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Paying for Privilege: How Political Contributions Undermine Environmental Sustainability—And How Executive Contracting Can Restore Balance

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ABSTRACT

We are interested in investigating whether firms use political donations as a license to neglect environmental sustainability. We further deepen the examination by exploring the role of executive contracting. Drawing on a wide range of data between 2002 and 2021 and a global sample, our findings confirm that firms use political contributions as a license to neglect environmental sustainability. More specifically, we find that political donors have a poor environmental performance, which is confirmed by the composite environmental score as well as its two dimensions, namely, emissions and eco-innovation performance, if not resource consumption performance. However, executive ESG contracting helps political donation givers strengthen their environmental performance. Further tests reveal that board independence and cash flow help political donors enhance their environmental performance. Female directors are also useful in breaking the negative link between political donation and environmental performance if they cannot turn this link into a positive relationship. Finally, the results highlight that the institutional environment (i.e., environmental tax) matters in using political contribution as a license to neglect environmental sustainability. The findings are robust to alternative samples, political donation proxy, endogeneity issues, and the Paris Treaty. In the end, we propose our theoretical and managerial implications.

1 | Introduction

Corporate social responsibility (CSR) is a vital component of business strategy, aiming to generate a positive influence on society (Wang et al. 2015), manage legitimacy threats, and meet stakeholders' expectations (Muttakin et al. 2022). A corporate political donation is an instrumental strategy to influence the political and regulatory system and proactively manage environmental risks stemming from poor environmental performance (Muttakin et al. 2021). It can be seen as a tactical manipulation tool to influence the perception of policymakers and mask their actual environmental performance (Den Hond et al. 2014). Anecdotal evidence shows that companies investing in fossil fuels spent more than $2 billion in political donations between 2000 and 2016. Companies such as Exxon Mobil, BP, Chevron, and Shell, which are among the highest carbon emitters, get an average of $119 back in funding for every $1 spent in lobbying for politicians who will vote for their interests.[1]

Political science studies examine the relationship between political contributions and policy outcomes. For example, Snyder (1992) argues that political contributions function like long-term investments in political relationships, where firms give consistently to build influence over time with politicians, and Fouirnaies and Hall (2014) show that political contributions are aimed at securing access to influential policy-makers.

Similarly, Fouirnaies and Fowler (2022) show that political contributions give little consistent effect on policy outcomes, suggesting that campaign contributions seem effective for gaining access and political connection, but much less effective at producing direct policy rewards. Business and finance research focuses on political connections and the associations with corporate governance mechanisms (Mathur et al. 2013; Li et al. 2015), firm value (Bliss and Gul 2012; Boubakri et al. 2012), corporate risk-taking (Halari et al. 2023), and shield from the government (Zhang et al. 2016). Extant research also examines the link between politically connected firms and CSR (Den Hond et al. 2014; Muttakin et al. 2018; Jeong and Kim 2020; Xu and Liu 2020; Luo and Wang 2021; DesJardine et al. 2024). For example, recent studies including Jiao et al. (2026) show that politically active firms, especially high-polluting firms, use lobbying to influence legislation, which results in weaker environmental rules and higher emissions; Xiao and Shen (2022) argue that politically active firms face lower penalties and show that political connections harm environmental performance, and Wang et al. (2023) show that politically connected firms can receive leniency or exemption from environmental punishment.

However, research that examines corporate political donations and associated consequences on social and environmental practices is limited. Unlike political connections, which represent long-term interactions, political donations are short-term strategies that are used for tactical purposes and change over time (Aggarwal et al. 2012). A handful of studies investigate the role of corporate political donations. For example, Gounopoulos et al. (2021) investigate the link between corporate political donations and corporate performance. Muttakin et al. (2022) investigate the association between the quality of CSR disclosure and political donations of Australian firms and explore the effect of board gender diversity on this association, and Muttakin et al. (2021) explore the moderating role of political donations on the association between a country's electoral system and greenhouse gas emissions. Most of the work focuses on identifying causal effects of political influence on environmental performance or examines the impact of political connections rather than political donations specifically. The direct relationship between political donations and environmental performance has not yet been examined in the existing literature and requires further attention from the academic community (Muttakin et al. 2022).

Firms that make political donations tend to have poorer environmental performance because donations are often used to influence regulation and reduce environmental protections, rather than to support environmental sustainability. In this respect, incentivizing executives for their environmental behavior through the inclusion of social, environmental, and governance (ESG) targets in executive compensation plans can help strengthen environmental performance for corporate political donors. Executive ESG contracting may impose greater responsibility on executives and incentivize them to address environmental issues and ensure corporate accountability to society. Drawing on a wide range of data between 2002 and 2021 and a global sample, results show that firms use political contributions to cover their poor environmental performance. More specifically, we find that political donors have poor environmental performance, which is confirmed by the composite environmental score as well as its two dimensions, namely, emissions and eco-innovation performance. However, executive ESG contracting helps political donation givers strengthen their environmental performance. The findings are robust to alternative samples, political donation proxy, and endogeneity issues.

This study contributes to academic literature in the following ways. First, we examine whether firms' political donations are a license to neglect environmental sustainability, which remains largely underinvestigated in the existing literature. Supported by the view of neo-pluralist theory (Manley 1983; Gray et al. 1996), companies can use political donations to exploit the political system. In a nonpluralist society where political and social power is unequally distributed, corporations can abuse their power to influence the government and regulatory system and lessen pressures on firms to meet societal expectations (Soobaroyen and Mahadeo 2016; Muttakin et al. 2018). Second, we further deepen our investigation by exploring the moderating role of executive ESG contracting in this association. The inclusion of ESG-related targets in executive compensation has become a recent corporate governance practice (Maas and Rosendaal 2016; Maas 2018; Al-Shaer and Zaman 2019). Based on stakeholder theory, the existence of an ESG-linked compensation plan motivates managers to build strong relationships with stakeholders and align management decisions with stakeholders' expectations (Derchi et al. 2021; Radu and Smaili 2021). Compensated managers for their environmental actions are likely to act in favor of stakeholders' interests (e.g., environmental groups) by improving their environmental performance (Al-Shaer, Liu, and Albitar 2024). Third, we explore whether the institutional environment (i.e., environmental taxation, legal regime, and control of corruption) matters in using political contribution as a license to neglect environmental sustainability, drawing on the institutional theory (DiMaggio and Powell 1983). Firms tend to use political donation as a license to neglect environmental sustainability in countries where low environmental taxation exists, code law regime is maintained, and weak control of corruption is detected.

The findings from this study provide evidence that political donations are used for tactical purposes aimed at exploiting the political system to cover poor environmental performance. The moderating role of the existence of ESG-linked compensation policy confirms the need to consider corporate mechanisms that help firms engaging in political donations strengthen their environmental performance. Although prior studies found that executive ESG compensation helps improve ESG performance (Zhang et al. 2024), there is no evidence yet on whether it is useful for politically connected firms' environmental engagement. The results suggest implications for regulators and policymakers to understand the role of political donations and motivations behind firms' engagements and to call for more implementation of ESG-linked compensation plans in corporate governance practices.

The remainder of the paper is structured as follows. The next section provides the theoretical background and outlines the research hypotheses. Section 3 sets out the research methodology in terms of sample, data, and model. Section 4 presents the empirical results, and in Section 5, we draw conclusions, discuss the results, and suggest implications and future research.

2 | Theoretical Background and Hypotheses

2.1 | Corporate Political Donation and Environmental Performance

Legitimacy theory posits that organizations need to meet the social expectations of the society in which they operate (Patten 1991, 1992). They abide by the social contract that exists between organizations and society, and their legitimate operations will be threatened should they break this contract (Patten 1992). Because social norms and business practices are not static and likely to change over time, a legitimacy gap may occur (Sorour et al. 2021; Muttakin et al. 2022). Consequently, companies need to fill the legitimacy gap by strategically engaging in social and environmental activities to meet societal expectations (Muttakin et al. 2022; Muttakin et al. 2021). In this regard, regulatory interventions, through legislation and public policies, can help to manage the violation of societal contracts when companies fail to do so (Gray et al. 1996; Archel et al. 2011). Along this line of argument, corporations need to address regulatory pressures and employ legitimation strategies that meet stakeholders' expectations (Muttakin et al. 2018).

The role of regulators and the government is expected to be independent. However, they can be biased and intervene to serve the corporate purpose (Gray et al. 1996; Archel et al. 2011; Muttakin et al. 2022). This argument is supported by the neo-pluralist theory (Manley 1983; Gray et al. 1996), which posits that organizations can deploy resources to manipulate rules and regulations imposed by the government and avoid legitimacy threats (Archel et al. 2011; Muttakin et al. 2018, 2022). The theory confronts the pluralist view of society posited by the mainstream legitimacy theory literature and suggests that political or social power can be unevenly distributed across different groups in society (Gray et al. 1996; Soobaroyen and Mahadeo 2016; Muttakin et al. 2018). As a result, corporations can abuse their power to exploit the political system (Gray et al. 1996; Archel et al. 2011), and thus, government and regulators may fail to exert pressure on firms to meet societal expectations and lessen the legitimacy gap (Soobaroyen and Mahadeo 2016; Muttakin et al. 2018, 2022). In support of this, different forms of corporate political activities, such as political donations, can substitute the legitimacy affirmation tools such as substantial social and environmental engagements (Archel et al. 2011; Muttakin et al. 2021, 2022). Based on the neo-pluralist perspective, corporate political donations may be used as a strategy to exploit the regulatory system and manage legitimacy gaps without actual engagement in sustainability (Muttakin et al. 2018).

Firms normally face pressure from regulators, investors, and stakeholders to improve ESG performance. Political contributions can weaken external pressures by securing favorable treatments, such as lax enforcements and regulatory delays. Political donation is a form of strategic activity where firms can exploit their environmental legitimacy through strategic donations (Marquis et al. 2016; Wu et al. 2021). Existing literature suggests that political contributions can be viewed as a strategic tool through which firms manage their regulatory environment. Heitz et al. (2023) show that corporate political connections, formed through campaign contributions, can lead to more lenient environmental enforcement outcomes. Consequently, this can lead to reducing firms' incentives to improve environmental performance. Aggarwal et al. (2012) find little evidence that political contributions provide positive firm outcomes and show that managers utilize corporate resources for managerial agency motives, suggesting that political spending reflects agency motives rather than value-enhancing investment. Firms are able to negotiate environmental compliance and shift resources from sustainability; for example, they underinvest in environmental protection if enforcement is weakened (Qi et al. 2023).

Previous literature shows that political connections are used for rent-seeking and avoiding regulations, which may undermine oversight of environmental practices and lead to poor environmental outcomes (Aggarwal et al. 2012). Qi et al. (2023) argue that, in private firms, politically connected directors are associated with lower environmental protection investment because firms can exploit political ties to obtain regulatory leniency. Moreover, firms that engage in environmental lobbying are more likely to influence policy outcomes and benefit from reduced regulatory pressure, which results in higher emissions (Jiao et al. 2026). Politically connected firms tend to receive lower fines and less stringent enforcement actions for environmental breaches, supporting the view that political influence can distort regulatory fairness, thus undermining environmental goals (Florackis et al. 2023). When politically connected firms violate environmental rules, local governments may mitigate or even exempt punishment, which reduces the cost of noncompliance and encourages more pollution (Wang et al. 2023).

Consequently, our theoretical argument does not rely on firms merely concealing or manipulating environmental performance metrics. Instead, we propose that corporate political donations can reduce the stringency of regulatory oversight and enforcement, thereby lowering the expected costs of noncompliance. This, in turn, enables firms to engage in more environmentally harmful practices, leading to weaker observed environmental performance. In this sense, political donations affect firms' actual environmental behavior, rather than simply the visibility of that behavior; thus, we propose the first hypothesis:

Hypothesis 1. *Firms making political contributions have weaker environmental performance, implying that firms exploit political contributions as a license to neglect environmental sustainability.*

2.2 | The Moderation Role of ESG Compensation Policy

Previous literature argues that firms that integrate ESG-related goals into executive pay enhance firms' commitment to environmental sustainability (Maas and Rosendaal 2016; Albitar et al. 2023; Al-Shaer et al. 2023; Al-Shaer, Liu, and Albitar 2024). The pay-for-performance incentive is value-relevant as it motivates managers to invest in sustainable strategies (Brown-Liburd and Zamora 2015; Al-Shaer and Zaman 2019). Compensation committees mainly form a compensation scheme that focuses on financial targets. The integration of nonfinancial goals in executive pay has become a recent practice in corporate governance (Maas and Rosendaal 2016; Maas 2018; Al-Shaer and Zaman 2019) to incentivize managers to participate in actions that lead to good social and environmental performance (Haque

and Ntim 2020; Albitar et al. 2023). Managers can be motivated to be involved in environmental activities such as carbon reduction programs and waste management when ESG-related targets are linked to executive remuneration packages (Haque and Ntim 2020; Albitar et al. 2023). Previous literature argues that the inclusion of ESG-related issues in executive pay is likely to promote good ESG performance (Albitar et al. 2023; Al-Shaer, Albitar, and Hussainey 2024). Companies that establish an ESG compensation policy are likely to be more transparent in their sustainable behavior (Maas 2018).

