, as a form of strategic behaviour orchestrated by top management, the occurrence of green fraud is fundamentally shaped by the ethical orientations and personal values of executives. Earlier research identified a range of individual-level factors – including perceptions of social responsibility, tolerance for performance pressure, environmental attitudes, religious convictions, and even family background – that influence executive decision-making under moral temptation (Hao et al., 2025; Zhang et al., 2023). Despite growing interest in the behavioural motivations underlying green fraud, the literature remains underdeveloped in addressing its cultural foundations, particularly in terms of systematically analysing how informal institutions can shape behavioural restraint mechanisms. Accordingly, integrating the ethical constraint logic embedded in Confucian culture with the analytical framework of green fraud not only broadens the research frontier at the intersection of environmental governance and political economy but also offers a normative foundation for refining the soft institutional design of China's green governance regime. Building on this perspective, this study systematically investigated the constraint mechanisms and behavioural effects of Confucian culture in relation to corporate green fraud.

This paper makes three primary contributions to the literature. First, it introduces Confucian culture into the analytical framework of green fraud, thereby extending the inquiry into the cultural foundations of corporate misconduct within the domain of environmental governance. Departing from earlier research that emphasised formal institutional constraints, the paper highlights the ethical disciplining function of informal institutions, revealing the endogenous role of Confucian culture in shaping corporate green responsibility. Second, it investigates how Confucian culture shapes managerial moral cognition and value orientation, which in turn influences corporate green fraud behaviour, thereby enriching our understanding of the "culture–cognition–behaviour" linkage in corporate decision-making. Third, it develops a culturally embedded analytical framework for understanding the mechanisms of green fraud, identifies key conditions and boundary effects that shape the influence of Confucian culture, and offers both theoretical foundations and empirical support for designing soft constraint mechanisms within green governance systems.

2. Theory and research hypotheses

2.1. The influence of Confucian culture on corporate green fraud

Confucian culture, as one of the historically embedded ethical and social traditions in Chinese society, constitutes an important component of the country's broader system of informal institutions and moral frameworks, rather than merely a homogeneous or exogenously given cultural factor. Following insights from sociological and institutional theories, culture is not understood here as a fixed normative blueprint, but as a socially constructed and context-dependent system of meanings, practices, and expectations that interacts with formal institutions and local social structures (Ling, 2019).

Confucian culture has long highlighted virtues such as benevolence (Ren), righteousness (Yi), propriety (Li), wisdom (Zhi), and trust/integrity (Xin). These values have historically shaped interpersonal relations, community governance, and ethical discourses in Chinese society (Li, et al., 2024). However, a distinction must be made between the normative ideals of Confucian ethics and their actual social practices, as the latter vary significantly across regions and historical periods depending on local traditions, levels of marketisation, and institutional environments.

From this perspective, Confucian culture does not operate as a deterministic moral force, but rather as a symbolic and normative resource that may influence corporate behaviour through multiple channels, such as social expectations, reputation mechanisms, and locally embedded relational networks (e.g. clan structures and business communities). In particular, under conditions where informal social monitoring is salient and community ties are dense, Confucian norms related to integrity and moral self-restraint may increase the perceived moral and reputational costs of green fraud, thereby shaping companies' behavioural choices beyond purely economic incentives. This mechanism echoes earlier arguments that integrity-oriented norms reduce opportunistic corporate behavior and enhance disclosure credibility (Ip, 2009; Low & Ang, 2012). Meanwhile, existing studies in cultural economics also demonstrated that cultural factors can be meaningfully operationalised and incorporated into empirical models of economic behaviour and organizational outcomes (Guiso et al., 2006).

Moreover, while virtues such as altruism, honesty and public morality are present across various religious and ethical traditions (including Buddhism, Daoism, Christianity, and others), the sociocultural specificity of Confucianism in the Chinese context lies in its long-standing integration with state ideology, educational systems and local governance practices, which may grant it a distinct role in structuring social expectations and corporate legitimacy in contemporary China (Li et al., 2024).

Therefore, rather than interpreting Confucian culture as a monolithic or universally effective moral force, this study conceptualised it as a form of regionally embedded informal institution, whose influence on corporate green fraud depends on local social conditions, patterns of cultural transmission, and the interaction with formal regulatory systems. Under such conditions, businesses located in regions with stronger Confucian cultural embeddedness may experience higher normative and reputational pressures to avoid green fraud, ceteris paribus. Therefore, the following hypothesis is proposed:

H1: The higher the level of Confucian cultural embeddedness in a region, the less likely corporations are to engage in green fraud.

