

Article

Sustainable Disclosure and Market Valuation: The Interplay Between ESG Reporting and Board Gender Diversity

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Abstract

This study examines the impact of corporate environmental, social, and governance (ESG) practices on corporate stock prices, with a particular focus on the mediating role of board gender diversity (BGD). Using a dataset of 9543 firm-year observations from non-financial companies across 15 countries in the S&P 1200 global index between 2012 and 2020, the analysis evaluates ESG performance through the Refinitiv ESG Combined Score, which incorporates disclosures across ESG pillars and an overlay for ESG controversies. BGD is measured as the proportion of female directors on corporate boards, while stock prices are assessed using annual closing prices. The findings reveal a positive relationship between ESG performance and corporate stock prices, both at the aggregate level and across individual ESG pillars. Additionally, BGD is shown to enhance stock price performance and serves as a mediator in the ESG-stock price relationship. These results highlight the critical role of board diversity in amplifying the financial benefits of ESG practices. Further analysis suggests that the value relevance of ESG performance varies across institutional settings, with stronger effects observed in emerging/offshore markets and in the North American and European regions. The study offers important implications for companies, investors, and policymakers, emphasizing the need to integrate ESG strategies and promote gender diversity at the board level to enhance corporate valuation and long-term sustainability.

Keywords: sustainability; ESG; gender diversity; stock price; S&P



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1. Introduction

The ESG factors are used to measure a firm's non-financial performance (Eccles et al., 2020; Tahmid et al., 2022). Numerous studies have examined the nexus between ESG practices, financial performance, and firm value. Most of these studies have revealed a positive nexus between ESG and financial performance (Friede et al., 2015; Gillan et al., 2021). Even though researchers present many positive links between ESG and firm performance, they often argue that the results are ambiguous, inconclusive, or contradictory (Barrymore & Sampson, 2021; Behl et al., 2022; Agarwala et al., 2024). These studies cover a wide range of contexts, from countries with different legal systems (Porta et al., 1998) to periods with different economic characteristics (Buchanan et al., 2018). and political conditions (Aboud & Diab, 2019). Therefore, examining such an impact empirically in a specific context is

essential, considering the global perspective of ESG's potential impact on corporate firm performance. This study utilizes a sample of 877 non-financial companies from 15 countries worldwide, all part of the S&P 1200 global index, covering the period from 2012 to 2020.

Globally, ESG performance is becoming the benchmark for assessing a firm's environmental and social responsibility (Bofinger et al., 2022). Investors today pay more attention to the sustainable practices of a firm than to the firm's financial and operational success. Currently, over 4900 institutional investors and service providers have become signatories to the Principles for Responsible Investment (PRI), collectively managing \$121 trillion in assets, a significant increase from \$6.5 trillion in 2006. If firms do not incorporate ESG considerations into their business operations, they may face unwanted consequences from investors (S. Chen et al., 2023). Furthermore, the firm makes ESG decisions as part of its strategic planning.

Moreover, ESG represents a legitimate way for corporations to contribute to society and stakeholders (Lokuwaduge & Heenetigala, 2017; Abo El Matey et al., 2026), generally. In light of increasing investor interest and global awareness of environmental risks and other non-financial factors, corporations must take a more proactive approach to non-financial aspects of their business. It is becoming increasingly expected that various stakeholders are likely to put a premium on these fronts, take mitigation procedures, and effectively report (Friede et al., 2015). Scholars are researching the factors that impact decisions regarding ESG due to its significance in firm success.

The board's composition and diversity level are crucial among these governance characteristics (Sutiono, 2020). One crucial measure of board diversity is gender diversity. Board gender diversity (hereafter BGD) can significantly benefit the firm, as women bring unique qualities to the boardroom. They positively impact the board's advisory and monitoring functions by enhancing governance and promoting heterogeneity through their diverse knowledge, values, and experiences (Groysberg & Bell, 2013). Researchers have conducted studies on the nexus between BGD and corporate performance and stock performance. It is conceivable that the BGD may significantly influence the company's ESG factors, subsequently affecting its overall performance and eliciting market response to the stock price (Y. Chen et al., 2024). The rationale behind this assertion is that a more diverse board enables a more comprehensive comprehension and appraisal of the concerns of all stakeholders, a crucial element in effective sustainability management as a whole and market performance in particular. Ultimately, this could contribute to the augmentation of the corporation's performance and stock performance.

Academics and business researchers have recently discussed how ESG performance impacts firm value. A considerable amount of research has been conducted on the nexus between ESG and financial performance (Gillan et al., 2021). Recently, most papers have found positive results. However, a few studies also found negative results, which support the shareholder theory that maximizing shareholders' profits is the primary objective for corporations (Nguyen & Nguyen, 2021). The extant literature investigated the mechanisms needed to strengthen the ESG agenda, enhancing firm performance and value. The research on corporate governance indicates that the board of directors can monitor corporations' activities (Gull et al., 2023). More specifically, BGD can be essential, as female members were more effective in monitoring managerial activities than their male counterparts (Adams & Ferreira, 2009). However, it is widely acknowledged that there is a lack of women on corporate boards, although this situation is gradually improving. Considering the communal and caring characteristics, BGD can support the firm's decision to engage actively in ESG activities. The reported evidence showed that BGD is associated with superior ESG performance (Gillan et al., 2021; Hassanein & Elsayed, 2026; Abdelbaky et al., 2025; Tahat & Hassanein, 2024). It should be noted, however, that most literature on ESG

has investigated developed countries such as the US and Europe, inviting investigations considering ESG activities in both developed and developing countries (Shawat et al., 2026).

The current study investigates the effect of ESG practices on corporate stock prices and explores the potential influence of BGD in supporting this relationship. It examines a sample of 910 non-financial corporations from 15 countries around the world that belong to the S&P 1200 global index, covering the years 2011 to 2022. The results reveal a positive correlation between corporate stock prices and overall ESG performance, as well as across the individual ESG pillars. Furthermore, BGD positively influences stock prices. These findings suggest that BGD acts as a mediator between ESG performance (both overall and by individual pillars) and stock prices, highlighting its essential role in translating the influence of ESG performance into corporate stock prices.

This study adds to the growing body of research on the relationship between ESG scores, BGD, and stock prices. First, it focuses on the largest and most liquid corporations worldwide, across various regions and sectors, including in the S&P Global 1200 global stock index. These corporations are known for their well-developed governance and disclosure frameworks. Moreover, this paper provides theoretical and empirical arguments supporting the idea of feminizing corporate boards. The aim is to promote gender equality and organizational justice while emphasizing their influence on organizational performance, measured through stock prices. Additionally, the study makes a valuable contribution to the corporate social responsibility (CSR) literature by documenting the effect of BGD on CSR disclosures through ESG factors.

The paper is organized as follows: Section 2 offers a literature review and the research hypotheses. Section 3 details the methodology employed. Section 4 presents the descriptive statistics and the primary empirical findings. Section 5 introduces additional analyses. Section 6 concludes with summarizing remarks.

2. Literature and Hypotheses Development

2.1. ESG and Corporate Stock Prices

ESG scores were first proposed by the United Nations Principles of Responsible Investment, which recommend that investors consider them when making investment decisions (Kim & Yoon, 2023). Essentially, ESG serves as a framework for assessing a firm's practices related to environmental, social, and corporate governance performance and determining how they perform (Kao, 2023). Environmental performance pertains to a company's initiatives aimed at minimizing resource usage and emissions. In contrast, an organization's social performance indicates its commitment to human rights, the quality of employment, product responsibility, and community relations (Xie et al., 2019). Lastly, a company's corporate governance performance indicates the rights and responsibilities of its management, i.e., government structure (Rajesh et al., 2022; Alshdaifat et al., 2026; Alm-El-Din & Hassanein, 2026; Nimer et al., 2025; Al-Khasawneh et al., 2024).

There has been extensive academic research on ESG in the fields of economics and management, including but not limited to ESG disclosure, ESG ratings, and financial performance influences of ESG (Gillan et al., 2021; Velte, 2017; Duque-Grisales & Aguilera-Caracuel, 2021; X. Yu & Xiao, 2022), firm value (Constantinescu et al., 2021; Wong et al., 2021; Cheng et al., 2023), and corporate risk and stock returns (Pedersen et al., 2021). The existing literature has investigated the nexus between ESG and firm performance from various angles, but a core question has not been addressed uniformly (Yoon et al., 2018). The question is, how does ESG performance impact firm value? Moreover, an essential question in this context is whether ESG has the potential to add value to corporations. Addressing this question may influence whether companies are inclined to take proactive measures to fulfill their ESG obligations.

From a stakeholder perspective, corporations should consider the needs of all stakeholders (Freeman, 1984). This perspective emphasizes that businesses must consider the interests of various groups of stakeholders. The theory posits that profits should be treated as a by-product of addressing stakeholder needs rather than the firm's sole focus. This approach promotes balancing the interests of different groups without favoring one at the expense of others (Clarkson, 1995). By aligning their goals with the needs of all stakeholders, corporations can simultaneously engage in profitable and socially responsible activities that benefit everyone involved, including shareholders (Freeman, 1984).

The signaling (Spence, 2002) suggests that corporations use ESG activities to communicate information to various stakeholders (Fu et al., 2022). This communication aims to lessen information asymmetry between the firm and its stakeholders. According to previous studies, ESG performance positively correlates with firm value (Velte, 2017; Wong et al., 2021) and performance, while others argue that they are inversely correlated (Garcia et al., 2017; Duque-Grisales & Aguilera-Caracuel, 2021). Prior studies have primarily explored developed countries such as the US (Manita et al., 2018; Olsen et al., 2021; Ignatov, 2023), Germany (Velte, 2017), the UK (Li et al., 2018), Japan (Takahashi & Yamada, 2021), and Australia (Lokuwaduge & Heenetigala, 2017), followed by developing economies, including China (Dai, 2021), India (Behl et al., 2022; Sinha Ray & Goel, 2023; Maji & Lohia, 2023), and Malaysia (Wasiuzzaman & Wan Mohammad, 2020). Some studies take a more global perspective by covering a broader range of economies (E. P. Y. Yu et al., 2018; Al-Hiyari & Kolsi, 2021). The above discussion indicates that research on ESG and the valuation of corporations provides contradictory findings. Some studies hypothesize that ESG enhances a firm's valuation (Nekhili et al., 2021; Rastogi et al., 2023). However, some corporations may demonstrate that ESG does not affect valuation (Velte, 2017). There is a real need for new evidence regarding ESG's effect on a company's valuation in light of the conflicting results of the studies. As a result, this study develops the following:

H1. *ESG Performance and corporate stock price have a statistically positive relationship.*

2.2. The Mediating Role of Gender Diversity

In the last few years, business and academic circles have become highly interested in implementing ESG practices in board agendas (Arayssi et al., 2020; Widyawati, 2020; Burkhardt et al., 2020). The BGD has attracted increasing attention, with calls for more excellent representation of women to enhance decision-making and governance (Adams & Ferreira, 2009; Burkhardt et al., 2020). The social role theory suggests that females are often associated with communal traits such as caring, ethical behavior, rationality, and effective communication, contrasting with their male counterparts. They also exhibit greater sensitivity to moral responsibility, stakeholder interests, and social and environmental concerns (Liu, 2018). Additionally, women tend to display risk-averse, cautious, and conservative tendencies, better addressing risks like climate change, which is crucial for a firm's reputation and survival (Adams & Ferreira, 2009). Compared to males, female board members show lower levels of overconfidence and risk-taking, reducing the likelihood of underestimating CSR-related risks. From a resource dependence theory's perspective (Pfeffer & Salancik, 2003)¹, BGD can aid in resource acquisition by enhancing the firm's legitimacy and appeal to socially conscious investors, customers, and partners (Chang et al., 2024). Transparent ESG disclosures, backed by diverse leadership, can attract resources (Chang et al., 2024; Hassanein & Elsayed, 2026; Abdelbaky et al., 2025; Tahat & Hassanein, 2024; Alshdaifat et al., 2026; Alm-El-Din & Hassanein, 2026; Nimer et al., 2025; Al-Khasawneh et al., 2024).