Based on the perspective of stakeholder theory, ESG-linked compensation aligns management decisions with stakeholders' expectations (Derchi et al. 2021; Radu and Smaili 2021; Al-Shaer, Albitar, and Hussainey 2024). Managers are more inclined to build strong relationships with stakeholders and respond to their demands when they receive ESG-linked compensation packages (Maas 2018; Al-Shaer and Zaman 2019; Albitar et al. 2023; Al-Shaer et al. 2023). They are likely to be held responsible for their firms' ESG performance if they are compensated for their social and environmental engagements (Al-Shaer and Zaman 2019; Al-Shaer et al. 2023). The existence of an ESG compensation plan may encourage executives to act in favor of stakeholders' interests by improving their environmental performance, e.g., reducing the level of pollutant emissions from business operations and investing in eco-innovation (Albitar et al. 2023; Al-Shaer et al. 2023). This perspective also aligns with the accountability theory, suggesting that persons or groups (i.e., executives) held accountable for their actions toward stakeholders feel obliged to pursue social and environmental goals (Tetlock 1983; Bolourian et al. 2023).

The provision of environmental-related incentives is evolving as a business practice for some of the largest companies in the world. Integrating carbon targets into executive pay is a key element of the corporate commitment to low-carbon emissions (Ritz 2022). For example, in 2019, large companies operating in the oil and gas industry such as BP and Chevron were under extreme pressure from institutional investors to incorporate climate-related targets into executive pay (Ritz 2022). Because political donations can represent a form of expenditure for firms (Aggarwal et al. 2012), large companies tend to make larger political donations than small companies due to resource availability. As a result, large companies are more likely to integrate environmental-related targets into executive pay to motivate managers to improve environmental performance while still obtaining shareholders' approval to make political donations. Although corporate political donations can be used to reduce external regulatory pressure, thereby enabling firms to engage in environmentally harmful behavior, ESG-linked compensation introduces internal governance mechanisms that tie managerial rewards to environmental outcomes. By increasing the salience of environmental performance in executive evaluation and compensation, ESG incentives strengthen managerial accountability to boards and stakeholders, which can constrain opportunistic behavior even in the presence of regulatory forbearance.

As a result, although political donations may weaken external discipline, ESG compensation provides a countervailing internal incentive, attenuating the negative relationship between political donations and environmental performance observed in our results. We thus propose the second hypothesis:

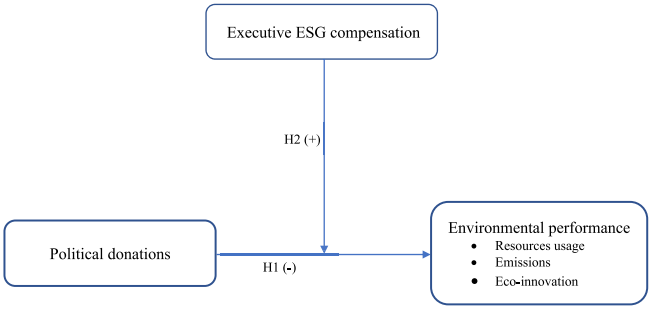

FIGURE 1 | The conceptual framework of the study and developed hypotheses.

Hypothesis 2. *The presence of ESG-linked executive compensation weakens the negative association between corporate political donations and environmental performance, such that firms with ESG compensation are less likely to exhibit environmentally harmful outcomes associated with political donations.*

Figure 1 depicts the hypothesized relationships.

3 | Research Methodology

3.1 | Sample

Our sample is based on the Thomson Reuters Eikon/Refinitiv database from which we retrieved firm-level political donation, corporate governance, environmental performance, and financial data. The sample encompasses nonfinancial sectors, along with case-wise available observations of the research variables, covering the years from 2002 to 2021, and includes countries with at least 10 unique firms. Our sample period starts with 2002, as it is the earliest year for which the environmental performance data were available at the data source, and ends with 2021, as it was the latest year for which the data were available at the time we initiated our study. We excluded the financial sector from the sample, as its financial and operational characteristics diverge from nonfinancial sectors, and it is also exposed to different regulations. This approach ensures that our analysis captures a diverse range of industries and geographical regions, thereby enhancing the generalizability of our findings (Dechow and Sloan 1991). By restricting our analysis to countries with a minimum of 10 unique firms, we aim to maintain a robust sample size while mitigating potential biases associated with data sparsity.

Because of the variability observed around the mean or extreme values at the tails of the variables, we applied winsorization to board size, firm performance (return on assets), firm indebtedness (leverage), firm liquidity (current ratio), and research and development intensity (R&D intensity).[2] In this winsorization process, we utilized a 1% cut-off value at both tails, replacing the extreme values with the corresponding winsorized values (Cox 2006). Winsorization is commonly used to reduce the influence of extreme observations and improve the robustness of regression estimates (Barnett and Lewis 1994). It helps ensure that results are not driven by a small number of outliers while preserving the full sample.

Initially, the sample comprised 8161 records. We implemented three sampling constraints. First, we excluded the financial sector, resulting in the removal of 526 observations, to concentrate on nonfinancial sectors in the study. Second, we eliminated case-wise unavailable records of the dependent variables (environmental performance with a composite indicator and its three dimensions), the testing variable of interest (political donations with LN_Political donations proxy), and the control variables. This constraint led to the removal of 738 missing records.[3] To avoid a further reduction in the sample size, we did not include the moderating variable (executive ESG compensation) in the sampling constraints. Lastly, we excluded countries with less than 10 unique firms, resulting in the removal of 380 records. Consequently, following the three sampling constraints, our final sample size comprised 6517 observations (Table 1, Panel A).

At the sector level, the sample comprises nine sectors, with ratios ranging from 2.07% for Utilities to 19.35% for Industrials (Table 1, Panel B). In terms of the year-level sample distributions, observations span from the year 2002 to 2021. The ratios range from 0.05% for the Year 2006 to 14.29% for the Year 2020 (Table 1, Panel B). Finally, the country-level sampling distributions reveal that 23 countries remain after applying the sampling constraints. The total number of unique firms is 1271, with the United Kingdom and the United States accounting for 28.32% and 24.08%, respectively. Furthermore, out of the 6517 data points, the United Kingdom and the United States comprise 40.31% and 22.08% of the sample, respectively (Table 1, Panel C).

3.2 | Variables

3.2.1 | Dependent Variable

In line with prior studies (Kuzey et al. 2022; Uyar et al. 2023), we measure environmental performance with a composite indicator and its three dimensions. The composite indicator is measured by the environmental pillar score of ESG (Environmental pillar), whereas its three dimensions are proxied by the resource consumption score (Resources score), emission score (Emissions score), and eco-innovation score (Eco-innovation score) (the scores range from 0 to 100).

3.2.2 | Independent Variable

Following prior studies (Chourou 2023; Xiong et al. 2024), we measure political donation with two proxies, namely, the natural logarithm of (1 + political contributions/net sales) multiplied by 1000 (LN_Political donations) and (1 + political contributions/net sales) * 1000 (Political donations). We prefer these political donation proxies since they consider firm size, mitigate the skewness (the one with logarithm), and multiply them by a thousand as the political donation amount is a small fraction of net sales (Chourou 2023).

3.2.3 | Moderating Variable

In accordance with past studies (Elbardan et al. 2023; Orazalin et al. 2024), our moderating variable is executive ESG compensation, which is an indicator variable showing whether a firm has an ESG-oriented compensation policy. The compensation policy could include remuneration for executive directors, the CEO, non-board executives, and other management bodies based on ESG or sustainability factors. It takes 1 if such a policy exists, and 0 if not.

3.2.4 | Control Variables

We incorporate several control variables into the model to mitigate omitted variable bias. The board of directors is the primary decision-making corporate governance mechanism playing a role in strategic decisions including environmental engagement and corporate giving, so we control board size, CEO duality, board gender diversity, and board independence (Boubakri et al. 2012; Kuzey et al. 2022; Halari et al. 2023; Uyar et al. 2023). Moreover, corporate financial attributes might predict environmental performance and corporate political giving, so we control firm size, firm indebtedness (leverage), firm performance (return on assets), firm investment (capital expenditures), firm liquidity (current ratio), and research and development intensity (R&D intensity) (Boubakri et al. 2012; Kuzey et al. 2022; Halari et al. 2023; Uyar et al. 2023). Larger, high-performing, and more liquid firms may feel more obliged and have more resources for greater environmental and social engagement, whereas innovative and investing firms might be exposed to greater financial constraints for such an engagement. Ownership concentration/dispersion might also predict environmental and social engagement; thus, we control the free float percentage of corporations (free float). Finally, we control the institutional environment with Worldwide Governance Indicators (World Governance Indicators) as it regulates the corporate domain.

Although all firm-level board, financial, and ownership data were collected from the Thomson Reuters Eikon/Refinitiv, the World Governance Indicators data were collected from the World Bank. We present the detailed descriptions of the research variables in Table 2.

3.3 | Research Models

We employed a country, industry, and year fixed-effects (FE) regression approach to examine the research hypotheses. This method offers several benefits including the mitigation of potential time-invariant endogeneity issues (Schons and Steinmeier 2016) and the control of potential omitted variable bias, given our dataset spans multiple time periods across various country and industry levels (Angrist and Pischke 2009). Consequently, it enables us to account for unobserved time-invariant differences between countries and industries that may impact our dependent variables. Additionally, by permitting each entity to have its intercept, the country, industry, and year FE can address heterogeneity at the country, industry, and year levels (Gujarati 2014). Furthermore, our sample is well-suited for the country, industry, and year FE methodology as it encompasses multiple observations within the country, industry, and year levels. To incorporate the country, industry, and year FE into our model, we included them as dummy variables. We employed the least squares dummy variable (LSDV) model approach (Gujarati 2014), which is a useful methodology for

TABLE 1 | Sampling distributions.

Panel A

Initial sample	8161
(-) Financials	526
(-) Case-wise missing observations of dependent, test, and control variables	738
(-) Countries with less than 10 firms	380
Final sample	6517

Panel B

Variable	Category	Frequency	Percent
Sector	Basic materials	989	15.18
	Consumer cyclicals	1222	18.75
	Consumer noncyclicals	730	11.20
	Energy	450	6.91
	Healthcare	461	7.07
	Industrials	1261	19.35
	Real estate	319	4.89
	Technology	950	14.58
	Utilities	135	2.07
	Total	6517	100.00
Year	2002	18	0.28
	2003	16	0.25
	2004	52	0.80
	2005	71	1.09
	2006	3	0.05
	2007	176	2.70
	2008	202	3.10
	2009	203	3.11
	2010	236	3.62
	2011	278	4.27
	2012	332	5.09
	2013	354	5.43
	2014	373	5.72
	2015	424	6.51
	2016	465	7.14
	2017	534	8.19
	2018	634	9.73
	2019	742	11.39
	2020	931	14.29
	2021	473	7.26
	Total	6517	100.00

Panel C

	Country	Unique firms	Percent	Data points	Percent
1	Australia	53	4.17	228	3.50
2	Canada	49	3.86	196	3.01
3	Chile	15	1.18	35	0.54
4	Finland	16	1.26	95	1.46
5	France	15	1.18	42	0.64
6	Germany	58	4.56	189	2.90
7	India	45	3.54	184	2.82
8	Indonesia	10	0.79	26	0.40
9	Ireland; Republic of	25	1.97	180	2.76
10	Italy	24	1.89	79	1.21
11	Japan	77	6.06	287	4.40
12	Korea; Republic (S. Korea)	29	2.28	117	1.80
13	Mexico	17	1.34	60	0.92
14	Netherlands	12	0.94	41	0.63
15	New Zealand	10	0.79	50	0.77
16	South Africa	36	2.83	160	2.46
17	Spain	21	1.65	77	1.18
18	Sweden	10	0.79	43	0.66
19	Switzerland	28	2.20	149	2.29
20	Taiwan	39	3.07	158	2.42
21	Thailand	16	1.26	55	0.84
22	United Kingdom	360	28.32	2627	40.31
23	United States of America	306	24.08	1439	22.08
	Total	1271	100.00	6517	100.00

Note: This table discloses sample formation and distribution.

addressing the specific heterogeneity associated with countries, industries, and years.

We constructed linear models using Equation (1) below to investigate the impact of the political donation proxy on environmental performance.

$$(\text{Environmental Performance})_{ijt} = \beta_0 + \beta_1(\text{Political Donation})_{ijt} + \beta_2(\text{Controls})_{ijt} + \text{Country FE} + \text{Industry FE} + \text{Year FE} + \varepsilon_{ijt} \quad (1)$$

We included four proxies of environmental performance including a composite indicator (Environmental pillar) and its three dimensions (Resources score, Emissions score, and Eco-innovation score) as the dependent variables in the model. Additionally, we used one proxy, which measures political donations (LN_Political donations), as the testing variable of interest.

We formulated our model with the moderating effect using Equation (2) below. We investigated the moderating role of

TABLE 2 | List of variables.