2.2. Confucian culture, corporate green innovation and green fraud

The ecological ethics and moral norms embedded in Confucian culture provide an important normative foundation for fostering corporate green innovation, but the relationship between culture and innovation must be understood as contingent on social, institutional, and economic factors. Confucianism advocates a harmonious human-nature relationship and stresses the collective responsibility toward the common good, with an emphasis on values such as the "unity of man and nature" and "the benevolent person loves others" (Dong & Li, 2023; Huang et al., 2024). Empirical studies also demonstrated that regional cultural traits can be systematically operationalised and incorporated into quantitative analyses of economic and organizational behaviour, and are closely linked to institutional quality and long-term development patterns (Tabellini, 2010). However, this normative framework should not be interpreted as an automatically functioning driver of innovation, as the degree to which these values are implemented in practice depends on local social conditions, market dynamics, and regulatory enforcement mechanisms.

In regions with dense informal networks and strong social capital, Confucian culture may promote corporate green innovation by embedding norms of social responsibility and ethical governance within corporate strategies. In these contexts, the value of integrity (Xin) may lead managers to prioritise genuine green innovation over superficial greenwashing, as such fraudulent practices would expose companies to high reputational and social costs (Wang & Lv, 2023). Furthermore, the importance of moral evaluation and public scrutiny in Confucian society enhances incentives for companies to adopt authentic green strategies which align with both formal regulations and informal community expectations (Zhang et al., 2025; DiMaggio & Powell, 1983).

However the adoption of green innovation is not solely determined by Confucian cultural norms but is also influenced by the broader institutional environment, such as the availability of green technologies, market incentives for innovation, and the role of government policies in promoting environmental responsibility. Therefore, while Confucian culture may provide a moral anchor for green innovation, its actual impact is shaped by the interplay between ethical norms and external institutional factors. Based on these insights, the following hypothesis is proposed:

H2: Confucian culture indirectly inhibits corporate green fraud by promoting corporate green innovation.

2.3. Confucian culture, corporate financial transparency and green fraud

Confucian culture highlights the principles of sincerity (Cheng) and trust (Xin), which function as moral imperatives for individuals and organizations to act with integrity, consistency, and social responsibility. These values establish an important ethical foundation for information governance and corporate accountability (Tang et al., 2022), yet these ethical values do not automatically lead to transparency in corporate financial practices. Instead, transparency must be understood as a complex, context--dependent outcome shaped by both internal corporate norms and external institutional pressures.

In regions where Confucian norms are deeply embedded, companies are more likely to internalise these values and prioritize the ethical obligations associated with financial transparency. In such contexts, Confucian ethics may encourage businesses to align their financial disclosures with moral expectations, thereby reducing the temptation to engage in deceptive practices or green fraud. This alignment is not purely a product of Confucian culture, but rather interacts with external factors such as the regulatory framework, the strength of auditing systems, and the level of public awareness regarding environmental issues. Moreover, existing cultural economics literature has demonstrated that culture and social norms shape institutional quality and organizational behaviour in systematic and measurable ways (Alesina & Giuliano, 2015).

Confucian culture enhances the reputational and moral costs of financial misrepresentation by fostering a strong sense of social evaluation and communal judgment. Under conditions where companies are subject to intense local scrutiny, Confucian norms may strengthen the role of informal social networks and reputational mechanisms in holding corporations accountable for their environmental claims, thus reinforcing the incentive for firms to disclose financial and environmental information truthfully (Zhang et al., 2025). This process is facilitated by the Confucian emphasis on self--cultivation and moral responsibility, which fosters an organizational culture that values consistency and honesty. Based on this concept, the third hypothesis is proposed:

H3: Confucian culture indirectly inhibits corporate green fraud by improving corporate financial transparency.

2.4. Confucian culture, quality of corporate environmental disclosures, and green fraud

The quality of corporate environmental disclosures reflects the extent to which companies uphold their environmental responsibilities and is an important mechanism for external stakeholders to monitor corporate behaviour (Li & Yao, 2025; Zhao et al., 2024). However, the quality of these disclosures cannot be understood solely as a function of Confucian cultural norms, but rather results from a complex interaction between cultural values, institutional constraints, and regulatory frameworks.

Confucian culture, with its emphasis on integrity (Xin) and sincerity (Cheng), promotes the idea that corporate actions should align with ethical principles. This cultural orientation may increase the likelihood that businesses will approach environmental disclosures as a moral duty, ensuring that the information disclosed is truthful, comprehensive, and aligned with societal expectations (Chao et al., 2023). As with other aspects of corporate governance, the actual quality of environmental disclosures is contingent upon a variety of external factors, including the institutional context, the presence of regulatory oversight, and the level of public concern over environmental issues.

In regions where Confucian norms are strongly embedded within local communities, environmental disclosures may be subject to additional informal institutional constraints that enhance their accuracy and completeness. This is because companies are not only held accountable by formal regulatory bodies but also by social networks that assess their reputation within the community, reinforcing communal norms and shared moral expectations (Qu & Leung, 2006). The Confucian concept of moral self-regulation, coupled with the communal pressures of social evaluation, may encourage businesses to provide more reliable and transparent environmental disclosures.