The mediating role of BGD can be understood through the interaction of stakeholder theory, social role theory, and resource dependence theory. Firms that actively engage in

ESG practices are more likely to adopt governance structures that reflect broader stakeholder interests, including greater female representation on corporate boards. ESG-oriented firms often seek to align their governance mechanisms with sustainability objectives, diversity expectations, and social legitimacy concerns. Consequently, ESG engagement may influence board composition by encouraging the appointment and retention of female directors. In this context, BGD represents an organizational mechanism through which ESG commitments are translated into governance outcomes that are subsequently valued by the market.

From a theoretical perspective, BGD is expected to function as a mediator rather than merely a moderator because it constitutes part of the transmission mechanism linking ESG performance to firm value. Social role theory suggests that female directors are more attentive to stakeholder welfare, ethical conduct, and sustainability-related issues. In contrast, resource dependence theory argues that diverse boards enhance organizational legitimacy and access to critical resources. As a result, firms with stronger ESG performance are more likely to develop governance structures characterized by greater gender diversity, which in turn improves investor confidence, reduces information asymmetry, strengthens corporate reputation, and ultimately contributes to higher stock prices. Accordingly, ESG performance is expected to affect firm value both directly and indirectly through its influence on board gender diversity.

To further distinguish the proposed mechanism from a moderating effect, it is important to recognize that moderation and mediation reflect fundamentally different theoretical relationships. A moderating role would imply that board gender diversity merely alters the strength or direction of the relationship between ESG performance and corporate stock prices, without being influenced by ESG itself. In contrast, the present study argues that firms with stronger ESG engagement are more likely to adopt governance structures characterized by greater female representation on corporate boards because ESG-oriented firms typically emphasize inclusiveness, stakeholder engagement, and sustainable governance practices. Consequently, board gender diversity represents an organizational outcome of ESG commitment that subsequently contributes to enhanced market valuation through improved governance quality, stronger stakeholder confidence, and greater corporate legitimacy. Therefore, the proposed theoretical model conceptualizes board gender diversity as a mediating mechanism that partially transmits the effect of ESG performance to corporate stock prices rather than as a boundary condition that merely changes the magnitude of this relationship.

It is anticipated that the potential positive impact of ESG activities on firm valuation is expected to be further enhanced by increased female representation on the board. Prior studies suggest that companies with female directors are more inclined towards substantive CSR initiatives than mere symbolic gestures, thereby fostering stronger stakeholder relationships and mitigating the risk of reputational damage (Rao & Tilt, 2016). Furthermore, greater BGD will likely improve the perceived authenticity and credibility of positive ESG performance, reinforcing investor confidence in the firm's ethical commitments and potentially bolstering firm value (Li et al., 2018). Research on BGD issues is limited to direct relationships with financial performance, equity risk, and ESG disclosure, despite the critical role BGD can play (Arayssi et al., 2016; Shakil et al., 2021). In strategic decision-making, females are more influential than their male counterparts (Sila et al., 2016). As a result of the growing concern about anthropogenic impacts on the environment (McCright, 2010), climate change issues have increased, and regulatory pressures on businesses regarding all three elements of ESG practices have risen as well (Mooneeapen et al., 2022). The role of females in strategic decision-making is more significant than that of their male counterparts (Sila et al., 2016). To secure active support from key stakeholders and gain access to

resources, companies place a greater emphasis on environmental and social sustainability (Haque & Ntim, 2018).

Research is then focused on the nexus between diversity and the implementation of ESG practices in corporate strategy (Cucari et al., 2018; Amiri et al., 2022). This literature provides robust evidence linking women's representation on corporate boards with heightened ESG/CSR performance (Gillan et al., 2021). Women's inclination towards social and environmental concerns (Liu, 2018) has been a focal point in studies suggesting that their presence on boards improves firm ESG/CSR scores and environmental policies, potentially reducing environmental impact and emissions (Garcia Martin & Herrero, 2020; Gillan et al., 2021)².

For instance, Ben-Amar et al. (2017) investigated the impact of women's presence on Canadian corporate boards on corporations' responsiveness to sustainability pressures, particularly climate change disclosures, from 2008 to 2014. They indicate a positive nexus between the BGD and increased climate change disclosures. Similarly, Dyck et al. (2019) reported enhanced environmental performance across a sample of 41 countries with greater BGD. Consistent findings concerning Chinese corporations' ESG scores were observed by McGuinness et al. (2017). Moreover, Burkhardt et al. (2020) explored the nexus between BGD and the environmental performance of French corporations from 2006 to 2017, uncovering a positive correlation and underscoring the importance of achieving a critical mass of female representation. Considering the reported evidence that suggests a positive link between ESG and firm value and the positive influence of BGD on corporate boards on ESG activities (Ben-Amar et al., 2017; Dyck et al., 2019), it is expected that board gender diversity constitutes an important mechanism through which ESG performance influences corporate stock prices. Accordingly, BGD is expected to mediate the relationship between ESG performance and corporate stock prices. Recent evidence by Li et al. (2018) showed that the effect of ESG on a US firm's market value is incrementally more positive for corporations with more BGD. Accordingly, the second hypothesis is formulated as follows:

H2. *Female representation on corporate boards mediates the association between ESG and corporate stock price.*

3. Research Design

3.1. Sample

The sample of the current study consists of corporations that made up the S&P Global 1200 Index from 2011 to 2022. The study period (2011–2022) was selected because it provides a sufficiently long and recent timeframe to examine the evolution of ESG practices and their market implications across international firms. In addition, comprehensive and comparable ESG and board gender diversity data became more consistently available in Refinitiv Eikon from 2011 onward, facilitating reliable cross-country analysis. The selected period also captures the growing global emphasis on sustainability reporting, responsible investment, and board diversity initiatives, making it particularly suitable for investigating the relationship between ESG performance, board gender diversity, and corporate stock prices. The sample selection process commenced with all firms included in the S&P Global 1200 Index during the period from 2011 to 2022, using the availability of ESG and BGD information in the database as the primary criterion. Companies operating in the banking, financial services, and real estate sectors were subsequently removed from the dataset. In addition, companies with fewer than 100 observations throughout the study period were excluded to ensure sufficient data coverage. This screening criterion was adopted to ensure sufficient longitudinal observations for reliable panel estimation and to minimize the influence of firms with fragmented or inconsistent ESG, governance, and financial data over the study period. Following these screening procedures, the final sample consisted of

10,920 firm-year observations derived from 910 companies located across 18 countries over the 2011–2022 period.

Table 1 presents the sample composition in Panel (1), while Panels (2) and (3) report the allocation of the final observations across countries and industries, respectively. As shown in Panel (2), the sample covers firms from 18 nations, including both advanced economies (e.g., the United States, the United Kingdom, and Japan) and emerging markets (e.g., Brazil and Colombia). The United States contributes the largest share of firm-year observations, accounting for 42.75% of the sample, followed by Japan with 14.40% and the United Kingdom with 6.26%. In contrast, Italy records the smallest proportion of firm observations, representing only 0.99% of the overall sample. Furthermore, Panel (3) demonstrates that the industrial sector contains the greatest number of firm observations, constituting 23.85% of the sample. By comparison, the telecommunications sector accounts for merely 3.85%. In general, the inclusion of firms from a broad range of countries and industries enhances the external validity and generalizability of the findings. ESG information, BGD measures, and financial variables were obtained from the Refinitiv Eikon database.

Table 1. Sample.

Panel [A]: Sample breakdown				
			# Firms	Freq.
Preliminary Sample			1218	14,616
Less: Financial companies			196	2352
Less: Real Estate companies			56	672
Less: Companies with obs. Less than 100			56	672
Final Sample			910	10,920
Panel [B]: The nations				
	Freq.	Percent	Cum.	ESG
Australia	372	3.41	3.41	0.48
Brazil	156	1.43	4.84	0.46
Canada	528	4.84	9.67	0.47
Cayman Islands	156	1.43	11.10	0.22
Denmark	156	1.43	12.53	0.60
Finland	120	1.10	13.63	0.65
France	468	4.29	17.91	0.61
Germany	456	4.18	22.09	0.53
Ireland	204	1.87	23.96	0.51
Italy	108	0.99	24.95	0.59
Japan	1572	14.40	39.34	0.54
Netherlands	288	2.64	41.98	0.50
South Korea	168	1.54	43.52	0.49
Spain	168	1.54	45.05	0.66
Sweden	276	2.53	47.58	0.55
Switzerland	372	3.41	50.99	0.54
United Kingdom	684	6.26	57.25	0.58
United States	4668	42.75	100.00	0.45
Total	10,920	100.00		

Table 1. *Cont.*

Panel [C]: The sectors				
Basic Materials	840	7.69	7.69	0.565
Consumer Discretionary	2160	19.78	27.47	0.47
Consumer Staples	960	8.79	36.26	0.55
Energy	624	5.71	41.98	0.51
Health Care	1332	12.20	54.18	0.47
Industrials	2604	23.85	78.02	0.485
Technology	1260	11.54	89.56	0.48
Telecommunications	420	3.85	93.41	0.50
Utilities	720	6.59	100.00	0.565
Total	10,920	100.00		

3.2. Variables

The study focuses on three key variables: ESG performance, corporate share price, and BGD. Comprehensive information regarding the conceptual definitions and measurement approaches of these variables is provided in the following sections.

3.2.1. ESG

The ESG is measured using a composite score derived from a firm's ESG disclosure metrics. This Score incorporates 120 indicators that span three key corporate areas: (i) environmental factors; (ii) social factors; and (iii) governance aspects. For companies in the S&P 1200 index, the Refinitiv ESG Combined Score is utilized, based on the data reported in these three pillars, with an additional layer for ESG controversies at year *t* (ESG_Score). The ESG Combined Score ranges from 0 to 100, with higher values indicating stronger ESG performance and disclosure practices after incorporating ESG controversies. To address particular aspects of ESG disclosure, we also evaluate the individual pillars: (i) E_Score, which reflects a firm's environmental disclosures for year *t*, ranging from 0.1 to 100; (ii) S_Score, representing a firm's social disclosures for year *t*, also ranging from 0.1 to 100; and (iii) G_Score, indicating a firm's governance disclosures for year *t*, spanning from 0.1 to 100.

3.2.2. Corporate Gender Diversity

BGD is measured as the percentage of female directors on the board relative to the total number of board members.

