International Journal of Disclosure and Governance
https://doi.org/10.1057/s41310-023-00181-9

ORIGINAL ARTICLE

Does earnings management constrain ESG performance? The role of corporate governance

Yusuf Babatunde Adeneye[1] · Setareh Fasihi[2] · Ines Kammoun[3] · Khaldoon Albitar[4]

Received: 18 February 2022 / Accepted: 27 April 2023

Abstract
Responding to the calls in both earnings management and sustainability literature to examine corporate governance patterns, this study fills the sustainability literature gap by shedding light on the moderating role of corporate governance on earnings management and environmental, social and governance performance. Using a sample of UK firms listed on the London Stock Exchange for the period 2016–2020, we find considerable evidence that earnings management reduces environmental, social and governance performance. Importantly, we find that board gender diversity among other corporate governance mechanisms is stronger and more effective in attenuating the negative effects of earnings management on environmental, social and governance performance significantly. We find support for the agency theory that corporate governance mechanisms reduce the managerial exploitation of resources required for sustainable investments and sustainability performance.

Keywords Earnings management · Environmental · Social · Governance performance · Corporate governance

Introduction

Researchers exploring evidence on the relationship between earnings management (EM) and sustainability performance generally take one of three clear-cut approaches. The most superior approach is that of following the propositions of the stakeholders' theorists who contend that the firm's societal relationships include not only investors and creditors, but also heterogeneous coalition groups and that satisfying these groups is a challenge in the presence of information asymmetries (e.g., Freeman 1984). These researchers argued that managers would disclose more quality information and reporting in a way to reduce these asymmetries (Aladwey et al. 2021; Al-Shaer and Zaman 2018; Arayssi et al. 2020; Hussain et al. 2018; Husted and de Sousa-Filho 2019). Their studies have investigated the link between several proxies of sustainability (e.g., Corporate social responsibility (CSR) disclosure, CSR disclosure quality, environmental, social and governance (ESG) disclosure, ESG ratings, and ESG performance) and EM. Two recent studies (Velte 2020; Yang and Tang 2021) found that environmental performance including carbon performance reduces accrual-based EM and that managers use income-decreasing EM practices to respond to environmental issues such as air pollution, and solid and waste pollution.

The second path is relatively less investigated to study the influence of EM on sustainability performance based on the agency theory. This stream of studies contends that to reduce conflict of interest by engaging in less manipulative practices, the firm would ensure a greater reporting quality by paying attention to promoting socially responsible practices (Martinez-Ferrero et al. 2015). The primary concern of this study is the extent to which EM undermines the drive toward improved sustainability practices (proxied by ESG performance). Agency theorists investigate how EM

✉ Khaldoon Albitar
Khaldoon.albitar@port.ac.uk

Yusuf Babatunde Adeneye
adeneye.yb@umk.edu.my

Setareh Fasihi
s.fasihi@pnu.ac.ir

Ines Kammoun
Ines.kammoun@fsegs.usf.tn

[1] Faculty of Hospitality, Tourism and Wellness, Universiti Malaysia Kelantan, Kelantan, Malaysia

[2] Department of Accounting, Payame Noor University (PNU), P.O. Box 19395-4697, Tehran, Iran

[3] Faculty of Economics and Management of Sfax, University of Sfax, Sfax, Tunisia

[4] Faculty of Business and Law, University of Portsmouth, Portsmouth, UK

Published online: 08 May 2023

may undermine sustainability objectives in corporate firms. Studies on the agency theory have documented a negative relationship between EM and sustainability practices, arguing that increasing the level of EM by managers erodes sustainability goals and financial performance (e.g., Choi et al. 2013; Prior et al. 2008; Velte 2019). The third path describes the body of literature that examines the resource provision role of corporate boards, referring to the resource function in which directors provide and secure resources by reducing earnings manipulations and averting corporate failures (Hillman et al. 2002; Hillman and Dalziel 2003). Directors reduce these manipulations and failures through managing internal relationships, structures, diversities, and specializations in order to co-opt important external organizations and reduce environmental uncertainty (Hillman et al. 2000, 2002; Hillman and Dalziel 2003).