Environmental pillar	The environmental pillar score of ESG measures a company's efforts to integrate environmental practices into its operations and to avoid environmental risks. It is based on three individual dimensions, namely, resource use, emissions, and eco-innovation (the score ranges from 0 to 100; higher score indicates greater environmental performance).
Resources score	Resource use category score of environmental pillar reflects a company's ability in reducing materials, energy, and water consumption and to find more eco-efficient practices by improving supply chain management (the score ranges from 0 to 100).
Emissions score	Emission category score of environmental pillar measures a company's capacity toward diminishing environmental emissions in its processes (the score ranges from 0 to 100).
Eco-innovation score	Environmental innovation category score of environmental pillar reflects a company's capacity to create new market opportunities through new eco-friendly technologies and processes or eco-designed products (the score ranges from 0 to 100).
LN_Political donations	Political donation proxy: It is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000.
Political donations	Alternative political donation proxy: It is calculated by (1 + political contributions/net sales) * 1000.
ESG compensation	Does the company have an ESG-oriented compensation policy? The compensation policy includes remuneration for executive directors, the CEO, non-board executives, and other management bodies based on ESG or sustainability factors. It takes 1 if it exists, 0 if not.
Board size	Number of directors on board
Board gender diversity	Percentage of women directors on board
Board independence	Percentage of independent directors on board
CEO duality	CEO duality takes 1 if the chairperson and CEO are the same person, and 0 if not.
Firm size	Natural logarithm of total assets
Leverage	Total debt over total assets
Return on assets	Income before tax over total assets
Current ratio	Current assets over current liabilities
R&D intensity	Research and development expenditures over total assets
Capital expenditures	Capital expenditure over total assets
Cash flow	Earnings before interest and tax plus depreciation and amortization over total assets
Free float	Free float percentage of shares tradable in the stock market
World Governance Indicators	Average of six Worldwide Governance Indicators average including control of corruption, political stability and absence of violence/terrorism, voice and accountability, rule of law, government effectiveness, and regulatory quality (all metrics' values range from −2.5 to 2.5)

Note: This table defines the research variables.

executive ESG compensation between political donations and environmental performance.

$$\begin{aligned}(\text{Environmental Performance})_{ijt} = {} & \beta_0 + \beta_1(\text{Political Donation})_{ijt} \\ & + \beta_2(\text{ESG compensation})_{ijt} \\ & + \beta_3(\text{Political Donation} \times \text{ESG compensation})_{ijt} \\ & + \beta_4(\text{Controls})_{ijt} + \text{Country FE} + \text{Industry FE} + \text{Year FE} + \varepsilon_{ijt}\end{aligned} \quad (2)$$

In Equation (2), the dependent variables (Resources score, Emissions score, and Eco-innovation score) measuring environmental performance and the testing variable of interest (LN_Political donations) assessing political donations remain consistent with those in Equation (1). The moderating variable is executive ESG compensation.

We maintained consistency in control variables across both equations, encompassing board size, CEO duality, board gender diversity, board independence, firm size, firm indebtedness (leverage), firm performance (return on assets), firm investment (capital expenditures), firm liquidity (current ratio), research and development intensity (R&D intensity), free float percentage of corporations (free float), and institutional environment using Worldwide Governance Indicators (World Governance Indicators).

TABLE 3 | Descriptive statistics.

Variable	Obs.	Mean	Std. dev.	Min	Max
Environmental pillar	6517	54.91	25.12	0.00	98.55
Resources score	6517	61.83	28.72	0.00	99.86
Emissions score	6517	62.64	27.56	0.00	99.89
Eco-innovation score	6517	32.23	33.26	0.00	99.88
LN_Political donations	6517	0.02	0.09	0.00	0.65
ESG compensation	5743	0.55	0.50	0.00	1.00
Board size	6517	9.97	2.99	4.00	21.00
Board independence	6517	62.98	22.06	0.00	100.00
Board gender diversity	6517	19.62	12.92	0.00	100.00
CEO duality	6517	0.27	0.44	0.00	1.00
Firm size	6517	22.43	1.72	16.49	27.24
Return on assets	6517	0.07	0.10	−0.67	0.36
Leverage	6517	0.26	0.17	0.00	0.84
Current ratio	6517	1.68	1.29	0.23	17.66
Capital expenditures	6517	0.05	0.04	0.00	0.86
R&D intensity	6517	0.01	0.03	0.00	0.36
Free float	6517	83.48	21.74	0.80	100.00
World Governance Indicators	6517	1.22	0.44	−0.51	1.95

Note: This table reports descriptive statistics. All variables are described in Table 2.

4 | Results

4.1 | Descriptive Statistics and Correlation Analysis

We present the summary statistics of the research variables in Table 3. Concerning the dependent variables, which measure environmental performance, the mean composite indicator score of the environmental pillar of ESG (Environmental pillar) is 54.91, whereas the mean values of the three dimensions for resource consumption score (Resources score), emission score (Emissions score), and eco-innovation score (Eco-innovation score) are 61.83, 62.64, and 32.23, respectively. Regarding the testing variable of interest, the mean political donations, represented by the natural logarithm of (1 + political contributions/net sales) multiplied by 1000 (LN_Political donations), is 0.02, with a range between 0 and 0.65. Regarding the moderating variable, executive ESG compensations (ESG compensation), 55% of the records indicate firms with an ESG-oriented compensation policy. We also reported the mean raw political donations across sectors and countries in Table A1.

The correlation analysis results, based on Pearson's correlation coefficients, are presented in Table 4. The findings indicate that the measure of political donations (LN_Political donations) exhibits a statistically significant and positive linear correlation with both the composite indicator score of the environmental pillar of ESG (Environmental pillar) and the resource consumption score (Resources score). Conversely, LN_Political donations is significantly and negatively correlated with the eco-innovation score (Eco-innovation score).

We also assessed whether there was any significant multicollinearity among the independent variables in the research models. To do this, we calculated the variance inflation factors (VIFs), which ranged from 1.03 to 1.88. These values are well below the recommended threshold of 10 (Kennedy 2008), indicating that multicollinearity is not a concern.

4.2 | Baseline Analysis Results

We investigated the influence of political donations on environmental performance measures by conducting country, industry, and year FE regression analysis. The findings, presented in Table 5, reveal a negative association between the proxy for political donations (LN_Political donations) and the composite indicator of environmental performance (Environmental pillar), as well as its two subdimensions: emission score (Emissions score) and eco-innovation score (Eco-innovation score). Thus, Hypothesis 1, proposing that firms making political contributions have weak environmental performance, is supported by the composite environmental performance proxy and its emissions and eco-innovation dimensions, but not the resource use dimension.

TABLE 4 | Correlation analysis.

	Variables	1	2	3	4	5	6	7	8	9
1	Environmental pillar	1.000								
2	Resources score	0.876*	1.000							
3	Emissions score	0.857*	0.737*	1.000						
4	Eco-innovation score	0.651*	0.413*	0.379*	1.000					
5	LN_Political donations	0.031*	0.058*	0.015	−0.029*	1.000				
6	ESG compensation	0.203*	0.192*	0.208*	0.052*	−0.050*	1.000			
7	Board size	0.414*	0.377*	0.351*	0.274*	0.089*	0.002	1.000		
8	Board independence	0.208*	0.230*	0.173*	0.073*	0.101*	0.224*	0.028*	1.000	
9	Board gender diversity	0.180*	0.196*	0.184*	0.076*	0.022	0.263*	0.052*	0.329*	1.000
10	CEO duality	0.143*	0.157*	0.114*	0.124*	0.080*	−0.042*	0.199*	0.203*	0.033*
11	Firm size	0.598*	0.561*	0.526*	0.383*	0.117*	0.151*	0.569*	0.339*	0.121*
12	Return on assets	−0.016	0.012	−0.010	−0.011	0.021	−0.127*	0.010	0.026*	−0.005
13	Leverage	0.120*	0.112*	0.082*	0.018	0.040*	0.069*	0.125*	0.096*	0.098*
14	Current ratio	−0.082*	−0.066*	−0.057*	−0.054*	0.017	−0.050*	−0.100*	−0.041*	−0.045*
15	Capital expenditures	0.000	−0.006	0.003	−0.094*	0.046*	0.057*	0.030*	−0.004	−0.093*
16	R&D intensity	0.103*	0.132*	0.090*	0.085*	0.071*	−0.035*	0.038*	0.148*	0.038*
17	Free float	0.113*	0.146*	0.079*	0.078*	−0.079*	0.170*	−0.041*	0.410*	0.146*
18	World Governance Indicators	−0.047*	−0.069*	−0.039*	0.004	−0.229*	0.071*	−0.226*	0.122*	0.058*

	Variables	10.000	11.000	12.000	13.000	14.000	15.000	16.000	17.000	18.000
10	CEO duality	1.000								
11	Firm size	0.271*	1.000							
12	Return on assets	0.059*	−0.050*	1.000						
13	Leverage	0.020	0.212*	−0.263*	1.000					
14	Current ratio	0.027*	−0.156*	0.097*	−0.274*	1.000				
15	Capital expenditures	−0.049*	0.012	0.027*	0.026*	−0.031*	1.000			
16	R&D intensity	0.134*	0.096*	0.055*	−0.116*	0.155*	−0.044*	1.000		
17	Free float	0.077*	0.185*	0.042*	0.020	−0.046*	−0.103*	0.112*	1.000	
18	World Governance Indicators	−0.076*	−0.026*	−0.028*	−0.031*	−0.033*	−0.040*	0.029*	0.334*	1.000

Note: This table reports correlation coefficients. Multicollinearity check: Variance inflation factors (VIFs) of the independent variables range between 1.03 and 1.88. All variables are described in Table 2.
*$p < 0.05$.

We assessed the economic significance of the findings by multiplying the coefficients of the political donation proxy (LN_Pdonation) by its standard deviation and then dividing the product by the mean values of the environmental performance measures. LN_Pdonation is defined as ln(1 + Political Contributions/Net Sales) multiplied by 1000. Therefore, a one-unit change in LN_Pdonation does not correspond to a one-unit change in political contributions. To interpret the magnitude, we convert the standard deviation of LN_Pdonation back to the raw ratio of political contributions to net sales. Since $\text{LN\_Pdonation} = 1000 \times \ln(1 + x)$, where x = Political Contributions/Net Sales, a one standard deviation increase in LN_Pdonation (0.09) corresponds to a change of $0.09/1000 = 0.00009$ in $\ln(1 + x)$. Converting back to the original scale gives $\exp.(0.00009) - 1 \approx 0.00009$, which implies that a one standard deviation increase in LN_Pdonation corresponds approximately to 0.009% of net sales spent on political contributions.

TABLE 5 | Political contribution and environmental performance.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−6.645**	−3.548	−7.547**	−17.561***
	(−2.342)	(−1.027)	(−2.231)	(−4.004)
Board size	1.010***	0.915***	0.815***	1.002***
	(9.362)	(6.966)	(6.341)	(6.014)
Board independence	0.076***	0.054***	0.069***	0.105***
	(4.588)	(2.661)	(3.502)	(4.127)
Board gender diversity	0.203***	0.305***	0.277***	0.034
	(8.552)	(10.535)	(9.790)	(0.926)
CEO duality	1.162*	0.729	0.059	4.323***
	(1.942)	(1.001)	(0.083)	(4.674)
Firm size	7.303***	7.614***	7.393***	6.080***
	(36.445)	(31.211)	(30.944)	(19.632)
Return on assets	9.302***	12.454***	13.397***	2.796
	(3.820)	(4.201)	(4.614)	(0.743)
Leverage	−1.095	0.352	−4.925***	−11.157***
	(−0.713)	(0.188)	(−2.690)	(−4.700)
Current ratio	−0.008	0.190	0.045	0.191
	(−0.039)	(0.818)	(0.196)	(0.647)
Capital expenditures	5.046	0.581	−3.070	−33.388***
	(0.904)	(0.085)	(−0.461)	(−3.871)
R&D intensity	91.778***	85.664***	73.424***	95.560***
	(10.892)	(8.351)	(7.309)	(7.338)
Free float	0.108***	0.163***	0.074***	0.136***
	(7.895)	(9.750)	(4.501)	(6.412)
World Governance Indicators	7.707*	8.599*	7.882	2.682
	(1.887)	(1.729)	(1.618)	(0.425)
Constant	−148.146***	−154.076***	−137.268***	−134.036***
	(−23.866)	(−20.388)	(−18.548)	(−13.971)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	6517	6517	6517	6517
Adj. R^2	0.484	0.415	0.390	0.296
F-stat.	290.316***	223.018***	196.992***	94.178***

Note: This table reports the association between political contribution and environmental performance. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

Using this one-standard-deviation change in LN_Pdonation (0.09), the economic effects are calculated as follows. For the environmental pillar score, the effect is (−6.645 × 0.09)/54.91 = −1.09% of the mean. For the resources score, the effect is (−3.548 × 0.09)/61.83 = −0.52% of the mean. For the emissions score, the effect is (−7.547 × 0.09)/62.64 = −1.08% of the mean. For the eco-innovation score, the effect is (−17.561 × 0.09)/32.23 = −4.90% of the mean.

These results indicate that even small increases in political contributions relative to firm sales (about 0.009% of net sales) are associated with economically meaningful reductions in environmental performance.