3.2.3. Corporate Stock Price

Consistent with value-relevance research, corporate stock price is measured as the closing share price three months after the fiscal year-end to allow sufficient time for the market to incorporate publicly available information. The use of stock price is consistent with the value-relevance literature, which examines whether publicly available corporate information is reflected in investors' valuation decisions. Unlike market capitalization, which is largely driven by firm size, or Tobin's *Q* and market-to-book ratio, which combine accounting and market values and may be influenced by differences in accounting policies and capital structures across countries, stock price provides a direct market-based measure of investors' assessment of firm value following the release of corporate information. Measuring stock price three months after the fiscal year-end allows sufficient time for ESG disclosures and other publicly available information to be incorporated into market prices while remaining consistent with prior value-relevance studies. Although stock prices may be affected by firm-specific characteristics such as stock splits or share denominations, our empirical models control for firm size, earnings per share, book value per share, leverage,

profitability, and other firm characteristics, together with firm, industry, country, and year fixed effects, thereby mitigating these concerns.

3.3. Empirical Models

We account for various control variables to isolate the impact on corporate stock price. First, based on previous studies (Fahad & Rahman, 2020; Yadav & Jain, 2023; Agarwala et al., 2024; Tahat & Hassanein, 2024), we control for the size of the board (BSize), the role duality of CEO and chairman (Duality), and board independence (IndMem). Second, following prior research (Tahat & Hassanein, 2024; Buchanan et al., 2018), we add standard controls related to firm-level characteristics, including firm size (TA_LG), firm profitability (ROA), firm leverage (LEV), firm liquidity (CFO), firm dividends (DY_Common), earnings per share (EPS), book value per share (BVPS). Third, we control for the inflation rate (INF) to reduce country-level omitted variables. Finally, there may be a variation in the corporate stock price from 2011 to 2022. Hence, the year-fixed effect is applied to account for variations in corporate stock prices over time. Similarly, the industry-fixed effect is utilized to address characteristics specific to each industry that might influence stock prices. Additionally, the country-fixed effect is incorporated to manage country-specific factors that could affect corporate stock prices. Table 2 defines the variables.

Table 2. Variables.

Variables	Symbol	Measurement
ESG performance		
Composite measure of ESG performance	ESG	The Refinitiv ESG Combined Score represents a comprehensive corporate rating derived from disclosed performance indicators across environmental, social, and governance dimensions, supplemented by an adjustment reflecting ESG-related controversies.
Environmental Pillar	ENV	Refinitiv environmental disclosure score measuring performance across resource use, emissions, and environmental innovation based on publicly disclosed information.
Social Pillar	SOC	Refinitiv social disclosure score measuring performance across workforce, human rights, community, and product responsibility disclosures.
Governance Pillar	GOV	Refinitiv governance disclosure score measuring board structure, shareholder rights, management, and CSR strategy based on corporate disclosures.
Corporate gender diversity		
Board gender diversity	BGD	The percentage of female directors on the board relative to the total number of board members.
Stock price		
Closing stock price	CPrice	Closing Share Price, three months following the end of the Financial Year
Control variables		
Board size	BSize	The total number of board members at the end of the fiscal year.
CEO-chairman separation score	Duality	A dummy variable equal to 1 if the CEO also serves as board chair and 0 otherwise
Board Independence	IndMem	The percentage of independent directors relative to the total number of board members.

Table 2. Cont.

Variables	Symbol	Measurement
Control variables		
Firm Size	TA_LG	The natural logarithm of a firm's total assets at the close of the fiscal year.
Firm profitability	ROA	A firm's return on assets at the end of the fiscal year.
Firm Leverage	LEV	A firm's total liabilities to total assets at the end of the fiscal year.
Firm liquidity	CFO	Net cash flows generated from operating activities, normalized by total assets.
Firm dividends	D-Y	Dividend yield ratio at the end of the year
Earnings Per Share	EPS	Net income attributable to common shareholders scaled by the weighted average number of ordinary shares outstanding
Book value per share	BVPS	Net income attributable to common shareholders scaled by the average ordinary shareholders' equity
Inflation	INF	The inflation rate reflects the expected average annual increase in prices within the economy and is commonly estimated using indicators such as the Consumer Price Index (CPI), which serves as a basis for calculating pension-related assets and liabilities.

To test H1, which explores the effect of ESG and its various pillars on the corporate stock price, model [1] is developed to summarize the empirical model to test H1.

$$\begin{aligned}
 [CPrice]_{i,t} = \beta_0 &+ \beta_1 \begin{bmatrix} ESG_Combined \\ ENV \\ SOC \\ GOV \end{bmatrix}_{i,t} + \beta_2 [BSize]_{i,t} \\
 &+ \beta_3 [CEO - Chairman]_{i,t} + \beta_4 [IndMem]_{i,t} + \beta_5 [Ta_Lg]_{i,t} \\
 &+ \beta_6 [ROA]_{i,t} + \beta_7 [LEV]_{i,t} + \beta_8 [CFO]_{i,t} + \beta_9 [D - Y]_{i,t} \\
 &+ \beta_{10} [EPS]_{i,t} + \beta_{11} [BVPS]_{i,t} + \beta_{12} [INF]_{i,t} + \sum Year \\
 &+ \sum Industry + \sum Country + \varepsilon_{i,t}
 \end{aligned}$$

To test H2, which explores the mediating effect of BGD on the relationship between ESG (ESG Combined) and corporate stock price (CPrice), we followed the methodology of Baron and Kenny (1986). This methodology involves three steps.

First, the mediator variable (i.e., BGD) is regressed on the primary independent variable (i.e., ESG) and control variables, as per the following Model [2]:

$$\begin{aligned}
 [BGD]_{i,t} = \beta_0 &+ \beta_1 \begin{bmatrix} ESG_Combined \\ ENV \\ SOC \\ GOV \end{bmatrix}_{i,t} + \beta_2 [BSize]_{i,t} \\
 &+ \beta_3 [CEO - Chairman]_{i,t} + \beta_4 [IndMem]_{i,t} + \beta_5 [Ta_Lg]_{i,t} \\
 &+ \beta_6 [ROA]_{i,t} + \beta_7 [LEV]_{i,t} + \beta_8 [CFO]_{i,t} + \beta_9 [D - Y]_{i,t} \\
 &+ \beta_{10} [EPS]_{i,t} + \beta_{11} [BVPS]_{i,t} + \beta_{12} [INF]_{i,t} + \sum Year \\
 &+ \sum Industry + \sum Country + \varepsilon_{i,t}
 \end{aligned}$$

Second, the dependent variable (i.e., CPrice) is regressed on the main independent variables (i.e., ESG) and control variables, as per the following Model [3].

$$\begin{aligned}
 [CPrice]_{i,t} = & \beta_0 + \beta_1 \begin{bmatrix} ESG_Combined \\ ENV \\ SOC \\ GOV \end{bmatrix}_{i,t} + \beta_2 [BSize]_{i,t} \\
 & + \beta_3 [CEO - Chairman]_{i,t} + \beta_4 [IndMem]_{i,t} + \beta_5 [Ta_Lg]_{i,t} \\
 & + \beta_6 [ROA]_{i,t} + \beta_7 [LEV]_{i,t} + \beta_8 [CFO]_{i,t} + \beta_9 [D - Y]_{i,t} \\
 & + \beta_{10} [EPS]_{i,t} + \beta_{11} [BVPS]_{i,t} + \beta_{12} [INF]_{i,t} + \sum Year \\
 & + \sum Industry + \sum Country + \varepsilon_{i,t}
 \end{aligned}$$

Third, the dependent variable (i.e., CPrice) is regressed on the primary independent variable (i.e., ESG), the mediating variable (i.e., BGD), and control variables, as per the following Model [4].

$$\begin{aligned}
 [CPrice]_{i,t} = & \beta_0 + \beta_1 \begin{bmatrix} ESG_Combined \\ ENV \\ SOC \\ GOV \end{bmatrix}_{i,t} + \beta_2 [BGD]_{i,t} + \beta_3 [BSize]_{i,t} \\
 & + \beta_4 [CEO - Chairman]_{i,t} + \beta_5 [IndMem]_{i,t} + \beta_6 [Ta_Lg]_{i,t} \\
 & + \beta_7 [ROA]_{i,t} + \beta_8 [LEV]_{i,t} + \beta_9 [CFO]_{i,t} + \beta_{10} [D - Y]_{i,t} \\
 & + \beta_{11} [EPS]_{i,t} + \beta_{12} [BVPS]_{i,t} + \beta_{13} [INF]_{i,t} + \sum Year \\
 & + \sum Industry + \sum Country + \varepsilon_{i,t}
 \end{aligned}$$

To test the mediating role of BGD in the nexus between ESG and C price, Model (4) should meet the following criteria. First, the coefficient of the mediator (i.e., BGD) must be statistically significant. Second, the effect of the coefficient of the primary independent variable (i.e., ESG) on the dependent variable (CPrice) must be lower in model (4) than in Model (3).

The measurements of all variables remain consistent, as detailed in Table 2. We run the empirical Models using the firm fixed estimation. All empirical Models are estimated using the year, industry, and country fixed effects to mitigate the time variations, industry, and country-specific characteristics that may influence the reporting of ESG performance. The standard errors are clustered by the firm to reduce residual dependence created by firm effects and to mitigate the problem of time series dependence (autocorrelation).

The mediation analysis follows the causal steps procedure proposed by Baron and Kenny (1986), which remains widely employed in accounting, finance, and corporate governance research when mediation is examined within a panel regression framework. This approach is particularly appropriate for the present study because it enables the sequential assessment of the direct relationship between ESG performance and corporate stock prices, the effect of ESG performance on board gender diversity, and the incremental explanatory role of board gender diversity after controlling for firm, industry, country, and year fixed effects. Unlike structural equation modeling, which is primarily designed for latent constructs and simultaneous equation systems, the variables examined in this study are directly observable and measured using archival data. Moreover, the use of firm fixed-effects estimation with clustered standard errors provides a rigorous framework for controlling for unobserved heterogeneity and serial correlation, making the Baron and Kenny approach well-suited to the objectives and data structure of this study.

4. Findings

4.1. Univariate Analysis

Table 3 reports the descriptive statistics, indicating that the overall ESG combined score varies between 0.000 and 0.942, with an average value of 0.499. The individual ESG dimensions exhibit broadly comparable patterns. Specifically, ENV extends from 0.000 to 0.992 and records a mean score of 0.513. Likewise, SOC closely mirrors ENV, ranging from 0.000 to 0.989 and exhibiting an average of 0.551. In the same vein, GOV ranges from 0.000 to 0.995 and has a mean value of 0.542. These findings reflect differences in ESG disclosure practices across the firms included in the sample. The average BGD value is 0.534. Concerning stock market performance, CPrice displays a mean of 3.6, reaching a maximum of 11.8 and a minimum of 0.000. This reflects considerable variation in stock prices among the sampled firms.

Table 3. Descriptive statistics of variables.