Moreover, the localised social fabric shaped by Confucian norms amplifies reputational mechanisms, prompting companies to adopt more cautious and truthful disclosure practices under community, media, and peer scrutiny. Thus, by enhancing corporate sensitivity to moral evaluation and reinforcing internal self-discipline, Confucian culture contributes to improved disclosure quality, thereby exerting a constraining effect on green fraud through information-based mechanisms (Wu et al., 2025). Thus the fourth research hypothesis is proposed:

H4: Confucian culture indirectly inhibits corporate green fraud by improving the quality of corporate environmental disclosure.

3. Methodology

3.1. Data source

This study employed a panel dataset of Chinese A-share listed companies spanning the period from 2008 to 2020. Data on Confucian cultural influence were manually compiled, while environmental advocacy indicators were extracted from their annual reports. Other financial and control variables were primarily sourced from the CSMAR database. Prior to formal regression analysis, the dataset was refined through several preprocessing steps: (1) financial companies were excluded due to their distinct regulatory and reporting frameworks; (2) companies classified as ST, ST*, or delisted were removed to avoid biases associated with financial distress or trading suspension; and (3) continuous variables (Includes all variables in this paper except for *Dual* and *Audit*) were winsorised at the 1st and 99th percentiles to minimise the effect of outliers.

3.2. Variables

(1) Dependent variable

Company Green Fraud (*GW*), also known as company greenwashing, refers to the discrepancy between a company's environmental claims and its actual environmental practices. Several approaches have been used to measure this phenomenon. One method assesses the gap between ESG disclosure scores and underlying ESG activities (Zhang, 2022), while another approach classifies companies as greenwashing entities if they promote environmental advocacy while simultaneously receiving environmental penalties (Hu, et al., 2023). A third and more comprehensive method measures greenwashing as the difference between corporate environmental advocacy and actual environmental investments (Tang, et al., 2023). Fundamentally, greenwashing occurs when rhetorical commitments to environmental sustainability exceed actual practices. Accurate measurement, therefore, requires a framework that jointly evaluates both environmental advocacy and environmental action. The ESG score-based method is limited by its broader focus on corporate social responsibility, while the penalty-based approach relies on the unrealistic assumption of uniform regulatory enforcement. In contrast, the advocacy–action discrepancy offers a more valid measure, hence this study adopted the greenwashing measurement approach proposed by Tang et al. (2023).

The measurement was operationalised as follows. First, environmental advocacy was quantified by extracting the frequency of environmental keywords in the Management Discussion and Analysis (MD&A) section of annual reports using text mining techniques. Second, environmental action was measured based on total annual environmental protection investments identified in detailed disclosures of construction-in-progress expenditures. Finally, both variables were standardised, and the difference between environmental rhetoric and action was computed to derive the corporate greenwashing index.

(2) Independent variable

Confucian Culture (*Confucian*). Following the approach of Jinyu et al. (2024), this study adopted the number of extant Confucian temples within a 100-kilometer radius of a company's registered location as a proxy for the regional influence of Confucian culture on corporate behaviour.

(3) Control variable

Drawing on the methodologies of Hu et al. (2023) and Tang et al. (2023), this study incorporated a set of control variables to account for company-level heterogeneity, which include: company size (*Size*) measured as the natural logarithm of total assets; financial leverage (*Lev*); ownership concentration proxied by the shareholding ratio of the largest shareholder (*First*); operating income growth rate (*Growth*); return on total assets (*ROA*); managerial duality (*Dual*) which equals 1 if the general manager also serves as the board chair, and 0 otherwise; audit opinion (*Audit*), coded as 1 for unqualified audit reports and 0 otherwise; *Tobin-Q*, defined as the ratio of market value to book value. Descriptive statistics for these variables are presented in Table 1.

Table 1. Descriptive statistics of variables

Variables	Obs	Mean	SD	Min	Median	Max
GW	27167	0.0651	1.415	-52.0617	-0.2086	18.9078
Confucian	27167	6.4243	4.245	0.0000	6.0000	24.0000
Size	27167	22.1524	1.275	19.8122	21.9579	26.1857
Lev	27167	0.4217	0.203	0.0505	0.4143	0.8881
First	27167	0.3536	0.149	0.0879	0.3355	0.7482
Growth	27060	0.3242	0.859	-0.6745	0.1248	6.7182
ROA	27167	0.0405	0.058	-0.2282	0.0392	0.1976
Dual	26816	0.2707	0.444	0.0000	0.0000	1.0000
Audit	27167	0.9763	0.152	0.0000	1.0000	1.0000
Tobin-Q	26710	1.9788	1.178	0.8680	1.6034	7.7600

Source: authors' own work.