Furthermore, we explored the moderating influence of executive ESG compensation on the relationship between political donations (LN_Political donations) and four environmental

performance measures (Environmental pillar, Resources score, Emissions score, and Eco-innovation score). Employing country, industry, and year FE regression analysis, as reported in Table 6, our findings indicate a significantly positive association between the interaction term LN_Political donations*ESG compensation and the composite environmental performance score (Environmental pillar), as well as with two of its dimensions: resource consumption score (Resources score) and eco-innovation score (Eco-innovation score). This suggests a positive moderation effect, implying that the integration of executive ESG compensation enhances the positive impact of political donations on environmental performance (Environmental pillar, Resources score, Emissions score, and Eco-innovation score). Thus, the result supports Hypothesis 2, stating that in firms having an executive ESG compensation policy, the link between political contribution and environmental performance strengthens.

To clarify the moderating effects, we plotted the interaction terms in Figures 2, 3, 4, and 5. The results consistently show that ESG compensation changes the direction of the relationship between political donations and the environmental sustainability pillar and its three dimensions. More specifically, when ESG compensation is low, higher political donations are associated with worse environmental performance. This is reflected by the downward-sloping lines across all four figures (environmental pillar, resource use, emissions, and eco-innovation). In contrast, when ESG compensation is high, higher political donations are associated with better environmental performance, as shown by the upward-sloping lines.

Although the interaction effect of LN_Political donations*ESG compensation was not significant for emissions score in Table 6 (Column 3), suggesting that ESG compensation does not statistically alter the relationship between political donations and emissions performance; Figure 4 depicts that the line of the slope indicating the relationship between political donations and environmental performance turns to positive at the existence of ESG compensation unlike observed negative slope at the absence of ESG compensation.

4.3 | Robustness Tests

We utilized various tests to check the robustness of the initial baseline analysis results by integrating alternative test variables, employing alternative methodologies to address endogeneity concerns, and using an alternative sample. We also explore three further channels through which political contribution could be associated with environmental performance.

4.3.1 | Alternative Test Variable

Initially, we employed an alternative proxy (political donations) for political donations, which is measured as "(1 + political contributions/net sales)*1000." The linear models incorporating political donations were re-evaluated in Table 7, and the results remain consistent. These findings are consistent with our baseline results and provide additional support for the robustness of the observed relationship.

4.3.2 | Endogeneity

We employed three alternative methodologies to mitigate the issue of endogeneity, namely, two-stage least squares (2SLS) regression, entropy balancing, and propensity score matching (PSM) approaches.

4.3.2.1 | 2SLS. Initially, we employed the 2SLS regression analysis to mitigate endogeneity, which may arise from various sources such as sample selection bias, omitted variables, or simultaneous causality (Hill et al. 2021). The 2SLS approach tackles endogeneity by utilizing instrumental variables that offer exogenous sources of variation for the independent variable. Consequently, it enables us to isolate the causal effect more accurately (Angrist and Krueger 2001).

Hence, we employed two instrumental variables for this purpose. The first instrumental variable is the 1-year lag of the political donation proxy, denoted as LN_Political donations ($t-$). The second instrumental variable is the industry-year average of the political donation proxy, excluding focal firms, represented as LN_Political donations-IndAve. First, lagged political donations are strongly correlated with current donations due to persistence in firms' political engagement, satisfying the relevance condition. At the same time, past donations are unlikely to directly affect current environmental performance, supporting the exclusion restriction. Second, industry-average political donations capture peer effects and common industry-level political engagement, which are key determinants of firm-level donation behavior. This ensures instrument relevance. Regarding exogeneity, industry-level averages are unlikely to directly influence an individual firm's environmental performance except through their effect on the firm's own political donations. Selecting these two instruments (i.e., lag of independent variable and industry average) is perfectly in line with the past literature in the case of the lack of exogenous shock (Wang and Li 2008; Murcia et al. 2021).

We presented the results of the 2SLS, alongside postestimation tests, in Table 8, Panel A. The findings from the first stage reveal a significant correlation between the two instrumental variables and the endogenous variables (Environmental pillar, Resources score, Emissions score, and Eco-innovation score), thus confirming the relevance of the selected instrumental variables. Furthermore, identifiability is assured as we have two instrumental variables for the single endogenous variable (LN_Political donations). Moreover, the Hansen J statistic values suggest that the exogeneity assumption is met, as the *p*-values are relatively large.

Moreover, we conducted several postestimation tests to assess the suitability of the 2SLS regression in conjunction with the selected instrumental variables. The Kleibergen–Paap rk LM statistic results are significant, indicating that LN_Political donations ($t-1$) and LN_Political donations-IndAve are not underidentified. Additionally, both the Cragg–Donald Wald *F* statistic and Kleibergen–Paap rk Wald *F* statistic results are significant, affirming the robustness of LN_Political donations ($t-1$) and LN_Political donations-IndAve. Furthermore, the Stock–Yogo weak ID test critical values at four IV sizes are smaller than the values of the Cragg–Donald Wald *F* statistics,

TABLE 6 | Moderation effect of executive ESG compensation.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−10.311***	−4.859	−5.141	−33.618***
	(−2.705)	(−1.039)	(−1.130)	(−5.685)
ESG compensation	5.184***	5.549***	6.640***	1.557*
	(9.131)	(7.965)	(9.802)	(1.767)
LN_Political donations*ESG compensation	17.015***	18.411**	11.702	27.390***
	(2.738)	(2.415)	(1.578)	(2.842)
Board size	1.136***	0.992***	0.878***	1.204***
	(9.857)	(7.016)	(6.386)	(6.737)
Board independence	0.052***	0.035	0.037*	0.103***
	(2.881)	(1.577)	(1.705)	(3.684)
Board gender diversity	0.223***	0.322***	0.276***	0.087**
	(8.629)	(10.170)	(8.968)	(2.186)
CEO duality	1.670***	1.421*	0.887	4.554***
	(2.627)	(1.822)	(1.170)	(4.618)
Firm size	6.969***	7.209***	7.104***	5.861***
	(32.282)	(27.217)	(27.580)	(17.502)
Return on assets	10.827***	14.707***	15.231***	0.960
	(4.246)	(4.701)	(5.006)	(0.243)
Leverage	0.491	2.157	−3.537*	−11.138***
	(0.305)	(1.093)	(−1.843)	(−4.465)
Current ratio	0.059	0.209	0.101	0.307
	(0.299)	(0.864)	(0.430)	(1.004)
Capital expenditures	−1.834	−4.210	−7.880	−38.825***
	(−0.313)	(−0.585)	(−1.127)	(−4.270)
R&D intensity	92.750***	82.804***	74.698***	90.390***
	(10.524)	(7.658)	(7.103)	(6.611)
Free float	0.106***	0.163***	0.070***	0.134***
	(7.045)	(8.828)	(3.894)	(5.737)
World Governance Indicators	4.071	6.039	4.622	−1.451
	(0.890)	(1.076)	(0.847)	(−0.204)
Constant	−140.033***	−145.914***	−130.025***	−128.692***
	(−20.218)	(−17.171)	(−15.733)	(−11.978)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	5743	5743	5743	5743
Adj. R^2	0.489	0.414	0.398	0.303
F-stat.	232.665***	173.693***	159.381***	75.892***

Note: This table reports the moderation effect of executive ESG compensation between political contribution and environmental performance. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. ESG compensation is the indicator variable showing the existence of ESG-related compensation policy. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

providing further support for the strength of LN_Political donations ($t-1$) and LN_Political donations-IndAve (indicating nonweak instruments). Lastly, the nonsignificant Hansen J statistics' values indicate that the selected instruments, LN_Political donations ($t-1$) and LN_Political donations-IndAve, are valid. Accordingly, the results from the PSM-based analysis

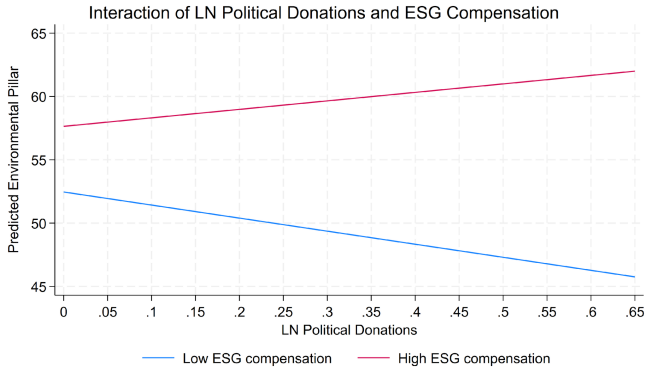

FIGURE 2 | Moderating effect of ESG compensation between LN_ Political donations and Environmental pillar.

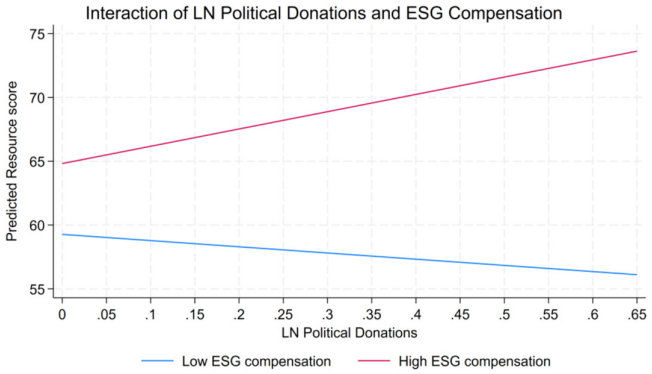

FIGURE 3 | Moderating effect of ESG compensation between LN_ Political donations and Resources score.

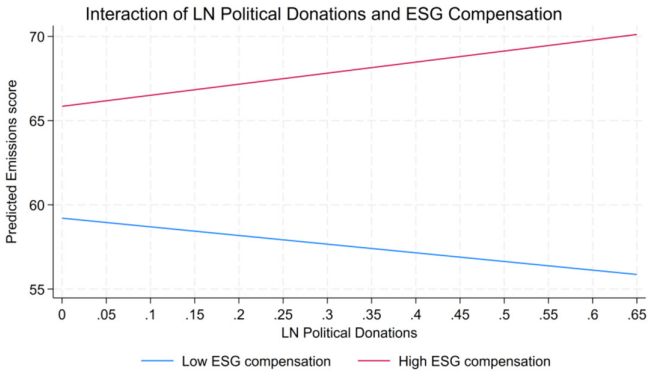

FIGURE 4 | Moderating effect of ESG compensation between LN_ Political donations and Emissions score.

align with the initial findings (Table 10, Panel B) and are consistent with the baseline results.

Moreover, the postestimation tests, including the Hansen J test, Kleibergen–Paap rk LM statistic, Kleibergen–Paap rk Wald *F* statistic, Cragg–Donald Wald *F* statistic, and the Stock–Yogo weak identification test, do not indicate violations of key assumptions and support the strength of the instruments. Overall, these findings suggest that our identification strategy is reasonable and the results should be interpreted accordingly.

4.3.2.2 | **Lewbel Method.** To address endogeneity concerns, we applied the Lewbel (2012) approach as an alternative

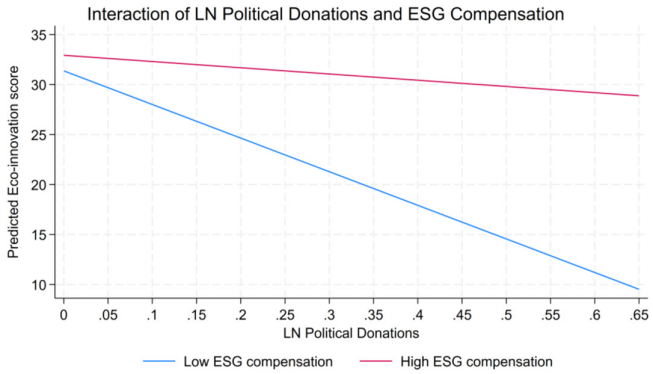

FIGURE 5 | Moderating effect of ESG compensation between LN_ Political donations and Eco-innovation score.

2SLS method. This technique leverages heteroskedasticity in the error term to generate internal instruments by interacting residuals from an auxiliary regression with centered exogenous variables. This approach assumes that the covariates used to construct the instruments are exogenous and uncorrelated with the error term. This assumption is plausible in our setting, given the use of firm-level controls and fixed effects, although it cannot be directly tested empirically. It is particularly useful when external instruments are weak or unavailable. The results, presented in Table 8 (Panel B), are consistent with the initial 2SLS estimates and provide additional support for the robustness of the findings.

4.3.2.3 | **Entropy Balance.** Second, we employed the entropy balancing approach (Hainmueller 2012) to tackle the endogeneity issue. This approach achieves balance by creating samples with minimized variability among observed characteristics in the treatment and control groups (Hainmueller 2012). Additionally, it serves as a crucial tool in mitigating self-selection bias due to observable characteristics (Fei 2022), thereby helping us to avoid observable selection bias (Treepongkaruna et al. 2022). This approach assumes that selection is driven by observable characteristics rather than unobserved factors. This assumption is reasonable in our setting, given the rich set of firm-level controls and fixed effects, although it cannot be directly tested empirically. Furthermore, we used entropy balancing to adjust the first moments (means) of the covariates, ensuring that the weighted control group closely matched the treatment group on these observed characteristics. To execute the entropy balancing method, we divided the dataset into treatment and control groups based on the testing variable of interest, the political donation proxy (LN_Political donations). The treatment group comprised observations falling within the top quartile of political donations, assigned a value of one, whereas the remaining observations constituted the control group, assigned a value of zero. Subsequently, we re-estimated the baseline linear models using entropy balancing sampling. The results, presented in Table 9, are consistent with the baseline findings and provide additional support for the robustness of the results.