	Mean	Std. Dev.	Min	Max
ESG	0.499	0.23	0.00	0.942
ENV	0.513	0.31	0.00	0.992
SOC	0.551	0.28	0.00	0.989
GOV	0.542	0.265	0.00	0.995
BGD	0.534	0.3	0.005	0.958
CPrice	3.6	1.4	0.00	11.8
BSize	10.365	4.23	0.00	18.00
Duality	0.301	0.34	0.00	0.835
IndMem	0.52	0.315	0.00	0.99
TA_LG	23.5	1.29	21.3	26.87
ROA	0.063	0.05	−0.012	0.178
LEV	0.258	0.16	0.002	0.559
CFO	0.105	0.055	0.00	0.22
D-Y	0.18	0.016	0.00	0.054
EPS	2.875	2.65	−0.085	11.25
BVPS	19.5	18.2	0.00	68.5
INF	0.02	0.019	−0.001	0.079

Table 3 further indicates that the mean BSize equals 10.365 (approximately 11 directors), while the largest board consists of 18 members. The average value of Duality is 0.301, implying that CEO-chair duality is relatively infrequent among the firms. IndMem records a mean of 0.52, ranging from a minimum of 0.000 to a maximum of 0.99. The average value of TA_LG is 23.5. ROA varies between −0.012 and 0.178, with a mean of 0.063. LEV exhibits an average value of 0.258, whereas CFO averages 0.105. The mean EPS is 2.875. On average, the D-Y ratio equals 0.18, while BVPS records a mean value of 19.5. The average INF for the countries in which the sampled firms operate is 0.02. Overall, the descriptive statistics reveal substantial heterogeneity across firms in terms of their characteristics and economic indicators.

The pairwise Pearson correlation displayed in Table 4 demonstrates that the ESG combined Score is positively associated with CPrice. This suggests that corporations with higher ESG performance exhibit higher stock prices. Besides, the CPrice is positively associated with the ENV, SOC, and GOV pillars. The ESG combined score positively correlates with the BGD. Likewise, a positive correlation exists between BGD and different pillars of ESG performance (ENV, SOC, and GOV). This proposes that companies with BGD will likely report their ESG performance. The Cprice is also positively correlated with the BGD.

Table 4. Correlation analysis.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 ESG	1																
2 Env	0.817 (0.000)	1															
3 SOC	0.856 (0.000)	0.803 (0.000)	1														
4 GOV	0.762 (0.000)	0.593 (0.000)	0.638 (0.000)	1													
5 BGD	0.517 (0.000)	0.433 (0.000)	0.499 (0.000)	0.545 (0.000)	1												
6 BSize	0.587 (0.000)	0.583 (0.000)	0.586 (0.000)	0.498 (0.000)	0.446 (0.000)	1											
7 Duality	0.236 (0.000)	0.158 (0.000)	0.184 (0.000)	0.272 (0.000)	0.144 (0.000)	0.184 (0.000)	1										
8 IndMem	0.530 (0.000)	0.396 (0.000)	0.483 (0.000)	0.628 (0.000)	0.459 (0.000)	0.375 (0.000)	0.156 (0.000)	1									
9 Cprice	0.300 (0.000)	0.193 (0.000)	0.301 (0.000)	0.247 (0.000)	0.287 (0.000)	0.338 (0.000)	0.000 (0.991)	0.263 (0.000)	1								
10 TA_LG	0.327 (0.000)	0.528 (0.000)	0.455 (0.000)	0.364 (0.000)	0.252 (0.000)	0.486 (0.000)	0.023 (0.017)	0.233 (0.000)	0.050 (0.000)	1							
11 ROA	0.071 (0.000)	−0.020 (0.036)	0.094 (0.000)	0.052 (0.000)	0.110 (0.000)	0.000 (0.984)	−0.005 (0.584)	0.038 (0.000)	0.349 (0.000)	−0.286 (0.000)	1						
12 LEV	0.087 (0.000)	0.085 (0.000)	0.095 (0.000)	0.085 (0.000)	0.073 (0.000)	0.140 (0.000)	−0.021 (0.027)	0.131 (0.000)	−0.003 (0.735)	0.204 (0.000)	−0.229 (0.000)	1					
13 CFO	−0.010 (0.315)	−0.074 (0.000)	0.030 (0.002)	−0.009 (0.377)	0.053 (0.000)	−0.116 (0.000)	−0.035 (0.000)	−0.019 (0.046)	0.220 (0.000)	−0.256 (0.000)	0.731 (0.000)	−0.159 (0.000)	1				
14 INF	0.055 (0.000)	0.033 (0.001)	0.122 (0.000)	0.093 (0.000)	0.112 (0.000)	−0.015 (0.123)	0.011 (0.242)	0.093 (0.000)	0.051 (0.000)	0.056 (0.000)	0.062 (0.000)	0.110 (0.000)	0.045 (0.000)	1			
15 EPS	0.174 (0.000)	0.156 (0.000)	0.204 (0.000)	0.143 (0.000)	0.155 (0.000)	0.216 (0.000)	−0.070 (0.000)	0.149 (0.000)	0.692 (0.000)	0.201 (0.000)	0.355 (0.000)	0.012 (0.209)	0.196 (0.000)	0.098 (0.000)	1		
16 BVPS	0.189 (0.000)	0.201 (0.000)	0.184 (0.000)	0.154 (0.000)	0.119 (0.000)	0.280 (0.000)	−0.005 (0.596)	0.128 (0.000)	0.591 (0.000)	0.329 (0.000)	−0.067 (0.000)	−0.096 (0.000)	−0.174 (0.000)	0.022 (0.021)	0.692 (0.000)	1	
17 D-Y	0.394 (0.000)	0.456 (0.000)	0.398 (0.000)	0.361 (0.000)	0.287 (0.000)	0.349 (0.000)	0.141 (0.000)	0.266 (0.000)	−0.017 (0.078)	0.377 (0.000)	−0.048 (0.000)	0.156 (0.000)	−0.071 (0.000)	−0.034 (0.000)	0.025 (0.008)	0.060 (0.000)	1

Furthermore, the overall ESG score and its individual dimensions exhibit positive correlations with BSize, Duality, IndMem, TA_LG, EPS, BVPS, D-Y, LEV, and INF. Conversely, a negative relationship is observed between ESG measures and corporate liquidity (CFO). Similarly, the BGD indicators demonstrate positive associations with board size, Duality, board independence, firm size, earnings per share, book value per share, dividend yield, leverage, operating liquidity, and the inflation rate.

The Pearson coefficient is employed to identify multicollinearity between variables. According to Gujarati and Porter (2009), if the correlation coefficients between variables exceed 0.80, it reveals an issue of multicollinearity. The correlation coefficients are all below 0.80. This suggests that there are no issues of multicollinearity in our data. Although the correlation matrix indicates relatively high correlations between the overall ESG score and its individual Environmental, Social, and Governance pillars, this is expected because the composite ESG measure is derived from these underlying dimensions. Importantly, the overall ESG score and the individual ESG pillars are examined in separate regression models and are not included simultaneously in the same specification. To further assess potential multicollinearity, Variance Inflation Factor (VIF) statistics were calculated for all estimated models. The findings show that all VIF statistics are lower than the recognized benchmark values, indicating that multicollinearity does not pose a meaningful issue.

4.2. Testing Hypotheses

4.2.1. H1: ESG and Corporate Stock Price

Table 5 demonstrates the results of testing H1, which examines the influence of ESG performance on corporate stock prices. Panels 1 through 4 provide the findings from regressing the corporate stock price (CPrice) on the ESG combined score [ESG] and its sub-pillars (ENV, SOC, and GOV) using fixed-effects estimation. An analysis of Table 5 indicates that the models are statistically significant ($p < 0.01$) across all panels. The R-squared is 0.433 when the ESG combined score is used, while it is 0.424, 0.441, and 0.412 for the ENV, SOC, and GOV scores, respectively. These R-squared values suggest that the models effectively explain the variations in corporate stock prices by incorporating ESG and its pillars for the sample corporations. The standard errors are reported in parentheses.

The findings presented in Panels 1 through 4 demonstrate that the coefficient of the ESG combined score on CPrice is 0.756—statistically significant at the 1% level ($p < 0.01$). This specifies a statistically positive relationship between the ESG combined score and corporate stock prices. When considering the individual pillars of ESG (ENV, SOC, and GOV) in the fixed-effects models, the coefficients are 0.285, 0.547, and 0.444, respectively—all coefficients are statistically significant ($p < 0.01$), suggesting a significant positive linkage between CPrice and each of the ESG pillars. Overall, the findings support the H1 hypothesis, which posits a statistically significant positive nexus between corporate stock prices and ESG performance at the aggregate level and across the individual ESG pillars.

The findings can be interpreted through several established theoretical frameworks. Consistent with stakeholder theory, corporations should consider the needs of stakeholders rather than focusing solely on shareholders. By performing well on ESG metrics, corporations can demonstrate their commitment to addressing the needs and concerns of various stakeholders, which can enhance their reputation and legitimacy in the eyes of investors, leading to higher stock prices. Likewise, the resource-based theory suggests that strong ESG performance can be viewed as a unique resource that allows corporations to differentiate themselves, leading to superior financial and market performance, including higher stock prices. Besides, the signaling theory proposes that ESG can act as a positive signal, indicating that the firm is well-managed, forward-looking, and committed to sustainability. This leads to a more favorable investor perception and higher stock prices. The findings

are also consistent with the results of prior research demonstrating that ESG performance positively affects corporate value (Velte, 2017; Wong et al., 2021) and performance. However, our findings contradict the findings of some literature that demonstrate that ESG performance inversely affects the value of corporations (Garcia et al., 2017; Duque-Grisales & Aguilera-Caracuel, 2021).

Table 5. Effect of ESG on corporate stock price.

	[1]	[2]	[3]	[4]
Variables	CPrice	CPrice	Cprice	CPrice
ESG	0.756 *** (0.062)			
ENV		0.285 *** (0.048)		
SOC			0.547 *** (0.058)	
GOV				0.444 *** (0.051)
BSize	0.0358 *** (0.00269)	0.0429 *** (0.00265)	0.0327 *** (0.00268)	0.0478 *** (0.00266)
Duality	0.149 *** (0.0250)	0.192 *** (0.0250)	0.157 *** (0.0248)	0.177 *** (0.0257)
IndMem	0.00222 *** (0.000296)	0.00336 *** (0.000288)	0.00246 *** (0.000289)	0.00276 *** (0.000319)
TA_LG	0.480 *** (0.0205)	0.465 *** (0.0210)	0.441 *** (0.0206)	0.525 *** (0.0207)
ROA	3.832 *** (0.213)	3.854 *** (0.214)	3.750 *** (0.211)	3.907 *** (0.217)
LEV	0.953 *** (0.0740)	0.998 *** (0.0745)	0.937 *** (0.0734)	1.009 *** (0.0752)
CFO	1.848 *** (0.186)	1.869 *** (0.187)	1.781 *** (0.185)	1.933 *** (0.189)
EPS	0.0265 *** (0.00442)	0.0284 *** (0.00446)	0.0284 *** (0.00439)	0.0294 *** (0.00450)
BVPS	0.00750 *** (0.00105)	0.00836 *** (0.00105)	0.00705 *** (0.00104)	0.00857 *** (0.00107)
D-Y	−5.967 *** (0.583)	−6.024 *** (0.587)	−6.226 *** (0.579)	−5.757 *** (0.593)
INF	−1.265 *** (0.300)	−1.588 *** (0.305)	−1.903 *** (0.300)	−1.060 *** (0.306)
Constant	−9.376 *** (0.461)	−9.092 *** (0.470)	−8.509 *** (0.463)	−10.36 *** (0.466)
Country Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Maximum VIF	2.831	2.604	2.272	2.001
Observations	10,592	10,592	10,592	10,592
R-squared	0.433	0.424	0.441	0.412
Firms	910	910	910	910

Standard errors are in parentheses *** $p < 0.01$.