3.3. Model

To determine the appropriate regression specification, the authors conducted a Hausman test, which yielded a p-value of 0.000. This result rejected the null hypothesis that "the difference in coefficients is not systematic", strongly supporting the use of a fixed-effects model over a random-effects model (Hausman, 1978). Thus the ordinary least squares fixed-effects regression model (1) was employed to estimate the effect of Confucian culture on corporate green fraud. Furthermore, to account for potential heteroscedasticity, robust standard errors were used in all regression equations (Wooldridge, 2010). The dependent variable, $GW_{i,t}$, denoted the degree of greenwashing for company *i* in year *t;* the key explanatory variable, $Confucian_{i,t}$, captured the influence of Confucian culture on the company; *CVS* represented control variables, while λ_j and δ_t denoted industry and year fixed effects, respectively, and $\mu_{i,t}$ was the error term. The coefficient of interest, ϕ_1, reflected the effect of Confucian cultural influence on the corporate greenwashing index.

$$GW_{i,t} = \phi_0 + \phi_1 Confucian_{i,t} + \sum_{k=1}^{8} \eta_k CVS_{k,i,t} + \lambda_j + \delta_t + \mu_{i,t} \tag{1}$$

4. Results

4.1. Baseline regression results

Table 2 presents the baseline regression results assessing the impact of Confucian culture on corporate green fraud. Column (1) reports the results of the initial specification, indicating that Confucian culture was significantly negatively associated with greenwashing at the 1% level. Column (2) incorporated year and industry fixed effects, and the coefficient of interest remained significantly negative. In Column (3), company-level control variables were introduced, and the negative relationship persised, both in magnitude and statistical significance. Additionally, the F-test statistics for columns (1) to (3) were 19.1540, 67.6757, and 59.8735, respectively, all with p-values of 0.0000, indicating that the joint significance of fixed effects was statistically confirmed. Therefore, these results suggest that greater exposure to Confucian cultural influence is associated with a lower propensity for corporate green fraud, thereby providing empirical support for Hypothesis 1.

Table 2. Baseline regression

	(1)	(2)	(3)
Confucian	-0.0083^{***}	-0.0052^{***}	-0.0036^{**}
	(0.0019)	(0.0019)	(0.0018)
Size			-0.1159^{***}
			(0.0194)
Lev			0.4707^{***}
			(0.0640)
First			-0.3507^{***}
			(0.0739)
Growth			0.0208^{***}
			(0.0070)
ROA			0.9421^{***}
			(0.1330)
Dual			-0.0950^{***}
			(0.0126)
Audit			0.0980^{***}
			(0.0356)
Tobin-Q			-0.0553^{***}
			(0.0059)
Constant	0.1187^{***}	-0.9203^{***}	1.1687^{***}
	(0.0124)	(0.1190)	(0.4189)
F-test statistic	19.15	67.68	59.87
F-test statistic *P* value	0.0000	0.0000	0.0000
Industry FE	No	Yes	Yes
Year FE	No	Yes	Yes
N	27167	27167	26264
R^2	0.0006	0.1225	0.1330

Note: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$, same as below.

Source: authors' own work.

4.2. Robustness test

To assess the robustness of the baseline regression results, the authors conducted a series of sensitivity tests by modifying the core variables and adjusting the sample. First, to mitigate potential measurement bias in the greenwashing variable, the original explanatory indicators were replaced with alternative measures of corporate greenwashing. Specifically, instead of using the total environmental investment, two alternative proxies were employed: the amount of environmental investment directed toward ongoing environmental protection projects, and the environmental expenditure embedded within management costs. For environmental advocacy, the study continued to use the ratio of environmental keywords to the total word count in the annual report. The regression results using these alternative specifications are reported in columns (1) and (2) of Table 3. The coefficients on Confucian culture remained significantly negative, consistent with the baseline findings.

Second, the authors implemented a more stringent treatment of outliers by trimming all continuous variables at the 5th and 95th percentiles. The results, presented in column (3) of Table 3, continue to support the original conclusion, indicating that the observed relationship was not driven by extreme values. Third, the study further accounted for heterogeneity in local environmental conditions across cities. In regions with higher environmental quality, public expectations and regulatory pressures on firms may be lower, reducing the need for symbolic compliance and weakening incentives for greenwashing (Yang et al., 2024). To control for this potential confounding factor, the authors excluded businesses located in cities with the highest environmental quality and re-estimated the model. As shown in column (4) of Table 3, the coefficient on Confucian culture remained significantly negative, further validating the robustness of the baseline results. Fourth, to mitigate potential bias from population size, the *Confucian* measure was rescaled by dividing it by regional population, constructing a new variable – *Confucian1*. As shown in column (5) of Table 3, the coefficient on *Confucian1* remained significantly negative, consistent with the baseline results. Fifth, to better isolate the effect of local culture, the authors excluded entities operating across regions and re-estimate the model in column (6). The results are robust, with findings aligning closely with the baseline estimates. Sixth, to address potential autocorrelation, the study adopted industry-level clustered standard errors in column (7) of Table 3. The estimated coefficient on Confucian remained statistically significant and negative, reinforcing the reliability of the core inference.