4.3.2.4 | **PSM.** We addressed the endogeneity issue using the PSM approach, employing the analysis module proposed by Leuven and Sianesi (2003). We utilized a one-to-one matching method for PSM, widely acknowledged in business-related research. PSM is effective in mitigating endogeneity by eliminating biases attributed to observed covariates (Rosenbaum

TABLE 7 | Alternative test variable (political donations).

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
Political donations	−6.644**	−3.549	−7.546**	−17.555***
	(−2.342)	(−1.028)	(−2.231)	(−4.004)
Board size	1.010***	0.915***	0.815***	1.002***
	(9.362)	(6.966)	(6.341)	(6.014)
Board independence	0.076***	0.054***	0.069***	0.105***
	(4.588)	(2.661)	(3.502)	(4.127)
Board gender diversity	0.203***	0.305***	0.277***	0.034
	(8.552)	(10.535)	(9.790)	(0.926)
CEO duality	1.162*	0.729	0.059	4.323***
	(1.942)	(1.001)	(0.083)	(4.674)
Firm size	7.303***	7.614***	7.393***	6.080***
	(36.445)	(31.211)	(30.944)	(19.632)
Return on assets	9.302***	12.454***	13.397***	2.796
	(3.820)	(4.201)	(4.614)	(0.743)
Leverage	−1.095	0.352	−4.925***	−11.157***
	(−0.713)	(0.188)	(−2.690)	(−4.700)
Current ratio	−0.008	0.190	0.045	0.191
	(−0.039)	(0.818)	(0.196)	(0.647)
Capital expenditures	5.046	0.581	−3.070	−33.388***
	(0.904)	(0.085)	(−0.461)	(−3.871)
R&D intensity	91.778***	85.664***	73.424***	95.559***
	(10.892)	(8.351)	(7.309)	(7.338)
Free float	0.108***	0.163***	0.074***	0.136***
	(7.895)	(9.750)	(4.501)	(6.412)
World Governance Indicators	7.707*	8.599*	7.882	2.682
	(1.887)	(1.729)	(1.618)	(0.425)
Constant	−148.146***	−154.076***	−137.268***	−134.036***
	(−23.866)	(−20.388)	(−18.548)	(−13.971)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	6517	6517	6517	6517
Adj. R^2	0.484	0.415	0.390	0.296
F-stat.	290.316***	223.018***	196.992***	94.178***

Note: This table reports the association between political contribution and environmental performance based on alternative political donation proxy. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). Political donations is the political donation proxy, which is (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

and Rubin 1983) and mitigating the impact of hidden biases (Rosenbaum 2005). This approach assumes that selection into treatment is based on observable characteristics and that no unobserved confounders jointly affect political donations and environmental performance. This assumption is partially supported by the rich set of covariates and matching diagnostics, although it cannot be directly tested empirically. To implement the PSM method, we followed a similar approach as with entropy balancing to generate control and treatment groups. Specifically, we assigned a value of one to observations within the top quartile of the political donation proxy (LN_Political donations) to create the treatment group, while assigning a value of zero to the remaining observations to form the control groups. We utilized the nearest-neighbor one-to-one matching without replacement and used a caliper of 0.05 to improve match quality.

Furthermore, we presented diagnostic test results supporting the PSM approach (Table 10, Panel A). We utilized logistic regression

TABLE 8 | Two-stage least squares (2SLS) analysis and the Lewbel (2012) approach.

Panel A: 2SLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LN_Political donations	Environmental pillar	LN_Political donations	Resources score	LN_Political donations	Emissions score	LN_Political donations	Eco-innovation score
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
IV: LN_Political donations ($t-1$)	0.718***		0.718***		0.718***		0.718***	
	(75.454)		(75.454)		(75.454)		(75.454)	
IV: LN_Political donations-IndAve	−0.162**		−0.162**		−0.162**		−0.162**	
	(−2.159)		(−2.159)		(−2.159)		(−2.159)	
LN_Political donations		−8.464*		−3.247		−10.026*		−23.348***
		(−1.906)		(−0.604)		(−1.919)		(−3.281)
Board size	0.000	1.047***	0.000	0.938***	0.000	0.708***	0.000	1.166***
	(0.778)	(8.500)	(0.778)	(6.290)	(0.778)	(4.884)	(0.778)	(5.904)
Board independence	0.000	0.063***	0.000	0.041*	0.000	0.029	0.000	0.124***
	(0.666)	(3.306)	(0.666)	(1.755)	(0.666)	(1.293)	(0.666)	(4.038)
Board gender diversity	0.000	0.212***	0.000	0.318***	0.000	0.303***	0.000	0.024
	(0.600)	(7.855)	(0.600)	(9.707)	(0.600)	(9.531)	(0.600)	(0.560)
CEO duality	−0.000	1.436**	−0.000	1.160	−0.000	0.259	−0.000	4.709***
	(−0.007)	(2.119)	(−0.007)	(1.414)	(−0.007)	(0.325)	(−0.007)	(4.336)
Firm size	−0.000	6.954***	−0.000	7.215***	−0.000	6.944***	−0.000	5.994***
	(−0.614)	(30.989)	(−0.614)	(26.555)	(−0.614)	(26.300)	(−0.614)	(16.670)
Return on assets	−0.008	9.550***	−0.008	12.151***	−0.008	13.107***	−0.008	5.233
	(−0.919)	(3.468)	(−0.919)	(3.644)	(−0.919)	(4.045)	(−0.919)	(1.186)
Leverage	0.004	1.872	0.004	4.147**	0.004	−2.831	0.004	−10.121***
	(0.777)	(1.092)	(0.777)	(1.998)	(0.777)	(−1.404)	(0.777)	(−3.685)
Current ratio	−0.000	−0.017	−0.000	0.257	−0.000	0.008	−0.000	−0.027
	(−0.506)	(−0.079)	(−0.506)	(0.976)	(−0.506)	(0.032)	(−0.506)	(−0.078)
Capital expenditures	0.039**	11.085*	0.039**	3.567	0.039**	6.167	0.039**	−41.587***
	(1.975)	(1.669)	(1.975)	(0.444)	(1.975)	(0.789)	(1.975)	(−3.907)
R&D intensity	−0.006	97.553***	−0.006	85.725***	−0.006	75.619***	−0.006	108.244***
	(−0.220)	(10.277)	(−0.220)	(7.458)	(−0.220)	(6.770)	(−0.220)	(7.116)

(Continues)

TABLE 8 | (Continued)

Panel A: 2SLS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LN_Political donations	**Environmental pillar**	**LN_Political donations**	**Resources score**	**LN_Political donations**	**Emissions score**	**LN_Political donations**	**Eco-innovation score**
	1st stage	**2nd stage**	**1st stage**	**2nd stage**	**1st stage**	**2nd stage**	**1st stage**	**2nd stage**
Free float	−0.000	0.113***	−0.000	0.161***	−0.000	0.078***	−0.000	0.152***
	(−0.777)	(7.189)	(−0.777)	(8.462)	(−0.777)	(4.220)	(−0.777)	(6.030)
World Governance Indicators	−0.019	7.437	−0.019	10.540*	−0.019	8.868	−0.019	−3.086
	(−1.378)	(1.576)	(−1.378)	(1.844)	(−1.378)	(1.597)	(−1.378)	(−0.408)
Country, industry, & year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5112	5112	5112	5112	5112	5112	5112	5112
Adj. R^2	0.619	0.343	0.619	0.284	0.619	0.250	0.619	0.145
F-stat.	414.367***	210.299***	414.367***	160.633***	414.367***	135.687***	414.367***	71.935***
Underidentification test								
Kleibergen–Paap rk LM statistic		38.931		38.931		38.931		38.931
Weak identification tests								
Cragg–Donald Wald *F* statistic		2853.915		2853.915		2853.915		2853.915
Kleibergen–Paap rk Wald F statistic		121.458		121.458		121.458		121.458
Stock–Yogo weak ID test critical values								
10% maximal IV size		19.93		19.93		19.93		19.93
15% maximal IV size		11.59		11.59		11.59		11.59
20% maximal IV size		8.75		8.75		8.75		8.75
25% maximal IV size		7.25		7.25		7.25		7.25
Hansen J stat.		0.14		0.16		0.12		0.13

Panel B: Lewbel (2012) method

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−9.36***	−8.29	−12.5***	−16.5***
	(−2.849)	(−1.071)	(−3.183)	(−3.252)

(Continues)

TABLE 8 | (Continued)

Panel B: Lewbel (2012) method

	(1) Environmental pillar	(2) Resources score	(3) Emissions score	(4) Eco-innovation score
Board size	1.00***	0.90***	0.81***	1.00***
	(9.296)	(6.892)	(6.270)	(5.997)
Board independence	0.074***	0.052***	0.068***	0.10***
	(4.493)	(2.578)	(3.449)	(4.072)
Board gender diversity	0.22***	0.33***	0.29***	0.046
	(9.123)	(11.028)	(10.156)	(1.216)
CEO duality	1.14*	0.70	0.032	4.32***
	(1.914)	(0.961)	(0.044)	(4.675)
Firm size	7.29***	7.60***	7.38***	6.07***
	(36.329)	(31.103)	(30.857)	(19.563)
Return on assets	9.26***	12.4***	13.4***	2.76
	(3.806)	(4.188)	(4.615)	(0.733)
Leverage	−1.06	0.40	−4.87***	−11.2***
	(−0.694)	(0.215)	(−2.658)	(−4.705)
Current ratio	−0.0089	0.19	0.043	0.19
	(−0.047)	(0.811)	(0.189)	(0.644)
Capital expenditures	5.28	1.04	−2.65	−33.5***
	(0.946)	(0.153)	(−0.398)	(−3.885)
R&D intensity	91.5***	85.4***	73.2***	95.3***
	(10.867)	(8.330)	(7.290)	(7.319)
Free float	0.11***	0.16***	0.072***	0.14***
	(7.839)	(9.706)	(4.402)	(6.408)
World Governance Indicators	7.85*	8.87*	8.16*	2.59
	(1.922)	(1.783)	(1.675)	(0.411)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	6517	6517	6517	6517
Adj. R^2	0.364	0.304	0.277	0.151
F-stat.	291.550***	224.249***	197.904***	93.821***

(Continues)

TABLE 8 | (Continued)

Panel B: Lewbel (2012) method

	(1) Environmental pillar	(2) Resources score	(3) Emissions score	(4) Eco-innovation score
Underidentification test				
Kleibergen–Paap rk LM statistic	56.683	56.683	56.683	56.683
Weak identification tests				
Cragg–Donald Wald *F* statistic	1564.762	1564.762	1564.762	1564.762
Kleibergen–Paap rk Wald *F* statistic	115.813	115.813	115.813	115.813
Stock–Yogo weak ID test critical values				
10% maximal IV size	11.52	11.52	11.52	11.52
15% maximal IV size	23.24	23.24	23.24	23.24
20% maximal IV size	16.35	16.35	16.35	16.35
25% maximal IV size	12.82	12.82	12.82	12.82
Hansen J stat.	0.26	0.15	0.24	0.68

Note: This table reports the association between political contribution and environmental performance based on 2SLS regression and Lewbel (2012) method. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). Political donations is the political donation proxy, which is (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. LN_Political donations ($t-1$) and LN_Political donations-IndAve are the instrumental variables (IV) indicating the lag and industrial average of political donation proxy. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

TABLE 9 | Entropy balancing.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−4.107*	−0.754	−3.779*	−18.331***
	(−1.918)	(−0.304)	(−1.707)	(−5.234)
Board size	1.189***	0.755***	0.875***	1.336***
	(11.574)	(6.352)	(7.276)	(7.957)
Board independence	0.091***	0.068***	0.049**	0.137***
	(4.858)	(3.112)	(2.228)	(4.439)
Board gender diversity	0.203***	0.334***	0.252***	0.071
	(7.505)	(10.698)	(7.980)	(1.600)
CEO duality	1.326**	0.436	0.180	4.827***
	(2.497)	(0.710)	(0.290)	(5.557)
Firm size	5.798***	6.305***	6.208***	4.044***
	(28.889)	(27.147)	(26.415)	(12.323)
Return on assets	6.931***	12.393***	9.829***	0.462
	(2.742)	(4.237)	(3.321)	(0.112)
Leverage	−2.605	−0.151	−4.138**	−17.024***
	(−1.601)	(−0.080)	(−2.172)	(−6.400)
Current ratio	0.034	−0.012	0.026	0.025
	(0.181)	(−0.054)	(0.116)	(0.081)
Capital expenditures	−24.140***	−23.674***	−27.500***	−70.149***
	(−4.171)	(−3.534)	(−4.058)	(−7.413)
R&D intensity	77.423***	59.062***	85.106***	65.883***
	(12.835)	(8.460)	(12.048)	(6.680)
Free float	0.110***	0.139***	0.070***	0.123***
	(6.367)	(6.943)	(3.429)	(4.351)
World Governance Indicators	3.358	2.646	−3.984	0.288
	(0.872)	(0.594)	(−0.884)	(0.046)
Constant	−111.138***	−112.521***	−94.858***	−87.797***
	(−17.675)	(−15.463)	(−12.883)	(−8.540)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	6517	6517	6517	6517
Adj. R^2	0.340	0.288	0.289	0.300
F-stat.	182.972***	148.014***	131.223***	62.610***

Note: This table reports the association between political contribution and environmental performance based on entropy balancing. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

analysis with a binary dependent variable, where one denotes companies in the treatment group (high political donation) and zero denotes others. The first column represents the entire sample (prematch), whereas the second column represents the PSM-matched sample (postmatch). The results reveal considerable differences between treatment firms and the rest of the sample. Most coefficients in the prematch analysis are significant, whereas those in the postmatch analysis are predominantly nonsignificant. This indicates that our treatment and control firms exhibit statistically similar observable characteristics.