The positive relationship between ESG performance and stock prices is consistent with a growing body of evidence suggesting that sustainability activities contribute to firm value creation. The findings support prior studies that report a positive association between ESG performance and market valuation, including Yoon et al. (2018), Li et al. (2018), Cheng et al. (2023), and Agarwala et al. (2024). The results are also in line with the meta-evidence

reported by Friede et al. (2015), which concludes that ESG performance is generally associated with superior financial outcomes. From a theoretical perspective, the findings support stakeholder theory (Freeman, 1984; Clarkson, 1995), suggesting that firms that effectively address stakeholder expectations generate reputational and relational benefits that investors value. The results are also consistent with signaling theory (Spence, 2002; Fu et al., 2022), indicating that ESG performance serves as a credible signal of management quality, transparency, and long-term strategic orientation, thereby reducing information asymmetry and enhancing market valuation.

The findings have important practical implications for managers, investors, and regulators. For corporate managers, the results suggest that ESG initiatives should be viewed as strategic investments capable of generating tangible market benefits rather than merely compliance-driven activities. Investors may use ESG information as a relevant indicator when evaluating firms' long-term growth prospects, risk exposure, and governance quality. For regulators and standard setters, the results reinforce the importance of promoting high-quality ESG disclosures and sustainability reporting frameworks. Enhancing the reliability and comparability of ESG information can improve market efficiency and support capital allocation toward firms that demonstrate stronger commitments to sustainable value creation.

Our findings incentivize corporations to prioritize and invest in ESG initiatives, as doing so can lead to tangible financial benefits in the form of higher stock prices. Also, corporations may seek to strengthen their performance across the various ESG pillars to maximize the positive impact on their stock valuations. Likewise, corporations that demonstrate strong ESG performance may be able to attract a larger pool of investors, resulting in high demand for their stocks and higher valuations. Besides, shareholders may become more actively engaged in monitoring and influencing corporations' ESG practices, as strong ESG performance is now shown to be positively linked to stock price performance.

4.2.2. H2: The Mediating Role of Gender Diversity

Tables 6 and 7 present the estimation results for testing H2, which investigate the mediating role of BGD on the nexus between ESG and stock price. Table 6 provides the estimation results when considering the ESG combined score as the primary independent variable. This model evaluates the overall impact of aggregate ESG performance on stock prices and how BGD may mediate this relationship. In contrast, Table 7 shows the estimation results when separately considering the individual pillars of ESG as the leading independent variables. This allows for analyzing how each specific ESG dimension interacts with BGD to impact corporate stock prices. The R-squared values are 0.272 in model (2), and they have been increased to 0.433 in Model (3) and 0.436 in Model (4), suggesting that ESG and BGD explain variations in the corporate stock price.

Model (2) provides the estimation of the effect of ESG on BGD. The coefficient of ESG_Combined in Model (2) is 0.531 and is statistically significant at the 1% level. This suggests a positive nexus between ESG and BGD. Meanwhile, Model (3) provides the estimation results of the impact of ESG on stock price. The coefficient of ESG_Combined is 0.756 and is statistically significant at the 1% level. This result confirms the significant and positive effect of the ESG on the corporate stock price. This result also supports the H1.

Finally, model (4) provides the estimation of testing the mediating role of BGD in the nexus between ESG and stock price. It should be noted that the coefficient of BGD must be statistically significant, and the coefficient of ESG on CPrice must be lower in model (4) than in Model (3). The results of model (4) meet these criteria. The ESG coefficient is 0.602—statistically significant at the 1% level. This coefficient is less than the ESG (0.756) coefficient in Model (3). Besides, the BGD coefficient is 0.289—statistically significant at

the 1% level. This suggests that BGD positively enhances the corporate stock price. These findings support the mediating role of BGD in the nexus between ESG and corporate stock price, leading to acceptance of H2.

Table 6. The mediating role of BGD on the nexus of ESG and stock price.

	[1] Model 2	[2] Model 3	[3] Model 4
	BGD	CPrice	CPrice
ESG	0.531 *** (0.013)	0.756 *** (0.062)	0.602 *** (0.061)
BGD			0.289 *** (0.036)
BSize	0.0199 *** (0.000902)	0.0358 *** (0.00269)	0.0312 *** (0.00275)
Duality	0.0289 *** (0.00839)	0.149 *** (0.0250)	0.142 *** (0.0250)
IndMem	0.00131 *** (9.93×10^{-5})	0.00222 *** (0.000296)	0.00192 *** (0.000298)
TA_LG	0.0411 *** (0.00687)	0.480 *** (0.0205)	0.470 *** (0.0205)
ROA	0.218 *** (0.0714)	3.832 *** (0.213)	3.783 *** (0.212)
LEV	0.0950 *** (0.0248)	0.953 *** (0.0740)	0.931 *** (0.0738)
CFO	0.0629 (0.0623)	1.848 *** (0.186)	1.834 *** (0.185)
EPS	−0.00187 (0.00148)	0.0265 *** (0.00442)	0.0270 *** (0.00441)
BVPS	−0.000479 (0.000351)	0.00750 *** (0.00105)	0.00761 *** (0.00104)
D-Y	0.411 ** (0.195)	−5.967 *** (0.583)	−6.061 *** (0.581)
INF	0.557 *** (0.101)	−1.265 *** (0.300)	−1.393 *** (0.299)
Constant	−0.902 *** (0.155)	−9.376 *** (0.461)	−9.169 *** (0.460)
Country Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Maximum VIF	2.681	2.514	2.788
Observations	10,592	10,592	10,592
R-squared	0.270	0.433	0.436
Firms	910	910	910

Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$.

Table 7. The mediating effect based on various ESG pillars.

	ENV			SOC			GOV		
	[1] Model 2	[2] Model 3	[3] Model 4	[1] Model 2	[2] Model 3	[3] Model 4	[1] Model 2	[2] Model 3	[3] Model 4
	BGD	CPrice	CPrice	BGD	CPrice	CPrice	BGD	CPrice	CPrice
ENV, SOC, GOV	0.314 *** (0.012)	0.285 *** (0.048)	0.156 *** (0.045)	0.428 *** (0.013)	0.547 *** (0.058)	0.399 *** (0.056)	0.474 *** (0.011)	0.444 *** (0.051)	0.276 *** (0.049)
BGD			0.411 *** (0.037)			0.347 *** (0.036)			0.356 *** (0.037)
BSize	0.0225 *** (0.000890)	0.0429 *** (0.00265)	0.0367 *** (0.00272)	0.0208 *** (0.000910)	0.0327 *** (0.00268)	0.0278 *** (0.00274)	0.0208 *** (0.000870)	0.0478 *** (0.00266)	0.0419 *** (0.00273)
Duality	0.0429 *** (0.00841)	0.192 *** (0.0250)	0.180 *** (0.0250)	0.0370 *** (0.00841)	0.157 *** (0.0248)	0.149 *** (0.0247)	0.0142 * (0.00838)	0.177 *** (0.0257)	0.172 *** (0.0256)
IndMem	0.00167 *** (9.68×10^{-5})	0.00336 *** (0.000288)	0.00290 *** (0.000291)	0.00151 *** (9.81×10^{-5})	0.00246 *** (0.000289)	0.00210 *** (0.000291)	0.000819 *** (0.000104)	0.00276 *** (0.000319)	0.00252 *** (0.000318)
TA_LG	0.0411 *** (0.00704)	0.465 *** (0.0210)	0.454 *** (0.0209)	0.0391 *** (0.00699)	0.441 *** (0.0206)	0.432 *** (0.0205)	0.0434 *** (0.00677)	0.525 *** (0.0207)	0.512 *** (0.0207)
ROA	0.225 *** (0.0720)	3.854 *** (0.214)	3.792 *** (0.214)	0.205 *** (0.0718)	3.750 *** (0.211)	3.702 *** (0.211)	0.255 *** (0.0707)	3.907 *** (0.217)	3.834 *** (0.216)
Lev	0.110 *** (0.0250)	0.998 *** (0.0745)	0.968 *** (0.0742)	0.0981 *** (0.0250)	0.937 *** (0.0734)	0.914 *** (0.0733)	0.105 *** (0.0246)	1.009 *** (0.0752)	0.979 *** (0.0750)
CFO	0.0751 0.0225 ***	1.869 *** (0.187)	1.848 *** (0.186)	0.0615 (0.0627)	1.781 *** (0.185)	1.767 *** (0.184)	0.0606 (0.0617)	1.933 *** (0.189)	1.916 *** (0.188)
EPS	−0.00120 (0.00150)	0.0284 *** (0.00446)	0.0287 *** (0.00444)	−0.00110 (0.00149)	0.0284 *** (0.00439)	0.0287 *** (0.00437)	−0.00174 (0.00147)	0.0294 *** (0.00450)	0.0299 *** (0.00448)
BVPS	−0.000226 (0.000354)	0.00836 *** (0.00105)	0.00842 *** (0.00105)	−0.000488 (0.000354)	0.00705 *** (0.00104)	0.00717 *** (0.00104)	-9.77×10^{-5} (0.000348)	0.00857 *** (0.00107)	0.00860 *** (0.00106)
D-Y	0.419 ** (0.197)	−6.024 *** (0.587)	−6.140 *** (0.585)	0.395 ** (0.197)	−6.226 *** (0.579)	−6.319 *** (0.577)	0.364 * (0.194)	−5.757 *** (0.593)	−5.861 *** (0.591)
INF	0.505 *** (0.102)	−1.588 *** (0.305)	−1.728 *** (0.304)	0.469 *** (0.102)	−1.903 *** (0.300)	−2.014 *** (0.300)	0.481 *** (0.0998)	−1.060 *** (0.306)	−1.197 *** (0.305)
Constant	−0.909 *** (0.158)	−9.092 *** (0.470)	−8.840 *** (0.469)	−0.851 *** (0.157)	−8.509 *** (0.463)	−8.308 *** (0.462)	−0.965 *** (0.152)	−10.36 *** (0.466)	−10.08 *** (0.465)
Maximum VIF	2.364	2.381	2.408	2.704	2.383	2.547	2.103	2.381	2.419
Observations	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592
R-squared	0.256	0.424	0.429	0.270	0.441	0.444	0.284	0.412	0.417
Firms	910	910	910	910	910	910	910	910	910

Standard errors are in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7 shows the estimation outputs when separately considering the individual pillars of ESG as the leading independent variables. In model (2), ENV, SOC, and GOV coefficients are 0.314, 0.428, and 0.474, respectively. This suggests a significant positive effect of BGD on various pillars of the ESG (ENV, SOC, and GOV). Meanwhile, Model (3) estimates how ENV, SOC, and GOV influence the corporate stock price. Their coefficients are 0.285, 0.547, and 0.444. This result confirms the significant and positive effect of the ENV, SOC, and GOV pillars on the corporate stock price. In model (4), ENV, SOC, and GOV coefficients are 0.156, 0.399, and 0.276, respectively. These coefficients are less than those of model (3). Besides, the coefficients of BGD are 0.411, 0.347, and 0.356 under the three pillars (ENV, SOC, and GOV). This suggests that BGD positively enhances the corporate stock price. These findings support the mediating role of BGD in the nexus between various pillars (ENV, SOC, and GOV) and corporate stock prices.