Table 3. Robust test regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Confucian	–0.0035**	–0.0037**	–0.0050***	–0.0045**		–0.0073*	–0.0072*
	(0.0018)	(0.0017)	(0.0019)	(0.0018)		(0.0039)	(0.0037)
Confucian1					–0.4490***		
					(0.0762)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	26151	24419	22385	26264	24073	6236	26264
R^2	0.1194	0.1836	0.1325	0.1269	0.1360	0.1042	0.1007

Source: authors' own work.

4.3. Endogeneity test

Confucian culture has been embedded in China's historical and cultural fabric for over two millennia and exhibits a strong degree of exogeneity, nevertheless the potential influence of unobserved factors on the estimated relationship cannot be entirely ruled out. For instance, certain local governments may actively promote Confucian culture to enhance regional reputation or stimulate tourism, potentially overstating its actual cultural penetration. To address this potential endogeneity concern, the authors followed the approach of Xu et al. (2023) and utilised the number of ancient chastity archways – an indicator of traditional Confucian moral norms – within a 100-kilometer radius of a company's registered location as an instrumental variable for Confucian cultural influence. Specifically, the study used the logarithm of one plus the number of chastity archways. These structures, which honour female chastity and reflect the Confucian ideals of the "three obediences and four virtues" (Zhan, 1996), serve as enduring symbols of Confucian moral authority. Regions with a higher density of such monuments are therefore more likely to exhibit stronger Confucian cultural influence. This approach satisfies both the relevance and exogeneity conditions required for valid identification.

Table 4. Estimation results

	First Stage	Second Stage
	Confucian	*GW*
Chas	0.0636***	
	(0.0006)	
Confucian		–0.0103***
		(0.0031)
First stage C-D F-value	68.54	
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	26264	26264
R^2	0.2471	0.1326

Source: authors' own work.

Table 4 reports the results of the two-stage least squares (2SLS) estimation. In the first stage, the instrumental variable was significantly and positively associated with the Confucian culture proxy, and the F-statistic was 68.54, well above the conventional threshold of 10, thus rejecting the null hypothesis of weak instruments. In the second stage, after correcting for potential endogeneity, the coefficient on Confucian culture remained significantly negative, confirming its mitigating effect on corporate green fraud.

4.4. Heterogeneity test

(1) Heterogeneity of corporate locations

Earlier research primarily examined the average effect of Confucian culture on corporate green fraud in China. To investigate whether this relationship exhibits heterogeneity across different regional or cultural contexts, the authors conducted subgroup analyses under various conditions. One important dimension of variation lies in administrative geography. In particular, border regions often host larger ethnic minority populations and are more heavily influenced by indigenous cultural traditions as well as neighbouring countries' cultural practices (Buckley, 1996). As a result, the influence of mainstream

Confucian culture in these regions tends to be weaker. Columns (1) and (2) of Table 5 present the regression results for businesses located in border and non-border areas, respectively. The findings support the posed hypothesis, showing that the inhibitory effect of Confucian culture on green fraud is more pronounced in non-border regions.

The study also examined differences between coastal and inland regions. Coastal areas, due to their earlier integration into global trade and greater exposure to foreign cultural influences, may experience a dilution of traditional Confucian values. In contrast, inland regions tend to retain stronger Confucian cultural roots. Columns (3) and (4) of Table 5 report the estimation results for coastal and inland subsamples, respectively. In line with the authors' expectations, the results indicate that the restraining effect of Confucian culture on green fraud was statistically significant in inland regions but not in coastal regions, further highlighting the context-dependent nature of cultural influence on corporate behaviour.

Table 5. Regional heterogeneity of corporate

	(1)	(2)	(3)	(4)
Confucian	–0.0029	–0.0036**	0.0010	–0.0052**
	(0.0060)	(0.0018)	(0.0019)	(0.0026)
Group by	Border	Non-border	Coastal	Non-Coastal
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2685	23579	16460	9804
R^2	0.2227	0.1327	0.2187	0.1126

Source: authors' own.

(2) Heterogeneity of external corporate attention

This study further investigated the effect of Confucian culture on corporate green fraud under varying levels of external attention. Companies that receive closer scrutiny from the public and capital markets tend to place more emphasis on cultivating a socially responsible image, as such efforts are often associated with enhanced reputational and financial returns (Porter & Kramer, 2006). However, this incentive structure may also increase the likelihood of greenwashing as a means to project environmental responsibility. To examine this heterogeneity, companies were classified into high and low external attention groups. External attention was proxied by two indicators: the number of analysts (or analyst teams) covering a company in a given year, and the number of research reports issued about the company. Separate regressions were then conducted for each group.

The results in Table 6 reveal that Confucian culture significantly reduced the incidence of green fraud among businesses with high external attention. By contrast, the inhibitory effect was not statistically significant for those with low external visibility. A plausible explanation is that, in companies receiving lesser public scrutiny, the marginal benefits of cultivating a green social image were limited, thereby reducing both the incentive for greenwashing and the moderating role of cultural norms.