The baseline linear models were re-evaluated using the PSM-based sample, and the results are presented in Table 10 (Panel B). The findings are consistent with the baseline results.

TABLE 10 | Propensity score matching (PSM).

Panel A: Diagnostic test

	(1) Prematch treatment (high political donations)	(2) Postmatch treatment (high political donations)
Board size	0.033*	0.009
	(1.830)	(0.227)
Board independence	0.008**	−0.019***
	(2.507)	(−2.603)
Board gender diversity	0.005	0.023**
	(1.077)	(2.338)
CEO duality	0.194**	−0.527
	(2.040)	(−1.119)
Firm size	0.544***	−0.078
	(14.974)	(−0.841)
Return on assets	−0.110	−1.324
	(−0.247)	(−1.149)
Leverage	0.604**	−0.167
	(2.150)	(−0.242)
Current ratio	0.009	−0.012
	(0.226)	(−0.184)
Capital expenditures	4.239***	2.671
	(4.287)	(1.058)
R&D intensity	2.508**	−2.633
	(2.025)	(−0.885)
Free float	0.001*	−0.013
	(1.437)	(−0.151)
World Governance Indicators	0.055	0.919
	(0.136)	(1.471)
Constant	−13.464***	2.755
	(−10.771)	(1.047)
Country, industry, & year FE	Yes	Yes
N	6257	2482
Pseudo R^2	0.417	0.185

Panel B

	(1) Environmental pillar	(2) Resources score	(3) Emissions score	(4) Eco-innovation score
LN_Political donations	−6.486**	−2.137	−6.105*	−19.030***
	(−1.970)	(−0.556)	(−1.688)	(−3.428)
Board size	1.124***	0.703***	0.897***	1.412***
	(7.114)	(3.811)	(4.863)	(5.302)
Board independence	0.128***	0.117***	0.080**	0.138***
	(4.367)	(3.425)	(2.346)	(2.796)
Board gender diversity	0.256***	0.365***	0.297***	0.092
	(6.038)	(7.372)	(6.006)	(1.283)

(Continues)

TABLE 10 | (Continued)

Panel B

	(1) Environmental pillar	(2) Resources score	(3) Emissions score	(4) Eco-innovation score
CEO duality	1.121	0.087	0.075	3.800***
	(1.335)	(0.089)	(0.077)	(2.685)
Firm size	5.513***	5.979***	5.942***	3.373***
	(17.145)	(15.930)	(15.830)	(6.223)
Return on assets	12.834***	24.262***	13.462***	−0.619
	(3.314)	(5.367)	(2.978)	(−0.095)
Leverage	−3.924	−1.775	−6.975**	−16.325***
	(−1.527)	(−0.592)	(−2.324)	(−3.767)
Current ratio	−0.079	−0.187	0.012	0.552
	(−0.264)	(−0.530)	(0.033)	(1.086)
Capital expenditures	−27.014***	−29.790***	−35.037***	−66.785***
	(−3.040)	(−2.872)	(−3.378)	(−4.459)
R&D intensity	69.547***	30.187**	75.069***	75.334***
	(6.706)	(2.494)	(6.201)	(4.309)
Free float	0.075***	0.109***	0.029	0.116**
	(2.779)	(3.443)	(0.900)	(2.538)
World Governance Indicators	0.317	0.913	−12.614*	12.943
	(0.052)	(0.128)	(−1.764)	(1.254)
Constant	−99.653***	−102.626***	−76.312***	−88.279***
	(−9.917)	(−8.750)	(−6.505)	(−5.212)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	2532	2532	2532	2532
Adj. R^2	0.336	0.288	0.285	0.284
F-stat.	68.280***	55.942***	50.599***	19.951***

Note: This table reports the association between political contribution and environmental performance based on PSM approach. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

4.3.2.5 | **Reverse Causality.** To address potential reverse causality, we re-estimate the model by reversing the relationship. Specifically, we use LN_Political donations as the dependent variable and the Environmental pillar as the key explanatory variable. We apply a 2SLS regression, using the environmental management team as an instrumental variable. We posit that the environmental management team in firms has a direct influence on firms' environmental sustainability but not political donations; hence, it is an appropriate instrumental variable.[4] The results are reported in Table 11, together with the relevant diagnostic test statistics. After conducting the 2SLS analysis, the coefficient of the Environmental pillar is not statistically significant. This indicates that environmental performance does not have a significant effect on political donations. Overall, these findings suggest that the direction of the relationship mainly runs from political donations to environmental performance, rather than the reverse. This supports our direction of causality from political donations toward environmental sustainability (Table 12).

4.3.2.6 | **Heckman's Sample Selection.** Furthermore, we conducted Heckman's two-step regression analysis to address potential sample selection bias arising from the nonrandom availability of political donation data. Since political donations are not reported by all firms, the observed sample may not be random, which can bias the results. In the first stage, we estimate a Probit selection model where the dependent variable is a binary indicator of LN_Political donations (equal to 1 if the firm is in the top quartile, and 0 otherwise). We use two instrumental variables: the 1-year lag of LN_Political donations and the industry-year average of LN_Political donations (excluding the focal firm). The coefficients of these instruments

TABLE 11 | 2SLS regression addressing reverse causality.

	(1) Environmental pillar 1st stage	(2) LN_Political donations 2nd stage
IV: Environment management team	15.0*** (12.692)	
Environmental pillar		0.00020 (0.769)
Board size	0.89*** (4.268)	−0.00054 (−0.548)
Board independence	0.077** (2.400)	0.00016 (1.394)
Board gender diversity	0.19*** (4.279)	0.00012 (0.635)
CEO duality	0.59 (0.536)	−0.0023 (−0.411)
Firm size	6.41*** (14.690)	0.00053 (0.166)
Return on assets	9.49** (2.318)	0.0032 (0.148)
Leverage	−0.10 (−0.032)	0.011 (0.965)
Current ratio	−0.23 (−0.553)	0.0018 (0.574)
Capital expenditures	−0.18 (−0.016)	0.092 (1.396)
R&D intensity	77.3*** (4.120)	0.059 (0.653)
Free float	0.082*** (2.998)	−0.00026 (−1.539)
World Governance Indicators	7.36 (1.469)	0.044 (1.140)
Country, industry, & year FE	Yes	Yes
N	5919	5919
Underidentification test		
Kleibergen–Paap rk LM statistic		127.191
Weak identification tests		
Cragg–Donald Wald F statistic		751.634
Kleibergen–Paap rk Wald F statistic		161.083
Stock–Yogo weak ID test critical values		
10% maximal IV size		16.38
15% maximal IV size		8.96
20% maximal IV size		6.66
25% maximal IV size		5.53
Hansen J stat.		0.11

Note: This table reports the association between political contribution and environmental performance based on 2SLS regression addressing reverse causality. Environmental pillar is the composite environmental pillar score. Environment management team is a binary variable indicating Environment management team existence or not. LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

are statistically significant, indicating that the relevance condition is satisfied.

In the second stage, we estimate the outcome equation for the Environmental pillar by including the inverse Mills ratio obtained from the first stage. The coefficient of the inverse Mills ratio is not statistically significant, suggesting that sample selection bias is not a major concern in our analysis. Importantly, the coefficient of LN_Political donations remains consistent with our main findings, supporting the robustness of the results after correcting for potential selection bias.

The results from the 2SLS, Lewbel method, entropy balancing, PSM, reverse causality, and Heckman analyses are generally consistent with the initial findings, supporting the robustness of the results while addressing potential endogeneity concerns.

4.3.3 | Alternative Sample

We further generated an alternative sample by excluding the observations from the United Kingdom and the United States to conduct the baseline linear models, as they are the most dominant countries in the sample (Table 13). The United Kingdom and the United States account for 62.39% of our sample, raising potential concerns about sample bias. To address this, we exclude these countries and re-run the models as a robustness check. This is particularly relevant because these are market-oriented economies with relatively strong regulatory encouragement of corporate disclosure, which may influence both political donations and environmental reporting, potentially affecting the observed relationship. Thus, we ran the additional test and reported the outcomes in Table 11, which reveal that political donation (LN_Political donations) significantly negatively impacts three dimensions of environmental performance (Environmental pillar, Resources score, and Emissions score) when the UK and US data are excluded.[5]

TABLE 12 | Heckman two-stage sample selection model addressing nonrandom missingness in political donations data.

	(1)	(2)
	LN_Political donations (binary)	**Environmental pillar**
	Selection equation	**Outcome equation**
	1st stage	**2nd stage**
IV: LN_Political donations ($t-1$)	2.41*** (14.934)	
IV: LN_Political donations-IndAve	−1.13* (−0.69)	
LN_Political donations		−7.86* (−1.687)
Board size	0.025*** (2.766)	1.01*** (7.468)
Board independence	0.0081*** (3.844)	0.049* (1.810)
Board gender diversity	−0.0012 (−0.477)	0.20*** (7.075)
CEO duality	0.086* (1.912)	1.43** (2.024)
Firm size	0.26*** (15.310)	6.44*** (10.511)
Return on assets	−0.26 (−1.217)	9.09*** (3.187)
Leverage	0.44*** (3.319)	2.10 (1.048)
Current ratio	−0.021 (−1.290)	0.023 (0.099)
Capital expenditures	1.32*** (2.907)	9.82 (1.344)
R&D intensity	0.94* (1.818)	93.2*** (9.532)
Free float	0.0022 (1.235)	0.13*** (7.659)
World Governance Indicators	−0.36 (−0.900)	8.04* (1.655)
Inverse Mill's Ratio		−2.21 (−0.838)
Constant	−7.85*** (−12.861)	−125.5*** (−5.997)
Country, industry, & year FE	Yes	Yes
N	4938	4938
Adj. R^2		0.481
Pseudo R^2	0.278	
F-stat.		194.406***
Chi^2-stat.	564.538***	

Note: This table reports the association between political contribution and environmental performance based on the Heckman two-stage sample selection model. Environmental pillar is the composite environmental pillar score. LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. t-statistics are reported in parentheses. Heckman first stage: We use a Probit model where LN political donations (binary) is the dependent variable. It equals 1 if the value is in the top quartile, and 0 otherwise. For the selection equation, we use two instruments: the 1-year lag of LN political donations and the industry average of LN political donations (excluding the focal firm).
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

4.3.4 | Additional Controls (Paris Treaty and ESG Compensation)

Lastly, we controlled for two factors that might affect the relationship between political donations and environmental performance, namely, the Paris Treaty and ESG compensation. Although the Paris Treaty is an exogenous shock for environmental sustainability, ESG compensation is an internal governance factor incentivizing environmental and social responsibility. Hence, first, we included the Paris Treaty (PARIS) as an additional control variable, assuming that it might affect the association between political donations and environmental performance and hence alleviate omitted variable bias. For this, we integrated the variable PARIS into the model, which takes 1 for the years between 2016 and 2021 when the Paris Treaty was in effect, and 0 for the years before the treaty. These findings are in line with the view that the Paris Treaty is associated with higher environmental performance across the three dimensions. However, after including this variable in the model, the results remain consistent between political donations and environmental sustainability (Table 14).