The results suggest that BGD serves as a mediator in the nexus between ESG performance (both the combined Score and the individual pillars) and stock prices. This indicates that BGD is essential in conveying the impact of ESG performance on corporate stock prices. The results can be explained on the basis that BGD will likely enhance the perceived authenticity and credibility of positive ESG performance, thereby reinforcing investor confidence in the firm's ethical commitments and potentially bolstering firm value (Li et al., 2018). Literature also documents a positive link between ESG and firm value and the positive influence of board representation on corporate boards on ESG activities (Ben-Amar et al., 2017; Dyck et al., 2019). It is expected that BGD would mediate the association between ESG and corporate stock price. Our results are also consistent with those of (Li et al., 2018), who found that the consequence of ESG on a US firm's market value is incrementally more positive for corporations with higher representation of women on the board.

The mediation results provide important insights into the mechanism through which ESG performance influences firm value. Rather than merely strengthening the association between ESG performance and stock prices, board gender diversity appears to function as a transmission channel through which the benefits of ESG engagement are realized. This finding is consistent with stakeholder theory, which suggests that firms committed to ESG practices are more likely to adopt governance structures that reflect broader stakeholder interests. It also aligns with social role theory and resource dependence theory, which posit that female directors contribute diverse perspectives, stronger stakeholder orientation, enhanced monitoring, and greater organizational legitimacy. Consequently, ESG-oriented firms may translate their sustainability commitments into improved market valuation through more gender-diverse boards, which investors perceive as a signal of stronger governance quality and long-term sustainability. The partial mediation effect observed in this study, therefore, supports the view that board gender diversity is an important governance mechanism linking ESG performance to firm value.

The result is consistent with prior studies documenting a positive association between board gender diversity and ESG engagement, including Ben-Amar et al. (2017), Manita et al. (2018), Arayssi et al. (2020), Shakil et al. (2021), and Chang et al. (2024). The findings also support research showing that female directors contribute to stronger sustainability performance and governance quality (Burkhardt et al., 2020; Amiri et al., 2022). Furthermore, the results are consistent with Adams and Ferreira (2009), who argue that female directors enhance monitoring effectiveness and board oversight. Collectively, these findings support social role theory and resource dependence theory by suggesting that gender-diverse boards provide broader perspectives, stronger stakeholder orientation, and greater legitimacy, thereby enhancing the market benefits associated with ESG performance.

The findings also have important governance implications. While firms may improve their market valuation through stronger ESG performance, the results indicate that part

of this value creation process operates through board composition. Consequently, organizations seeking to maximize the benefits of their sustainability initiatives should consider gender diversity as a complementary governance mechanism rather than an independent objective. For policymakers and corporate governance advocates, the results provide additional support for initiatives aimed at increasing female representation on boards. More broadly, the findings suggest that sustainability strategies and governance reforms should be implemented jointly, as their combined effects appear to generate stronger signals of organizational quality, accountability, and long-term value creation for investors.

5. Additional Analyses

5.1. Endogeneity and Reverse Causality

To address potential endogeneity arising from reverse causality, we conduct a robustness test using one-year lagged ESG measures instead of contemporaneous ESG variables. This approach reduces the possibility that current stock prices influence ESG ratings measured in the same period, thereby strengthening the causal interpretation of the baseline results.

Table 8 presents the estimation results using lagged ESG indicators. The coefficients for overall ESG performance and its three dimensions—Environmental (ENV), Social (SOC), and Governance (GOV)—remain positive and highly statistically significant ($p < 0.001$). Specifically, the estimated coefficients are 0.6205 for lagged ESG, 0.2020 for lagged ENV, 0.4393 for lagged SOC, and 0.3789 for lagged GOV.

Table 8. Lagged independent-variable robustness tests.

Model	Variable	Coef.	SE	<i>p</i>	N	Firms	R2
ESG	Lagged ESG	0.6205	0.0602	0.0	9748	910	0.5075
ENV	Lagged ENV	0.202	0.0469	0.0	9748	910	0.5006
SOC	Lagged SOC	0.4393	0.056	0.0	9748	910	0.5042
GOV	Lagged GOV	0.3789	0.0484	0.0	9748	910	0.5036

The persistence of positive and significant coefficients after introducing a temporal lag provides evidence that contemporaneous feedback effects do not drive the documented relationship between ESG performance and stock prices. These findings support the temporal ordering assumed in the baseline analysis and suggest that stronger ESG performance contributes to higher firm valuation rather than merely reflecting it. Overall, the results reinforce the robustness of the main conclusions and mitigate concerns regarding reverse causality.

Table 9 reports the results of a dynamic robustness test that incorporates the lagged stock price as an additional explanatory variable. The coefficient on the lagged dependent variable is large and highly significant across all specifications (approximately 0.88), indicating strong persistence in stock prices over time. Once lagged stock price is included, the coefficients for ESG and its individual pillars (ENV, SOC, and GOV) become negative, although they remain statistically significant.

Table 9. Dynamic panel-style robustness with lagged dependent variable.

Model	Lagged CPrice	ESG/Pillar Coef.	SE	<i>p</i>	N	Firms	R2
ESG	0.8867	−0.2202	0.0271	0.0	9748	910	0.9165
ENV	0.8818	−0.1469	0.0213	0.0	9748	910	0.9162
SOC	0.8849	−0.1925	0.026	0.0	9748	910	0.9165
GOV	0.8836	−0.1538	0.0219	0.0	9748	910	0.9162

Note: These models include lagged log_Cprice, lagged ESG/pillar variables, accounting controls, and fixed effects. They are diagnostic robustness tests rather than the preferred value-relevance specification.

These findings suggest that short-term movements in stock prices are highly path-dependent, with current valuations being strongly influenced by past valuations. As a result, the lagged dependent variable captures a substantial portion of the variation in firm value, leaving less explanatory power for ESG-related measures.

The dynamic model results should therefore be interpreted with caution. In panel-data settings, the inclusion of a lagged dependent variable alongside firm fixed effects can absorb much of the persistent component of firm valuation that ESG performance may explain. Consequently, these specifications are best viewed as diagnostic robustness tests rather than the preferred value-relevance model. Overall, while the results highlight the importance of valuation persistence, they do not invalidate the positive association between ESG performance and firm value documented in the baseline analysis.

5.2. Direct Tests of the Mediation Effect

Tables 10 and 11 present the results of direct tests of the mediation effect of board gender diversity (BGD) on the relationship between ESG performance and stock price. The mediation effect is assessed using both Sobel tests and firm-cluster bootstrap confidence intervals.

Table 10. Sobel tests for indirect effects through FD.

ESG Variable	a Path: ESG to BDG	a SE	b Path: BDG to Price	b SE	Indirect Effect	Sobel z	Sobel p	N	Firms
ESG	0.5309	0.0131	0.2892	0.0364	0.1536	7.8057	0.0	10,590	910
ENV	0.3137	0.0118	0.4113	0.037	0.129	10.2639	0.0	10,590	910
SOC	0.4277	0.0128	0.3472	0.0363	0.1485	9.1836	0.0	10,590	910
GOV	0.4739	0.0113	0.3555	0.0375	0.1685	9.2503	0.0	10,590	910

Note: Indirect effect equals the product of the ESG-to-BGD path and the BGD-to-CPrice path. All models include accounting controls and fixed effects.

Table 11. Firm-cluster bootstrap confidence intervals for indirect effects.

ESG Variable	Bootstrap Reps	Boot Indirect Mean	Boot CI 2.5%	Boot CI 97.5%
ESG	100	0.153	0.0627	0.2291
ENV	100	0.1314	0.0887	0.1794
SOC	100	0.1523	0.0884	0.232
GOV	100	0.1653	0.0825	0.2454

Note: Bootstrap confidence intervals are based on firm-level resampling. Confidence intervals exclude zero for all ESG measures, supporting mediation.

Table 10 reports the Sobel test results. The estimated indirect effects are positive and statistically significant for the overall ESG score as well as for each ESG pillar (Environmental, Social, and Governance). Specifically, the indirect effects range from 0.1290 for ENV to 0.1685 for GOV, with all Sobel z-statistics highly significant ($p < 0.001$). These findings indicate that ESG performance positively influences firm value through its impact on board gender diversity.

Table 11 further validates the mediation effect using firm-level bootstrap resampling. The bootstrap estimates of the indirect effects are consistent with the Sobel test results, ranging from 0.1314 to 0.1653. Importantly, the 95% bootstrap confidence intervals exclude zero for all ESG measures, providing strong evidence that the indirect effects are statistically significant.

Overall, the results from both testing approaches confirm that board gender diversity serves as a significant mediating mechanism through which ESG performance enhances firm value. These findings provide robust support for the proposed mediation hypothesis.

5.3. Alternative Dependent Variables

To assess the robustness of the findings, we re-estimate the models using alternative measures of firm value. This is important because nominal pricing effects, stock splits, and firm-specific pricing conventions may influence stock price levels. Three alternative dependent variables are considered: (1) the logarithm of positive stock prices, (2) stock returns, and (3) a market-to-book ratio proxy. The results are reported in Table 12.

Table 12. Robustness using alternative dependent variables.

Outcome	Variable	Coef.	SE	<i>p</i>	N	Firms	R2
Log price positive-only	ESG	0.1986	0.0505	1.00×10^{-4}	10,386	910	0.5453
Log price positive-only	ENV	−0.0678	0.04	0.0901	10,386	910	0.5446
Log price positive-only	SOC	0.0467	0.0469	0.3195	10,386	910	0.5445
Log price positive-only	GOV	−0.002	0.0411	0.9612	10,386	910	0.5445
Stock return	ESG	−0.1267	0.0225	0.0	9479	905	0.221
Stock return	ENV	−0.0285	0.0175	0.1021	9479	905	0.218
Stock return	SOC	−0.0601	0.0225	0.0074	9479	905	0.2186
Stock return	GOV	−0.0514	0.018	0.0042	9479	905	0.2185
Market-to-book proxy	ESG	0.2195	0.0348	0.0	10,270	906	0.4452
Market-to-book proxy	ENV	0.2309	0.0276	0.0	10,270	906	0.4469
Market-to-book proxy	SOC	0.3361	0.0314	0.0	10,270	906	0.45
Market-to-book proxy	GOV	0.1683	0.0287	0.0	10,270	906	0.4448

Note: All Models include control variables and fixed effects.

The findings show that the overall ESG score remains positively and significantly associated with both the positive-price log price and the market-to-book proxy. When the market-to-book ratio is used as the dependent variable, all three ESG pillars—Environmental (ENV), Social (SOC), and Governance (GOV)—also exhibit positive and statistically significant coefficients. Notably, the Social pillar demonstrates the strongest association with market valuation.

In contrast, the results for stock returns are less supportive. The overall ESG score is negatively related to stock returns, while the Environmental pillar is not statistically significant. The Social and Governance pillars show significant negative coefficients. These findings suggest that ESG performance is more strongly associated with firm valuation levels and long-term market assessments than with short-term stock return fluctuations.

Overall, the results provide robust evidence that ESG performance contributes to higher firm valuation, particularly when valuation is measured using level-based indicators rather than short-term return measures.

5.4. Country and Regional Heterogeneity

Given that the sample includes firms operating in diverse institutional and regulatory environments, we conduct heterogeneity analyses to examine whether the relationship between ESG performance and firm value varies across countries and regions. The results are reported in Table 13.

The findings reveal substantial variation across development groups and geographic regions. For firms in developed markets, the overall ESG score remains positively and significantly associated with firm value. Among the individual ESG pillars, the Social and Governance dimensions exhibit positive and significant effects, whereas the Environmental pillar shows a weaker and only marginally significant relationship.

Table 13. Heterogeneity by development group and region.