Table 6. Heterogeneity of external attention

	(1)	(2)	(3)	(4)
	GW	*GW*	*GW*	*GW*
Confucian	–0.0073**	0.0002	–0.0062**	–0.0004
	(0.0030)	(0.0019)	(0.0027)	(0.0020)

	(1)	(2)	(3)	(4)
Group by	Analyst attention: High	Analyst attention: Low	Report attention: High	Report attention: Low
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	12081	14183	13282	12982
R^2	0.1243	0.2498	0.1255	0.2458

Source: authors' own work.

(3) Heterogeneity of corporate operating performance

This study also investigated whether the effect of Confucian culture on corporate green fraud varies with companies' operational performance. Specifically, the sample was divided into four groups based on performance characteristics: high-efficiency versus low-efficiency companies, and high-risk versus low-risk ones. The regression results in Table 7 indicate that Confucian culture significantly inhibited green fraud among businesses with high operational efficiency or low operational risk. However, the inhibitory effect was not statistically significant for those with poor performance—namely with low efficiency or high risk.

Table 7. Heterogeneity of corporate operating performance

	(1)	(2)	(3)	(4)
	GW	*GW*	*GW*	*GW*
Confucian	-0.0068^{***}	0.0011	0.0008	-0.0053^{**}
	(0.0023)	(0.0024)	(0.0021)	(0.0026)
Group by	High business efficiency	Low business efficiency	High business risk	Low business risk
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	13156	13108	13150	13114
R^2	0.1414	0.1498	0.1965	0.1267

Source: authors' own work.

A plausible explanation for this heterogeneity lies in the differing capacity and strategic orientation of firms. High-efficiency and low-risk companies tend to possess more organizational resources and greater operational stability, enabling them to invest meaningfully in environmental initiatives and align their actions with the ethical principles embedded in Confucian culture. In contrast, those with weaker performance may prioritise short-term financial survival over long-term ethical commitments, thereby limiting the extent to which Confucian values are internalised and translated into responsible environmental behaviour.

4.5. Mechanism analysis

Building on the theoretical framework outlined in Section 2, this study further investigated the underlying mechanisms through which Confucian culture influences corporate green fraud. The authors first examined the mediating role of green innovation. Rooted in the Confucian ideal of "benefiting the people and society," this cultural tradition encourages corporate managers to assume broader social responsibilities, thereby enhancing public legitimacy. Green technological innovation, by improving environmental outcomes, aligns with both societal expectations and normative Confucian values. Consequently, companies guided by Confucian principles are more likely to proactively invest in green innovation, enhance environmental efficiency through concrete actions, and reduce reliance on greenwashing. To capture green innovation, two measures were applied: the ratio of green R&D investment to total revenue, and the (log-transformed) number of green patent applications. Regression results reported in columns (1) and (2) of Table 8 indicate that Confucian culture significantly promotes green innovation and reduces corporate green fraud, thus providing empirical support for Hypothesis 2.

Moreover, Confucian culture emphasises principles of integrity and fairness, which can enhance financial transparency and thereby further constrain opportunistic behaviour, including greenwashing. Corporate earnings management (*EM*) and related party transactions (*RPTs*) are widely regarded as indicators of managerial self-interest and weak transparency (Leuz & Wysocki, 2016). Higher levels of *EM* and *RPTs* suggest a greater risk of financial manipulation, thus the study used these two variables to proxy for self-serving corporate behaviour. Earnings management was measured following the approach of Rudolf and Ziemba (2004), while related party transactions were given as the ratio of related transactions to total assets. The regression results, shown in columns (3) and (4) of Table 8, reveal that Confucian culture was negatively associated with both indicators at the 1% significance level. These findings suggest that Confucian cultural influence reduces opportunistic financial practices and improves transparency, thereby offering further evidence in support of Hypothesis 3.

Table 8. Mechanism Test of Green innovation and financial transparency

	Green innovation		Financial transparency	
	(1)	(2)	(3)	(4)
	R&D	GI	*EM*	*RPTs*
Confucian	0.0001^{***}	0.0020^{***}	-0.0006^{***}	-0.0041^{***}
	(0.0000)	(0.0007)	(0.0002)	(0.0015)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	26264	22579	22711	24815
R^2	0.5473	0.1244	0.1596	0.3799

Source: authors' own work.

This study also examined the role of information disclosure quality as a mechanism through which Confucian culture influences corporate green fraud. High-quality disclosure enhances transparency and accountability, thereby reducing the likelihood of opportunistic environmental misrepresentation. To capture disclosure quality, the study employed three complementary indicators. First, it used the information disclosure rating issued by the China Securities Regulatory Commission (CSRC), which categorises firms into four levels – unqualified (1), qualified (2), good (3), and excellent (4) – with higher scores indicating superior disclosure quality. Second, the study incorporated the Internal Control Information Disclosure Index (*DI*), published by Deepo, which assesses the comprehensiveness and clarity of companies' internal control disclosures, where higher values reflect better quality. Third, the Environmental Governance Information Disclosure Index (*EID*) which evaluates companies' environmental disclosures across six dimensions was applied: air emission reduction, wastewater treatment, dust and soot control, solid waste disposal, noise reduction, and adoption of clean production practices. Each category was scored as follows: 0 for no disclosure, 1 for qualitative disclosure, and 2 for quantitative disclosure. Thus the aggregate *EID* score reflected the overall quality of environmental governance disclosure. Table 9 presents the regression results examining the relationship between Confucian culture and information disclosure quality. The results consistently show that Confucian culture exerts a significant positive effect on all three indicators, indicating that it enhances the quality of corporate information disclosure. These findings provide robust empirical support for Hypothesis 4.