Second, we controlled for ESG compensation as incentivizing executives for greater environmental performance might affect the association between political donations and environmental sustainability (Table 15). As expected, we found that ESG compensation has a strong positive association with firm environmental performance. However, after controlling for this factor, we found that the negative association between political donations and environmental sustainability weakens, rendering the significant association only between political donations and eco-innovation. This means that tying executive compensation

TABLE 13 | Alternative sample—Excluding the United Kingdom and the United States.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−12.580***	−14.774***	−18.474***	−4.160
	(−3.447)	(−3.471)	(−4.361)	(−0.713)
Board size	0.783***	0.781***	0.748***	0.654***
	(5.378)	(4.603)	(4.429)	(2.809)
Board independence	0.038*	0.017	0.079***	0.019
	(1.789)	(0.677)	(3.188)	(0.567)
Board gender diversity	0.110***	0.139***	0.141***	0.074
	(2.763)	(2.985)	(3.035)	(1.155)
CEO duality	0.668	1.848*	−0.038	4.637***
	(0.722)	(1.712)	(−0.036)	(3.133)
Firm size	7.174***	7.055***	7.129***	6.201***
	(20.803)	(17.540)	(17.809)	(11.242)
Return on assets	−1.810	1.820	1.704	−8.164
	(−0.424)	(0.365)	(0.344)	(−1.195)
Leverage	−16.037***	−19.701***	−18.377***	−10.502**
	(−5.686)	(−5.989)	(−5.613)	(−2.328)
Current ratio	0.326	0.315	−0.196	0.423
	(1.120)	(0.929)	(−0.580)	(0.908)
Capital expenditures	−4.548	−2.532	−8.225	−39.954***
	(−0.540)	(−0.258)	(−0.841)	(−2.966)
R&D intensity	39.118**	80.519***	61.019***	−5.958
	(1.997)	(3.525)	(2.684)	(−0.190)
Free float	0.057***	0.072***	0.007	0.120***
	(2.900)	(3.160)	(0.318)	(3.818)
World Governance Indicators	15.254**	17.233**	14.660**	8.381
	(2.511)	(2.432)	(2.079)	(0.862)
Constant	−130.443***	−124.797***	−117.852***	−125.556***
	(−13.942)	(−11.437)	(−10.852)	(−8.390)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	2451	2451	2451	2451
Adj. R^2	0.403	0.335	0.354	0.331
F-stat.	78.438***	58.358***	59.503***	27.511***

Note: This table reports the association between political contribution and environmental performance based on alternative sample—excluding the United Kingdom and the United States. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

to ESG engagement helps maintain environmental performance, although firms do political donations. The divergence between resources and emissions scores (insignificant) and eco-innovation (significantly negative) might be because eco-innovation is more discretionary compared with the other two dimensions of environmental performance, so that executives might be sacrificing it.

4.4 | Further Tests

4.4.1 | Firm-Level Channel Tests

We further examine three channels—board independence, board gender diversity, and cash flow—to explore potential mechanisms linking political donations and environmental

TABLE 14 | PARIS Treaty added as additional control.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−6.65**	−3.55	−7.55**	−17.6***
	(−2.342)	(−1.027)	(−2.231)	(−4.004)
Board size	1.01***	0.91***	0.82***	1.00***
	(9.362)	(6.966)	(6.341)	(6.014)
Board independence	0.076***	0.054***	0.069***	0.11***
	(4.588)	(2.661)	(3.502)	(4.127)
Board gender diversity	0.20***	0.30***	0.28***	0.034
	(8.552)	(10.535)	(9.790)	(0.926)
CEO duality	1.16*	0.73	0.059	4.32***
	(1.942)	(1.001)	(0.083)	(4.674)
Firm size	7.30***	7.61***	7.39***	6.08***
	(36.445)	(31.211)	(30.944)	(19.632)
Return on assets	9.30***	12.5***	13.4***	2.80
	(3.820)	(4.201)	(4.614)	(0.743)
Leverage	−1.10	0.35	−4.93***	−11.2***
	(−0.713)	(0.188)	(−2.690)	(−4.700)
Current ratio	−0.0075	0.19	0.045	0.19
	(−0.039)	(0.818)	(0.196)	(0.647)
Capital expenditures	5.05	0.58	−3.07	−33.4***
	(0.904)	(0.085)	(−0.461)	(−3.871)
R&D intensity	91.8***	85.7***	73.4***	95.6***
	(10.892)	(8.351)	(7.309)	(7.338)
Free float	0.11***	0.16***	0.074***	0.14***
	(7.895)	(9.750)	(4.501)	(6.412)
World Governance Indicators	7.71*	8.60*	7.88	2.68
	(1.887)	(1.729)	(1.618)	(0.425)
PARIS	21.3***	18.1***	19.0***	26.6***
	(4.756)	(3.325)	(3.570)	(3.852)
Constant	−163.6***	−168.1***	−152.5***	−171.9***
	(−18.152)	(−15.320)	(−14.190)	(−12.342)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	6517	6517	6517	6517
Adj. R^2	0.484	0.415	0.390	0.296
F-stat.	99.384***	75.403***	68.245***	45.250***

Note: This table reports the association between political contribution and environmental performance after including the Paris Treaty (Paris) as control variable. Paris takes 1 for the years between 2016 and 2021 when the Paris Treaty was in effect, and 0 for the years before the treaty. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

performance (Table 13). Board characteristics capture governance capacity to monitor and advise on corporate policies, including donations and environmental initiatives, whereas cash flow reflects firms' internal resources to fund such activities, which is in line with financial slack theory. These analyses complement the ESG contracting argument by highlighting other potential pathways. The coefficients of the interaction terms, including LN_Political donations*Board Independence and LN_Political donations*Cash Flow, are significantly positive, whereas the coefficient of LN_Political donations*Board

TABLE 15 | ESG compensation added as additional control.

	(1)	(2)	(3)	(4)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**
LN_Political donations	−4.10	1.86	−0.87	−23.6***
	(−1.338)	(0.494)	(−0.238)	(−4.967)
Board size	1.13***	0.99***	0.87***	1.20***
	(9.804)	(6.970)	(6.358)	(6.683)
Board independence	0.051***	0.034	0.036*	0.10***
	(2.828)	(1.530)	(1.675)	(3.628)
Board gender diversity	0.22***	0.32***	0.28***	0.089**
	(8.667)	(10.204)	(8.992)	(2.228)
CEO duality	1.65***	1.40*	0.88	4.53***
	(2.599)	(1.799)	(1.155)	(4.589)
Firm size	6.98***	7.22***	7.11***	5.87***
	(32.300)	(27.238)	(27.598)	(17.528)
Return on assets	10.6***	14.4***	15.1***	0.56
	(4.150)	(4.617)	(4.953)	(0.143)
Leverage	0.40	2.06	−3.60*	−11.3***
	(0.247)	(1.042)	(−1.877)	(−4.524)
Current ratio	0.030	0.18	0.081	0.26
	(0.150)	(0.734)	(0.345)	(0.851)
Capital expenditures	−0.98	−3.28	−7.29	−37.4***
	(−0.167)	(−0.457)	(−1.044)	(−4.122)
R&D intensity	92.5***	82.5***	74.5***	90.0***
	(10.491)	(7.630)	(7.087)	(6.579)
Free float	0.10***	0.16***	0.069***	0.13***
	(6.980)	(8.770)	(3.857)	(5.669)
World Governance Indicators	3.33	5.23	4.11	−2.65
	(0.728)	(0.934)	(0.755)	(−0.374)
ESG compensation	5.51***	5.90***	6.87***	2.08**
	(9.925)	(8.664)	(10.365)	(2.418)
Constant	−139.2***	−145.0***	−129.4***	−127.3***
	(−20.105)	(−17.073)	(−15.677)	(−11.856)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	5743	5743	5743	5743
Adj. R^2	0.489	0.413	0.398	0.302
F-stat.	248.464***	185.525***	170.542***	80.636***

Note: This table reports the association between political contribution and environmental performance after including ESG compensation as control variable. Paris takes 1 for the years between 2016 and 2021 when the Paris Treaty was in effect, and 0 for the years before the treaty. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

gender diversity is nonsignificant. The findings suggest that board independence and cash flow positively moderate the relationship between political donation and environmental performance, whereas board gender diversity does not exhibit a significant moderating effect. The results indicate that outsider directors and financial resources availability help maintain the environmental engagement of firms making political contributions, whereas female directors cannot (Table 16).[6]

TABLE 16 | Additional channel tests: Board independence, board gender diversity, and cash flow.

	(1)	(2)	(3)
	Environmental pillar	**Environmental pillar**	**Environmental pillar**
LN_Political donations	−32.257***	−10.736*	−16.223***
	(−2.975)	(−1.906)	(−2.957)
LN_Political donations * Board independence	0.379**		
	(2.447)		
LN_Political donations * Board gender diversity		0.205	
		(0.841)	
Cash flow			10.114**
			(2.203)
LN_Political donations * Cash flow			63.220**
			(1.978)
Board size	1.002***	1.009***	1.001***
	(9.296)	(9.353)	(9.285)
Board independence	0.072***	0.076***	0.075***
	(4.347)	(4.618)	(4.536)
Board gender diversity	0.203***	0.200***	0.200***
	(8.563)	(8.359)	(8.434)
CEO duality	1.162*	1.172*	1.160*
	(1.942)	(1.958)	(1.940)
Firm size	7.314***	7.302***	7.384***
	(36.503)	(36.436)	(36.279)
Return on assets	9.470***	9.304***	2.583
	(3.889)	(3.820)	(0.707)
Leverage	−1.098	−1.132	−1.723
	(−0.715)	(−0.736)	(−1.103)
Current ratio	−0.005	−0.007	0.005
	(−0.027)	(−0.037)	(0.027)
Capital expenditures	5.108	5.066	−0.049
	(0.916)	(0.908)	(−0.008)
R&D intensity	91.221***	91.646***	91.921***
	(10.827)	(10.875)	(10.909)
Free float	0.108***	0.109***	0.107***
	(7.861)	(7.898)	(7.780)
World Governance Indicators	7.783*	7.700*	8.151**
	(1.906)	(1.885)	(1.995)
Constant	−148.178***	−148.080***	−150.675***
	(−23.880)	(−23.852)	(−23.984)
Country, industry, & year FE	Yes	Yes	Yes
N	6517	6517	6517
Adj. R^2	0.484	0.483	0.484
F-stat.	270.215***	269.617***	252.582***

Note: This table runs additional channel tests with board independence, board gender diversity, and cash flow. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.

*$p < 0.10$.

**$p < 0.05$.

***$p < 0.01$.

TABLE 17 | Cross-country heterogeneity analysis: Environmental taxation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Environmental pillar	**Resources score**	**Emissions score**	**Eco-innovation score**	**Environmental pillar**	**Resources score**	**Emissions score**	**Eco-innovation score**
	High environmental tax	**High environmental tax**	**High environmental tax**	**High environmental tax**	**Low environmental tax**	**Low environmental tax**	**Low environmental tax**	**Low environmental tax**
LN_Political donations	0.26	7.10	−2.68	−25.6***	−9.24***	−9.47**	−9.58**	−11.4**
	(0.051)	(1.130)	(−0.443)	(−3.265)	(−2.593)	(−2.259)	(−2.269)	(−2.079)
Board size	0.86***	0.84***	0.78***	0.75***	1.17***	1.06***	0.83***	1.30***
	(5.959)	(4.674)	(4.481)	(3.341)	(7.103)	(5.473)	(4.267)	(5.106)
Board independence	0.078***	0.055**	0.063**	0.11***	0.074***	0.072**	0.084***	0.089**
	(3.643)	(2.058)	(2.419)	(3.181)	(2.845)	(2.357)	(2.728)	(2.203)
Board gender diversity	0.23***	0.31***	0.30***	0.054	0.16***	0.30***	0.23***	−0.036
	(7.697)	(8.482)	(8.599)	(1.181)	(3.873)	(6.078)	(4.700)	(−0.562)
CEO duality	−0.10	−0.77	0.24	0.90	2.83***	2.95***	0.17	7.82***
	(−0.118)	(−0.729)	(0.238)	(0.677)	(3.256)	(2.885)	(0.170)	(5.830)
Firm size	8.02***	8.29***	7.92***	6.87***	5.75***	5.79***	6.20***	4.83***
	(30.658)	(25.414)	(25.160)	(16.857)	(17.674)	(15.112)	(16.075)	(9.628)
Return on assets	10.0***	12.1***	14.6***	6.45	9.81**	15.4***	12.2**	−0.92
	(3.315)	(3.208)	(4.008)	(1.371)	(2.362)	(3.141)	(2.466)	(−0.143)
Leverage	0.75	2.74	−3.30	−10.1***	−5.25**	−5.14*	−8.40***	−14.9***
	(0.391)	(1.141)	(−1.423)	(−3.369)	(−2.027)	(−1.684)	(−2.731)	(−3.724)
Current ratio	−0.14	−0.10	0.46	−0.040	0.067	0.30	−0.62*	0.42
	(−0.579)	(−0.331)	(1.523)	(−0.102)	(0.224)	(0.864)	(−1.746)	(0.919)
Capital expenditures	29.5***	14.7	17.9**	−13.9	−33.3***	−22.6**	−32.2***	−65.3***
	(4.093)	(1.639)	(2.069)	(−1.239)	(−3.716)	(−2.145)	(−3.032)	(−4.724)
R&D intensity	96.1***	81.5***	18.9	141.1***	82.4***	70.6***	92.5***	72.8***
	(6.468)	(4.396)	(1.056)	(6.086)	(7.685)	(5.597)	(7.279)	(4.404)
Free float	0.11***	0.20***	0.078***	0.099***	0.11***	0.11***	0.084***	0.18***
	(6.732)	(9.529)	(3.900)	(3.855)	(4.537)	(3.714)	(2.905)	(4.851)
World Governance Indicators	8.92	16.6**	13.2	−10.5	0.77	−0.65	7.68	−9.34
	(1.336)	(1.999)	(1.641)	(−1.008)	(0.099)	(−0.072)	(0.838)	(−0.784)
Constant	−165.0***	−181.5***	−156.6***	−128.8***	−104.0***	−97.6***	−108.4***	−97.3***
	(−17.398)	(−15.342)	(−13.722)	(−8.708)	(−9.380)	(−7.473)	(−8.241)	(−5.691)

(Continues)

TABLE 17 | (Continued)

	(1) Environmental pillar High environmental tax	(2) Resources score High environmental tax	(3) Emissions score High environmental tax	(4) Eco-innovation score High environmental tax	(5) Environmental pillar Low environmental tax	(6) Resources score Low environmental tax	(7) Emissions score Low environmental tax	(8) Eco-innovation score Low environmental tax
Country, industry, & year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3921	3921	3921	3921	2593	2593	2593	2593
Adj. R^2	0.534	0.446	0.429	0.299	0.325	0.285	0.266	0.277
F-stat.	220.451***	167.257***	141.305***	63.840***	79.031***	58.761***	58.226***	34.119***

Note: This table runs additional channel tests for the high vs. low environmental tax as a percentage of GDP for which the data were downloaded from the OECD. The high vs. low environmental tax as a percentage of GDP was decomposed based on the median of environmental tax as a percentage of GDP. Environmental pillar is the composite environmental pillar score, resources score is the resource use category score of environmental pillar, emissions score is the emission category score of environmental pillar, and eco-innovation score is the environmental innovation category score of environmental pillar (the scores range from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p<0.10$.
**$p<0.05$.
***$p<0.01$.