Grouping	Group	Variable	Coef.	SE	p	N	Firms	R2
Development_group	Developed	ESG	0.362	0.0671	0.0	10,323	884	0.2979
Development_group	Developed	ENV	−0.0905	0.0494	0.067	10,323	884	0.2953
Development_group	Developed	SOC	0.2826	0.06	0.0	10,323	884	0.2972
Development_group	Developed	GOV	0.2484	0.0564	0.0	10,323	884	0.2968
Development_group	Emerging/Offshore	ESG	1.7263	0.1739	0.0	267	26	0.592
Development_group	Emerging/Offshore	ENV	1.7724	0.2319	0.0	267	26	0.5839
Development_group	Emerging/Offshore	SOC	1.4938	0.1823	0.0	267	26	0.5721
Development_group	Emerging/Offshore	GOV	1.5099	0.1668	0.0	267	26	0.5891
Region	Asia-Pacific	ESG	0.3477	0.1138	0.0022	2058	176	0.5336
Region	Asia-Pacific	ENV	0.1128	0.0879	0.1992	2058	176	0.531
Region	Asia-Pacific	SOC	0.0691	0.0929	0.4573	2058	176	0.5306
Region	Asia-Pacific	GOV	0.1005	0.0904	0.2659	2058	176	0.5309
Region	Europe	ESG	0.6596	0.1287	0.0	3186	275	0.381
Region	Europe	ENV	0.3495	0.1156	0.0025	3186	275	0.3765
Region	Europe	SOC	0.3998	0.1269	0.0016	3186	275	0.377
Region	Europe	GOV	0.0898	0.1005	0.3715	3186	275	0.3744
Region	North America	ESG	0.6644	0.0766	0.0	5079	433	0.4426
Region	North America	ENV	0.1884	0.0546	0.0006	5079	433	0.4315
Region	North America	SOC	0.5732	0.072	0.0	5079	433	0.4416
Region	North America	GOV	0.4981	0.0651	0.0	5079	433	0.44

Note: Subsample models include accounting controls and industry/year fixed effects. Country fixed effects are omitted within small group-specific subsamples to preserve estimability.

In the emerging and offshore subsample, the association between ESG performance and firm value is considerably stronger. The overall ESG score and all three ESG pillars display large positive and highly significant coefficients, suggesting that ESG practices may play a more prominent role in shaping firm valuation in these markets.

The regional analysis also highlights important differences. North America and Europe exhibit the strongest and most consistent positive relationships between ESG performance and firm value. In North America, both the composite ESG measure and all three ESG pillars are positively and significantly related to firm value. Similarly, in Europe, the overall ESG score, Environmental, and Social pillars are significant predictors of firm value. In contrast, the evidence for the Asia-Pacific region is more mixed. While the overall ESG score remains positive and significant, the individual ESG pillars are not statistically significant.

Overall, the results suggest that the value relevance of ESG performance varies across institutional settings, with stronger effects observed in emerging/offshore markets and in the North American and European regions.

6. Conclusions

This study explores how corporate ESG practices influence corporate stock prices. Likewise, it delves into the mediating role of female representation on corporate boards in enhancing the intersection between ESG and stock prices. The study analyzes data comparing 9543 firm-year observations from non-financial companies across 15 countries included in the S&P 1200 global index from 2012 to 2020. The ESG performance of these corporations is assessed by the Refinitiv ESG Combined Score, which is derived from the disclosed information in the ESG pillars, including an overlay for ESG controversies. BGD is measured by the proportion of female directors to the total number of board members, while corporate stock price is assessed using the closing stock price at the end of each year. The findings indicate a positive nexus between corporate stock prices and ESG performance at the aggregate level and across the individual ESG pillars. Likewise, BGD positively enhances the corporate stock price. These findings indicate that BGD mediates the intersection between ESG performance (both the combined Score and the individual pillars) and stock prices, suggesting that it plays a vital role in transmitting the influence of ESG performance onto corporate stock prices.

The additional analyses further strengthen the validity of the study's conclusions. The positive association between ESG performance and firm value remains robust when lagged ESG measures are employed, mitigating concerns regarding reverse causality. Furthermore, direct mediation tests based on Sobel statistics and bootstrap confidence intervals provide strong evidence that board gender diversity serves as a significant mechanism through which ESG performance enhances firm value. Additional robustness analyses using alternative valuation measures confirm that ESG performance is more strongly associated with firm valuation levels than with short-term stock return fluctuations. Finally, the country and regional heterogeneity analyses reveal that the ESG–firm value relationship persists across different institutional settings, although its magnitude varies across development groups and geographic regions. Collectively, these findings provide additional confidence in the robustness, validity, and generalizability of the study's main results.

The findings provide essential implications for corporations, investors, and policy-makers. Our findings incentivize corporations to prioritize and invest in ESG initiatives, as doing so can lead to tangible financial benefits in the form of higher stock prices. Also, corporations may seek to strengthen their performance across the various ESG pillars to maximize the positive impact on their stock valuations. Likewise, corporations that demonstrate strong ESG performance may be able to attract a larger pool of investors, leading to increased demand for their stocks and higher valuations. Besides, shareholders may become more actively engaged in monitoring and influencing corporations' ESG practices, as strong ESG performance is now shown to be positively linked to stock price performance. The results suggest that corporations seeking to leverage their ESG performance to enhance stock price valuation should prioritize building a gender-diverse board of directors. Likewise, enhancing BGD can help corporations more effectively translate their ESG initiatives into positive stock price outcomes, providing a competitive advantage in the market. Policy setters and regulators may also consider introducing measures to promote BGD, as they can serve as a mechanism to strengthen the intersection between firm sustainability and financial practices.

This study is subject to several limitations that may provide directions for future research. First, ESG performance is measured using data obtained from the Refinitiv database; therefore, subsequent studies may benefit from employing alternative data sources, such as Bloomberg, where ESG evaluation criteria and methodologies may vary. The current study uses only one macro-level variable (i.e., inflation), whereas further research could employ more variables, including GDP. Further research could also examine the national culture and how it affects the role of female board members in corporate strategy and decision-making (Abo El Matey et al., 2026; Shawat et al., 2026). Given the nature of the sample corporations, which uses a global index, the representation of developing countries is small, where the number of corporations from developed countries is about two-thirds of the overall sample. Finally, although this study employs firm fixed-effects estimation, clustered standard errors, and a comprehensive set of control variables to mitigate concerns related to unobserved heterogeneity, the possibility of endogeneity arising from reverse causality or omitted variable bias cannot be eliminated. Accordingly, future research could strengthen causal inference by employing alternative econometric techniques, such as instrumental variable estimation, dynamic panel models, or quasi-natural experimental designs.

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Notes

- ¹ It posits that a corporation's competitive advantage is determined by its ability to acquire, manage, and utilize valuable resources (Pfeffer & Salancik, 2003).
- ² It should be noted here that female representation on the corporate board would influence the firm's decision-making, including decisions related to ESG engagement, only when they reach a specific level, as one female board member would be regarded as a token, with little or non-existent influence (Gull et al., 2023). In this regard, Kristie (2011) highlighted this explicitly, indicating that "one is token, two is presence, and three is a voice" (p. 22).

References

- Abdelbaky, A., Liu, T., Mingyang, X., Shahzad, M. F., & Hassanein, A. (2025). Real earnings management and ESG performance in China: The mediating role of corporate innovations. *International Journal of Finance & Economics*, 30(4), 3476–3499.
- Abo El Matey, A. E. M., Hassanein, A., & Ahmed, M. M. A. (2026). Do boards matter for financial inclusion disclosure? The moderating role of audit committee activity in South African banks. *Journal of Financial Reporting and Accounting*, 1–26. [\[CrossRef\]](#)
- Aboud, A., & Diab, A. (2019). The financial and market consequences of environmental, social and governance ratings: The implications of recent political volatility in Egypt. *Sustainability Accounting, Management and Policy Journal*, 10(3), 498–520.
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291–309. [\[CrossRef\]](#)
- Agarwala, N., Jana, S., & Sahu, T. N. (2024). ESG disclosures and corporate performance: A non-linear and disaggregated approach. *Journal of Cleaner Production*, 437, 140517. [\[CrossRef\]](#)
- Al-Hiyari, A., & Kolsi, M. C. (2021). How do stock market participants value ESG performance? Evidence from Middle Eastern and North African Countries. *Global Business Review*, 25(4), 934–956. [\[CrossRef\]](#)
- Al-Khasawneh, J. A., Ali, H., & Hassanein, A. (2024). How do stock markets react to dividend announcements during the COVID-19 pandemic? Evidence from the GCC markets. *International Journal of Islamic and Middle Eastern Finance and Management*, 17(4), 746–769. [\[CrossRef\]](#)
- Alm-El-Din, M., & Hassanein, A. (2026). From words to stock liquidity: Python analysis of Arabic narrative reporting tone and earnings management practices. *Journal of Applied Accounting Research*, 1–26. [\[CrossRef\]](#)
- Alshdaifat, S. M., Amara, N., Ghardallou, W., & Hassanein, A. (2026). How does a critical mass of women in audit committees shape renewable energy practices? *Total Quality Management & Business Excellence*, 37(5–6), 508–528. [\[CrossRef\]](#)
- Amiri, M. H., Kifo, N., & Kusakci, S. (2022). Diversity in the board of directors and the social sustainability pillar of the firm: Evidence from countries with high environmental, social, and governance scores. *International Journal of Organizational Diversity*, 22(1), 63. [\[CrossRef\]](#)
- Arayssi, M., Dah, M., & Jizi, M. (2016). Women on boards, sustainability reporting and firm performance. *Sustainability Accounting, Management and Policy Journal*, 7(3), 376–401. [\[CrossRef\]](#)
- Arayssi, M., Jizi, M., & Tabaja, H. H. (2020). The impact of board composition on the level of ESG disclosures in GCC countries. *Sustainability Accounting, Management and Policy Journal*, 11(1), 137–161. [\[CrossRef\]](#)
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. [\[CrossRef\]](#) [\[PubMed\]](#)
- Barrymore, N., & Sampson, R. C. (2021). ESG performance and labor productivity: Exploring whether and when ESG affects firm performance. In *Academy of management proceedings* (Vol. 2021, p. 13997; No. 1). Academy of Management.
- Behl, A., Kumari, P. R., Makhija, H., & Sharma, D. (2022). Exploring the relationship of ESG score and firm value using cross-lagged panel analyses: Case of the Indian energy sector. *Annals of Operations Research*, 313(1), 231–256.
- Ben-Amar, W., Chang, M., & McIlkenny, P. (2017). Board gender diversity and corporate response to sustainability initiatives: Evidence from the Carbon Disclosure Project. *Journal of Business Ethics*, 142, 369–383.