Table 9. Mechanism Test of quality of corporate disclosure

	Improvement in the quality of corporate disclosure		
	(1)	(2)	(3)
	Score	*DI*	*EID*
Confucian	0.0039***	0.0161*	0.0092***
	(0.0010)	(0.0093)	(0.0034)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	19062	26247	26024
R^2	0.2182	0.4201	0.2664

Source: authors' own work.

4.6. Further research: influence of other cultures

While Confucian culture provides a prominent influence in Chinese society, it is not the only cultural force shaping corporate behaviour. Other elements of China's informal institutional landscape, namely Buddhism, Taoism, and clan culture, may also play important roles. To account for these additional cultural factors, the empirical analysis was extended to examine the influence of these traditions on corporate green fraud, as well as their potential moderating effects on the relationship between Confucian culture and greenwashing. Specifically, the authors proxied the regional influence of Buddhism and Taoism by counting the number of major Buddhist temples and Taoist monasteries located within a 100-kilometer radius of each company's registered address. Clan culture was proxied by genealogical density, calculated as the number of clan genealogies per million people in each region. These cultural indicators, along with their interaction terms with Confucian culture, were incorporated into the regression model.

The results in Table 10 reveal several important findings. First, the presence of Buddhist cultural influence weakened the inhibitory effect of Confucian culture on corporate green fraud. A plausible explanation is that Buddhism's emphasis on tolerance and compassion may soften societal expectations for corporate accountability, thereby diluting the reputational pressures that otherwise curb greenwashing. In contrast, the influence of Taoism amplified the negative relationship between Confucian culture and green fraud, most likely due to Taoism's core doctrine of harmony with nature, which reinforced environmental responsibility norms. Similarly, clan culture was found to enhance the constraining effect of Confucianism, potentially through its emphasis on family honour and collective reputation, which motivated companies to align more closely with socially responsible behavior. Importantly, the analysis also revealed that Taoism, independently of Confucian influence, exerted a significant direct inhibitory effect on corporate green fraud, whereas neither Buddhism nor clan culture demonstrated a statistically significant direct effect. These findings underline the multifaceted role of informal cultural institutions in shaping corporate environmental behaviour in China.

Table 10. Impact of other cultural factors

	(1)	(2)	(3)
	GW	*GW*	*GW*
Confucian	0.0104***	–0.0086***	–0.0048**
	(0.0025)	(0.0028)	(0.0022)
FO	–0.0010		
	(0.0043)		
Confucian×FO	–0.0025***		
	(0.0005)		
DAO		–0.0001*	
		(0.0001)	
Confucian×DAO		0.0001***	
		(0.0000)	
Clan			–0.0112
			(0.0101)
Confucian×Clan			0.0028**
			(0.0014)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	26264	26264	23632
R^2	0.1346	0.1333	0.1266

Source: authors' own work.

5. Discussion and conclusions

5.1. Conclusion

This paper offers an in-depth examination of the normative role of Confucian culture in shaping corporate green fraud behaviour through the lens of informal institutions. Utilising panel data from A-share listed firms in Shanghai and Shenzhen spanning the period 2008–2020, the empirical analysis revealed that Confucian culture significantly reduced the likelihood of corporate greenwashing. This core finding was robust to a range of sensitivity tests, underlining the regulatory function of cultural values in corporate environmental conduct. Mechanism analyses further suggested that Confucian culture constrained green fraud by promoting green innovation, enhancing financial transparency, and improving the quality of environmental information disclosure. These results highlight the internal logic through which informal institutions influence corporate environmental behaviour, while also offering a novel perspective on the cultural embedding of company-level decision-making processes. Moreover, heterogeneity analyses indicated that the influence of Confucian culture varied systematically depending on companies' geographic location, degree of external scrutiny, and operational performance. The presence of alternative cultural traditions may also moderate the institutional role of Confucianism, weakening its normative force under certain contextual conditions. Taken together, these findings highlight the nuanced and context-dependent nature of cultural governance and enrich our understanding of how traditional values shape modern corporate environmental behaviour.