4.4.2 | Cross-Country Heterogeneity Analyses

Grounding on the institutional theory (DiMaggio and Powell 1983), we also examine the association between political donations and environmental sustainability under different institutional contexts such as environmental taxation, legal regime, and control of corruption. First, we explore whether environmental regulations, as a coercive force, might affect the association between political donation and environmental performance (Uyar et al. 2026). For that purpose, we retrieved environmental tax (as a percentage of GDP) data from the OECD and composed the sample into high versus low environmental tax countries based on the median of environmental tax (as a percentage of GDP). After re-running the model, we found that political donation is negatively associated with environmental performance in low environmental tax countries in all three dimensions of environmental performance (Table 14). However, we found that political donation is negatively associated with only the eco-innovation dimension in high environmental tax countries. In low environmental tax countries, regulatory pressure is relatively weak. In such settings, firms may use political donations more broadly to influence policymakers, reduce scrutiny, or delay the introduction of stricter environmental regulations. As a result, political donations are associated with poorer performance across all environmental dimensions. In contrast, in high environmental tax countries, regulatory frameworks are more stringent, and enforcement is stronger, limiting firms' ability to broadly circumvent environmental obligations through political engagement. However, firms may still strategically use political donations in more targeted ways. The negative association observed only for eco-innovation suggests that firms may divert resources away from long-term, uncertain investments such as innovation, while maintaining compliance in more regulated and immediately enforceable dimensions of environmental performance (Table 17).

Second, we tested whether the association between political donations and environmental sustainability changes across code law versus common law regimes (La Porta et al. 1998). We found that although the negative association between political donations and environmental sustainability is maintained in code law regimes, it is not maintained in common law regimes (Table 18). The results suggest that the institutional and legal environment shapes how political donations affect environmental sustainability. Although political donations are associated with poorer environmental outcomes in code law countries, this relationship disappears in common law countries, possibly because stronger legal enforcement, transparency, and investor protections limit firms' ability to use political contributions in ways that undermine environmental performance.

Lastly, we tested whether the association between political donations and environmental sustainability changes depending on the strength of control of corruption in countries.[7] We found that although the negative association between political donations and environmental sustainability is maintained in countries where control of corruption is weak, it is not maintained in countries where control of corruption is strong (Table 18). The findings suggest that institutional quality—specifically control of corruption—conditions the impact of political donations.

TABLE 18 | Cross-country heterogeneity analysis: Legal origin and control of corruption.

	(1)	(2)	(3)	(4)
	Environmental pillar	Environmental pillar	Environmental pillar	Environmental pillar
	Common law	Code law	High control of corrupt	Low control of corrupt
LN_Political donations	−4.53	−35.3***	12.4	−10.1***
	(−1.508)	(−3.819)	(1.595)	(−3.192)
Board size	1.12***	0.95***	0.89***	1.06***
	(7.919)	(5.697)	(5.508)	(7.068)
Board independence	0.061***	0.077***	0.059***	0.094***
	(2.733)	(3.242)	(2.988)	(3.068)
Board gender diversity	0.21***	0.042	0.18***	0.24***
	(7.720)	(0.845)	(5.749)	(6.430)
CEO duality	2.38***	0.49	0.97	1.95**
	(3.348)	(0.426)	(0.997)	(2.474)
Firm size	7.46***	6.12***	7.70***	6.76***
	(32.762)	(13.893)	(25.810)	(23.501)
Return on assets	11.1***	−6.94	10.4***	8.91**
	(4.168)	(−1.078)	(3.207)	(2.406)
Leverage	1.34	−20.4***	1.76	−3.76
	(0.782)	(−5.599)	(0.860)	(−1.599)
Current ratio	−0.38*	0.77*	−0.020	−0.11
	(−1.789)	(1.858)	(−0.074)	(−0.389)
Capital expenditures	5.37	−15.9	14.2*	−3.04
	(0.846)	(−1.209)	(1.867)	(−0.369)
R&D intensity	94.5***	80.1***	118.5***	83.5***
	(10.177)	(3.468)	(7.292)	(8.127)
Free float	0.16***	0.020	0.15***	0.055**
	(9.637)	(0.833)	(8.617)	(2.364)
World Governance Indicators	3.77	10.5	−14.3	12.1**
	(0.698)	(1.208)	(−1.193)	(2.531)
Constant	−155.4***	−98.0***	−128.9***	−134.7***
	(−19.604)	(−7.407)	(−7.096)	(−17.773)
Country, industry, & year FE	Yes	Yes	Yes	Yes
N	5119	1236	3240	3274
Adj. R^2	0.480	0.411	0.553	0.353
F-stat.	251.631***	46.936***	202.120***	96.884***

Note: This table runs additional country-level heterogeneity tests based on the legal regime and control of corruption. Legal regime is identified as common and code law regimes, and control of corruption is based on the control of corruption metric of World Governance Indicators provided by the World Bank. Environmental pillar is the composite environmental pillar score (the score ranges from 0 to 100). LN_Political donations is the political donation proxy, which is the natural logarithm of (1 + political contributions/net sales) multiplied by 1000. All variables are described in Table 2. *t*-statistics are reported in parentheses.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

In countries with weak corruption control, political donations are associated with poorer environmental sustainability, likely reflecting greater opportunities for influence and regulatory avoidance. In contrast, this relationship disappears in countries with strong corruption control, where governance and oversight mechanisms appear to limit the adverse effects of political donations.

5 | Discussion and Conclusion

Although recent studies have intensively focused on the predictors of corporate charity and environmental performance, the link between corporate political contribution and environmental performance is missing in the literature. Thus, we are interested in investigating whether firms use political donations as a license

to neglect environmental sustainability. We further deepen the examination by exploring the role of executive contracting and environmental tax (i.e., institutions) in this relationship.

Our findings confirm that firms use political contributions as a license to neglect environmental sustainability. More specifically, we find that political donors have poor environmental performance, which is confirmed by the composite environmental score as well as its two dimensions, namely, emissions and eco-innovation performance, if not resource consumption performance. However, executive ESG contracting helps political donation givers strengthen their environmental performance. Further tests also reveal that board independence and cash flow help political donors enhance their environmental performance. Female directors are also useful in breaking the negative link between political donation and environmental performance if they cannot turn this link into a positive relationship.

The results suggest several theoretical, managerial, and policy-making implications. First, the results imply that firms use political donations as a license to neglect environmental sustainability. Our results confirm the proposition of neo-pluralist theory such that organizations may allocate resources to intervene in the political arena, manipulate rules and regulations imposed by the government, and avoid legitimacy threats (Manley 1983; Gray et al. 1996). Thus, corporations may leverage political donations to ensure their legitimacy instead of environmental engagement (Archel et al. 2011; Muttakin et al. 2021; Muttakin et al. 2022). Although exploiting political donations as a license to neglect environmental sustainability might be a viable short-term legitimacy strategy, politically connected firms may face repercussions from stakeholders, particularly environmentalists and civil organizations. Such a backfire might jeopardize their financial sustainability as a result of legitimacy concerns.

The positive moderation effect of ESG compensation is in line with the proposition of stakeholder and accountability theories. Conforming to these theories, ESG-linked compensation holds executives accountable toward stakeholders for their environmental responsibilities and hence aligns management decisions and actions with stakeholders' expectations (Tetlock 1983; Radu and Smaili 2021; Bolourian et al. 2023; Al-Shaer, Albitar, and Hussainey 2024). In prior studies, the integration of corporate sustainability goals into executive compensation has proven to be successful in improving firms' sustainability engagement (Maas and Rosendaal 2016; Maas 2018; Al-Shaer and Zaman 2019; Al-Shaer et al. 2023). Firms adopting ESG-linked executive compensation policies are found to decrease their carbon emissions and manage waste better than their counterparts who do not have such policies (Haque and Ntim 2020; Albitar et al. 2023). Our evidence advances those studies that executive ESG compensation policy is even helpful in politically connected firms, helping them stay clean and environmentally sustainable and exploiting political contributions for opportunistic goals.

Further tests also confirm the proposition of the upper-echelons theory, suggesting that directors' attributes balance between political donation and environmental engagement. Especially, independent directors are influential in breaking the negative linkage between political donations and environmental sustainability, which is evidence of their monitoring power. Board gender diversity is not as influential as board independence in breaking that linkage, possibly due to their limited access or interference in the political domain. In line with financial slack theory, stronger cash flow weakens or reverses the negative impact of political donations on environmental performance, indicating that financial resources provide flexibility to sustain environmental commitments. Although the findings suggest implications for integrating ESG into executive contracting, they also propose upper-echelon design and sustain financial availability for not sacrificing environmental sustainability for the sake of political contributions.

Finally, we find that the institutional environment matters in using political contribution as a license to neglect environmental sustainability, supporting the institutional theory (DiMaggio and Powell 1983). Firms tend to use political donations as a license to neglect environmental sustainability in countries where low environmental taxation exists, a code law regime is maintained, and weak control of corruption is observed. These results underscore the importance of a strong institutional environment in preventing the opportunistic use of political donations that undermine environmental responsibility. Weakly regulated environments, characterized by low environmental taxation and poor control of corruption, create greater opportunities to exploit political donations as a tool of opportunistic behavior, thereby weakening environmental responsibility. In code law regimes, political donations are more likely to weaken environmental responsibility due to weaker accountability and limited external monitoring mechanisms, such as less active litigation and fewer shareholder lawsuits.

Our study's main constraint is associated with the availability of political contribution data for a limited number of observations. The second limitation is that because of data availability constraints, our measure of ESG-linked compensation is binary and captures only the presence of ESG targets, not their relative weight or intensity. As a result, our findings reflect the adoption of ESG incentives rather than their economic magnitude. Third, because of the lack of data on the recipients of political donations, we are unable to examine how donations to specific parties or candidates relate to environmental performance. Accordingly, our analysis is limited to aggregate political donation measures. Despite these limitations, we believe that our study makes a significant contribution to literature and suggests further investigations. For example, future studies could seek answers to such questions: "Is political donation associated with sectoral affiliation?", "Do certain types of shareholders have more sympathy for political donations?", and "Does the scope of foreign operations play a role in political contribution?", among others.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

[1] Climate Change and Big Money in Politics - American Promise.

[2] We define the research variables in the following section.

[3] The sample shrinks mostly unavailability of political donation data.

[4] The environmental management team is a binary variable for which data were retrieved from the Refinitiv.

[5] In comparison with the baseline model utilizing the entire sample, the coefficient of Resources Score became significantly negative, whereas the coefficient of Eco-Innovation Score became nonsignificant.

[6] The insignificant moderation effect of female directors might trigger further research opinions such as critical mass theory testing, and country-level or sector-based studies.

[7] The data for the control of corruption metric (value ranging from −2.5 to 2.5) of the World Governance Indicators were collected from the World Bank.

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Appendix

TABLE A1 | Mean political contributions (in US dollars) across sectors and countries.

Variable	Category	Political contributions
Sector	Basic materials	127,053.10
	Consumer cyclicals	161,675.70
	Consumer noncyclicals	196,078.50
	Energy	555,031.60
	Healthcare	1,088,948.00
	Industrials	252,410.70
	Real estate	68,959.65
	Technology	3,496,202.00
	Utilities	27,189.11
Country	Australia	22,812.87
	Canada	35,206.35
	Chile	38,428.57
	Finland	2713.26
	France	0.00
	Germany	500,096.90
	India	721,978.80
	Indonesia	0.00
	Ireland; Republic of	74,388.09
	Italy	32,558.63
	Japan	87,968.04
	Korea; Republic (S. Korea)	138,458.20
	Mexico	0.00
	Netherlands	449.81
	New Zealand	0.00
	South Africa	33,736.66
	Spain	328.90
	Sweden	548,259.50
	Switzerland	359,455.20
	Taiwan	27,867.09
	Thailand	51,200,000.00
	United Kingdom	34,670.59
	United States of America	1,107,233.00