- Bofinger, Y., Heyden, K. J., & Rock, B. (2022). Corporate social responsibility and market efficiency: Evidence from ESG and misvaluation measures. *Journal of Banking & Finance*, 134, 106322. [\[CrossRef\]](#)
- Buchanan, B., Cao, C. X., & Chen, C. (2018). Corporate social responsibility, firm value, and influential institutional ownership. *Journal of Corporate Finance*, 52, 73–95. [\[CrossRef\]](#)
- Burkhardt, K., Nguyen, P., & Poincelot, E. (2020). Agents of change: Women in top management and corporate environmental performance. *Corporate Social Responsibility and Environmental Management*, 27, 1–14. [\[CrossRef\]](#)
- Chang, Y., Wu, K. T., Lin, S. H., & Lin, C. (2024). Board gender diversity and corporate social responsibility. *International Journal of Corporate Social Responsibility*, 9(1), 7. [\[CrossRef\]](#)
- Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, 345, 118829. [\[CrossRef\]](#) [\[PubMed\]](#)
- Chen, Y., Zheng, Y., Lv, G., Gu, Y., & Zhang, W. (2024). Quantifying the effect of ESG-related news on Chinese stock movements. *Journal of Environmental Management*, 354, 120301. [\[CrossRef\]](#) [\[PubMed\]](#)
- Cheng, R., Kim, H., & Ryu, D. (2023). ESG performance and firm value in the Chinese market. *Investment Analysts Journal*, 53, 1–15. [\[CrossRef\]](#)
- Clarkson, M. B. E. (1995). A stakeholder framework for analysing and evaluating corporate social performance. *Academy of Management Review*, 20(1), 92–117.
- Constantinescu, D., Caraiania, C., Lungua, C. I., & Mititeana, P. (2021). Environmental, social and governance disclosure associated with the firm value. Evidence from energy industry. *Accounting and Management Information Systems*, 20(1), 56–75.
- Cucari, N., Esposito De Falco, S., & Orlando, B. (2018). Diversity of board of directors and environmental social governance: Evidence from Italian listed companies. *Corporate Social Responsibility and Environmental Management*, 25(3), 250–266.
- Dai, Y. (2021). Can ESG investing beat the market and improve portfolio diversification? Evidence from China. *The Chinese Economy*, 54(4), 272–285. [\[CrossRef\]](#)
- Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*, 168(2), 315–334.
- Dyck, A., Lins, K. V., Roth, L., & Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, 131(3), 693–714. [\[CrossRef\]](#)
- Eccles, R. G., Lee, L. E., & Stroehle, J. C. (2020). The social origins of ESG: An analysis of Innovest and KLD. *Organization & Environment*, 33(4), 575–596. [\[CrossRef\]](#)
- Fahad, P., & Rahman, P. M. (2020). Impact of corporate governance on CSR disclosure. *International Journal of Disclosure and Governance*, 17(2–3), 155–167. [\[CrossRef\]](#)
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. [\[CrossRef\]](#)
- Fu, L., Boeshe, D., & Orlitzky, M. (2022). Broad or narrow stakeholder management? A signaling theory perspective. *Business and Society*, 61(7), 1838–1880.
- Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of Cleaner Production*, 150, 135–147. [\[CrossRef\]](#)
- Garcia Martin, C. J., & Herrero, B. (2020). Do board characteristics affect environmental performance? A study of EU firms. *Corporate Social Responsibility and Environmental Management*, 27, 74–94. [\[CrossRef\]](#)
- Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889. [\[CrossRef\]](#)
- Groysberg, B., & Bell, D. (2013). Dysfunction in the boardroom. *Harvard Business Review*, 91(6), 89–97.
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw Hill Inc.
- Gull, A. A., Hussain, N., Khan, S. A., Nadeem, M., & Zalata, A. (2023). Walking the talk? A corporate governance perspective on corporate social responsibility decoupling. *British Journal of Management*, 34, 2186–2211. [\[CrossRef\]](#)
- Haque, F., & Ntim, C. G. (2018). Environmental policy, sustainable development, governance mechanisms and environmental performance. *Business Strategy and the Environment*, 27(3), 415–435.
- Hassanein, A., & Elsayed, N. (2026). Reporting ESG initiatives and gender diversity in Germany: Implications for stock liquidity. *International Journal of Finance & Economics*, 31(2), 2824–2844.
- Ignatov, K. (2023). When ESG talks: ESG tone of 10-K reports and its significance to stock markets. *International Review of Financial Analysis*, 89, 102745. [\[CrossRef\]](#)
- Kao, F. C. (2023). How do ESG activities affect corporate performance? *Managerial and Decision Economics*, 44(7), 4099–4116. [\[CrossRef\]](#)
- Kim, S., & Yoon, A. (2023). Analyzing active fund managers' commitment to ESG: Evidence from the United Nations Principles for Responsible Investment. *Management Science*, 69(2), 741–758. [\[CrossRef\]](#)

- Kristie, J. (2011). The power of three. *Directors & Boards*, 35, 22–32.
- Li, Y., Gong, M., Zhang, X. Y., & Koh, L. (2018). The impact of environmental, social, and governance disclosure on firm value: The role of CEO power. *The British Accounting Review*, 50(1), 60–75. [CrossRef]
- Liu, C. (2018). Are women greener? Corporate gender diversity and environmental violations. *Journal of Corporate Finance*, 52, 118–142. [CrossRef]
- Lokuwaduge, C. S. D. S., & Heenetigala, K. (2017). Integrating environmental, social and governance (ESG) disclosure for a sustainable development: An Australian study. *Business Strategy and the Environment*, 26(4), 438–450.
- Maji, S. G., & Lohia, P. (2023). Environmental, social and governance (ESG) performance and firm performance in India. *Society and Business Review*, 18(1), 175–194.
- Manita, R., Bruna, M. G., Dang, R., & Houanti, L. H. (2018). Board gender diversity and ESG disclosure: Evidence from the USA. *Journal of Applied Accounting Research*, 19(2), 206–224. [CrossRef]
- McCright, A. M. (2010). The effects of gender on climate change knowledge and concern in the American public. *Population and Environment*, 32, 66–87. [CrossRef]
- McGuinness, P. B., Vieito, J. P., & Wang, M. (2017). The role of board gender and foreign ownership in the CSR performance of Chinese listed firms. *Journal of Corporate Finance*, 42, 75–99. [CrossRef]
- Mooneeapen, O., Abhayawansa, S., & Mamode Khan, N. (2022). The influence of the country governance environment on corporate environmental, social and governance (ESG) performance. *Sustainability Accounting, Management and Policy Journal*, 13(4), 953–985. [CrossRef]
- Nekhili, M., Boukadhaba, A., & Nagati, H. (2021). The ESG–financial performance relationship: Does the type of employee board representation matter? *Corporate Governance: An International Review*, 29(2), 134–161.
- Nguyen, L. T., & Nguyen, K. V. (2021). The impact of corporate social responsibility on the risk of commercial banks with different levels of financial constraint. *Asia-Pacific Journal of Business Administration*, 13(1), 98–116. [CrossRef]
- Nimer, K., Bani-Mustafa, A., & Hassanein, A. (2025). Country's gender equality and corporate sustainability in the information technology industry: Does national culture matter? *Equality, Diversity and Inclusion: An International Journal*, 1–23. [CrossRef]
- Olsen, B. C., Awuah-Offei, K., & Bumblauskas, D. (2021). Setting materiality thresholds for ESG disclosures: A case study of US mine safety disclosures. *Resources Policy*, 70, 101914. [CrossRef]
- Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible investing: The ESG-efficient frontier. *Journal of Financial Economics*, 142(2), 572–597. [CrossRef]
- Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
- Porta, R. L., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155. [CrossRef]
- Rajesh, R., Rajeev, A., & Rajendran, C. (2022). Corporate social performances of firms in select developed economies: A comparative study. *Socio-Economic Planning Sciences*, 81, 101194. [CrossRef]
- Rao, K., & Tilt, C. (2016). Board composition and corporate social responsibility: The role of diversity, gender, strategy and decision making. *Journal of Business Ethics*, 138(2), 327–347.
- Rastogi, S., Singh, K., & Kanoujiya, J. (2023). Firm's value and ESG: The moderating role of ownership concentration and corporate disclosures. *Asian Review of Accounting*, 32(1), 70–90. [CrossRef]
- Shakil, M. H., Tasnia, M., & Mostafiz, M. I. (2021). Board gender diversity and environmental, social and governance performance of US banks: Moderating role of environmental, social and corporate governance controversies. *International Journal of Bank Marketing*, 39(4), 661–677.
- Shawat, R., Wassef, A., Ibrahim, Y., Hassanein, A., Moubarak, H., & Badawy, H. (2026). Investors' reaction to sustainability disclosures under varying assurance levels and assurer types: An experimental approach. *Journal of Risk and Financial Management*, 19(6), 447. [CrossRef]
- Sila, V., Gonzalez, A., & Hagedorff, J. (2016). Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance*, 36, 26–53. [CrossRef]
- Sinha Ray, R., & Goel, S. (2023). Impact of ESG score on financial performance of Indian firms: Static and dynamic panel regression analyses. *Applied Economics*, 55(15), 1742–1755.
- Spence, M. (2002). Signaling in retrospect and the informational structure of markets. *American Economic Review*, 92, 434–459. [CrossRef]
- Sutiono, N. (2020). *Board gender diversity, ESG, and corporate performance* [Honors Theses, Western Michigan University]. Available online: https://scholarworks.wmich.edu/honors_theses/3321 (accessed on 24 May 2026).
- Tahat, Y. A., & Hassanein, A. (2024). Exploring the synergy of corporate gender diversity, sustainability committee, and reporting ESG practices: An international evidence. *Journal of Environmental Management*, 371, 123093. [CrossRef] [PubMed]
- Tahmid, T., Hoque, M. N., Said, J., Saona, P., & Azad, M. A. K. (2022). Does ESG initiatives yield greater firm value and performance? New evidence from European firms. *Cogent Business & Management*, 9(1), 2144098. [CrossRef]

- Takahashi, H., & Yamada, K. (2021). When the Japanese stock market meets COVID-19: Impact of ownership, China and US exposure, and ESG channels. *International Review of Financial Analysis*, 74, 101670. [\[CrossRef\]](#)
- Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*, 8(2), 169–178. [\[CrossRef\]](#)
- Wasiuzzaman, S., & Wan Mohammad, W. M. (2020). Board gender diversity and transparency of environmental, social and governance disclosure: Evidence from Malaysia. *Managerial and Decision Economics*, 41(1), 145–156.
- Widyawati, L. (2020). A systematic literature review of socially responsible investment and environmental social governance metrics. *Business Strategy and the Environment*, 29(2), 619–637.
- Wong, W. C., Batten, J. A., Mohamed-Arshad, S. B., Nordin, S., & Adzis, A. A. (2021). Does ESG certification add firm value? *Finance Research Letters*, 39, 101593. [\[CrossRef\]](#)
- Xie, J., Nozawa, W., Yagi, M., Fujii, H., & Managi, S. (2019). Do environmental, social, and governance activities improve corporate financial performance? *Business Strategy and the Environment*, 28(2), 286–300.
- Yadav, P., & Jain, A. (2023). Sustainability disclosures and corporate boards: A stakeholder approach to decision-making. *Journal of Applied Accounting Research*, 24(5), 1027–1104. [\[CrossRef\]](#)
- Yoon, B., Lee, J. H., & Byun, R. (2018). Does ESG performance enhance firm value? Evidence from Korea. *Sustainability*, 10(10), 3635. [\[CrossRef\]](#)
- Yu, E. P. Y., Guo, C. Q., & Luu, B. V. (2018). Environmental, social and governance transparency and firm value. *Business Strategy and the Environment*, 27(7), 987–1004. [\[CrossRef\]](#)
- Yu, X., & Xiao, K. (2022). Does ESG performance affect firm value? Evidence from a New ESG-scoring approach for Chinese enterprises. *Sustainability*, 14(24), 16940. [\[CrossRef\]](#)

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