5.2. Discussion

Drawing on the theory of informal institutions, this study investigated the normative role of Confucian culture in shaping corporate green fraud and identified its underlying mechanisms of influence and contextual boundaries. The empirical findings demonstrated that Confucian culture significantly constrains greenwashing behaviour through multiple channels, including the promotion of green innovation, the enhancement of financial information transparency, and the improvement of environmental disclosure quality. These results contribute to ongoing theoretical discussions regarding corporate responsibility mechanisms under China's green development agenda and provide robust empirical support for understanding how traditional cultural norms are embedded in contemporary corporate governance frameworks (Huang et al., 2024; Li & Yao, 2025; Tang et al., 2022). From the perspective of institutional economics, Confucian culture – an informal institution deeply rooted in China's social fabric – operates not through formal legal sanctions or external enforcement, but through the internalisation of moral norms and value-based behavioral expectations. As such, it constitutes a 'soft constraint' that can complement formal institutions, particularly in contexts where environmental governance is becoming increasingly complex and externally fragmented. By enhancing institutional resilience and behavioural responsiveness, Confucian culture offers an adaptive governance mechanism in the face of dynamic regulatory environments.

Note that the regulatory influence of Confucian culture is not uniform but instead exhibits considerable heterogeneity and context dependence. This study found that the inhibitory effect of Confucian culture on green fraud was more pronounced under conditions of high external scrutiny, low company performance, and strong local cultural embedding. These findings point to the boundary conditions that shape the efficacy of informal institutions. On the one hand, the behavioural influence of cultural norms is amplified by the external social environment – particularly through mechanisms such as public attention, media oversight, and reputational pressures – that reinforce the moral expectations encoded in Confucian ethics. These mechanisms facilitate the alignment of internal cultural identity with external accountability, thereby enhancing the practical governance capacity of Confucian culture (Lyon & Montgomery, 2013). On the other hand, when companies face heightened operational pressure, managerial sensitivity to compliance risks increases, making ethical norms more likely to be translated into behavioural discipline. Conversely, in contexts of high economic performance and market dominance, the constraining power of culture may be weakened due to elevated risk tolerance and diminished reputational concerns. Furthermore, as globalisation and regional cultural pluralism continue to deepen, external cultural shocks may disrupt the institutional functioning of Confucian values, thereby undermining their effectiveness in guiding green governance.

From a policy and theoretical standpoint, the authors' findings suggest that informal cultural institutions, particularly those rooted in traditional ethical systems, play a constructive role in mitigating information asymmetry problems such as adverse selection and moral hazard in the realm of green development. Given the covert nature of corporate green fraud and the limited effectiveness of purely technical or regulatory solutions, embedding moral self-discipline through cultural mechanisms offers a complementary pathway to promote genuine environmental responsibility. Specifically, Confucian norms may strengthen senior management's ethical awareness, clarify behavioural expectations, and enhance the credibility of companies environmental actions. As institutional frameworks for green finance and ESG evaluation continue to evolve, incorporating cultural constraint mechanisms into behavioural assessments and governance tools may foster an integrated governance architecture–one that effectively blends formal regulation with informal normative influence to achieve more authentic and accountable green development.

5.3. Policy recommendation

First, efforts should be made to promote the organic integration of traditional cultural resources into the development of green governance systems, thereby fostering a culture-embedded model of environmental regulation. In the process of formulating environmental policies and advancing green standards, policymakers should incorporate regional cultural characteristics and value orientations. Specifically, the institutionalisation of Confucian principles such as integrity, public morality, and responsibility should be explored through formal mechanisms. For instance, moral evaluation frameworks, community-based assessment systems, and corporate green credit scoring mechanisms could be embedded into the green certification process. These tools would enhance the role of cultural soft constraints in shaping corporate behaviour and provide a broader social and moral foundation for the effective implementation of green policies.

Second, it is essential to strengthen corporate culture and enhance companies' internal green governance capabilities by embedding Confucian ethics into organizational management. Regulatory bodies and industry associations may issue standardised documents such as corporate social responsibility (CSR) reporting templates, and green behaviour guidelines that explicitly incorporate Confucian values, e.g. sincerity (cheng) and trust (xin) as key dimensions of green governance evaluation. These standards would guide companies in aligning their internal strategic orientation with environmental and ethical principles. In parallel, businesses should be encouraged to improve managerial sensitivity to environmental compliance and moral accountability through the establishment of ethics committees, targeted cultural training programmes, and institutionalised ethical review procedures, thus reinforcing their ability to adhere to both green and normative standards in day-to-day decision-making.

Third, the development of pluralistic co-governance platforms and robust social oversight networks is crucial to amplifying the external regulatory function of Confucian culture. At the policy and practice levels, stakeholders such as media organizations, industry associations, and community groups should be mobilised to participate actively in green governance. An integrated system of institutional enforcement and cultural constraint can be built by leveraging Confucian moral mechanisms of honour and shame, particularly in the domains of public information disclosure and reputational evaluation. Such mechanisms can motivate companies to project a more authentic and sustainable green image under public scrutiny. What is more, regionally tailored governance frameworks rooted in local cultural identity should be developed to generate community-level consensus and enhance corporate accountability through localised reputation systems, thereby increasing the normative pressure on companies to comply with environmental and ethical standards.

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