In practice, managers' earnings manipulation is seen to exist before sustainability performance is assessed, however, present sustainability performance may signal a reduction in future EM practices, which follows the assumptions of the signalling theory (Velte 2020). Theoretically, we focus on how the conflict of interests (generated following EM practices) may affect the sustainability drive of firms. On the responsive part of the agency theorists to reduce EM practices, institutionalizing strong corporate governance (CG) to ensure effective boards monitoring role would mitigate agency problems by reducing the propensity towards opportunistic accounting discretion (Jensen 1986). We argue that combining these theoretical perspectives; agency theory, resource dependence theory, and stakeholder theory are relevant to study the relationships between EM, ESG performance, and corporate governance. Integration of these theories can help to proffer possible answers to the question of, why is sustainability performance becoming low despite the number of firms' resources channelled to sustainable investments? While the stakeholder theory explains the relationship between EM and ESG performance on the one hand, on the other hand, the agency theory posits effective monitoring functions of the board through strong CG mechanisms. These separate paths provide an inadequate understanding of what deters ESG performance and how such deterrents could be mitigated. Thus, there is a need to moderate the relationship between EM and ESG performance with CG mechanisms (such as board size, board independence, board gender diversity, and audit committee independence).

Past studies on the effect of EM and ESG performance are scanty with mixed findings. Researchers have paid much attention to CSR and EM (Buertey et al. 2020; Gras-Gil et al. 2016; Kim et al. 2019; Martinez-Ferrero et al. 2015; Palacios-Manzano et al. 2021), EM and firm performance (Gargouri et al. 2010; Griffin et al. 2021; Velte 2020; Wang et al. 2022), and ESG disclosure and firm performance (Albitar et al. 2020; Shakil 2021). We broaden our knowledge of the EM-ESG performance link and further explain why sustainability performance may be decreasing and how it can be mitigated through effective board monitoring functions. We argue that EM erodes the objectives and goals of heterogeneous groups. Failure to empirically establish solutions to both conjectures is a shortcoming of literature on agency and stakeholder perspectives. A board's monitoring functions (e.g., CG factors) will moderate the effect of opportunistic accounting discretion (e.g., EM) on sustainability practices (e.g., ESG performance).

The contribution of the paper is fourfold. First, our study complements the scanty literature on the negative effects of EM on sustainability performance. We establish that the continuous practice of firms' managers in EM practices will erode sustainability efforts. While most past studies focused on the impact of sustainability disclosure in reducing EM (e.g., Mohmed et al. 2019; Velte 2019), we took a reverse position and conjectured that EM could constrain sustainability practices. Our findings support the recent debate on sustainability manipulation that greenwashing (i.e., accentuating the positive and eliminating the negative environmental issues) and brownwashing (i.e., issuing communications that understate environmental achievements) are actions of EM (Kim and Lyon 2015; Lyon and Maxwell 2011; Zharfpeykan 2021), where firms could either underestimate or overestimate sustainability investments to meet certain stakeholders' targets, as such making it harder for stakeholders to overcome asymmetric information about sustainability reporting.

Second, while past studies have adopted the Jones and Modified Jones' model of EM on CSR (Gras-Gil et al. 2016; Palacios-Manzano et al. 2021; Yang and Tang 2021), thereby establishing differences in empirical results, we adopted the performance-matching model of Kothari et al. (2005) for Accruals EM on ESG. Unlike the modified Jones model of EM, the performance-matching model controls for ROA as, without it, firms with abnormal performances would be perceived as manipulating earnings. Thus, Kothari's model reduces heteroskedasticity and EM model specification bias. We find evidence that the Accruals-based measurement of EM has a negative relationship with ESG performance, suggesting that corporate managers' engagement in obscuring economic performance by changing accounting estimates with the Generally Accepted Accounting Principles (GAAPs) erodes sustainability performance.

Third, we focus on CG mechanisms, i.e., the board size, independent board members, board gender diversity, and audit committee independence to moderate the EM-ESG performance nexus. We find partial empirical evidence that only board gender diversity consistently reduces the negative effects of EM on ESG performance. Unlike past studies (Arun et al. 2015; Ben-Amar et al. 2017; Fernandez-Feijoo et al. 2014; Gull et al. 2018; Hillman et al. 2002), our

findings contribute to board gender diversity literature by establishing that women on boards serve two important functions for organizations: deterring managers from managing earnings and providing better investment decisions. Agency theorists assert that effective detection and reduction of earnings manipulation is a function of a board's gender diversity (Arun et al. 2015; Gull et al. 2018; Zalata et al. 2019), whereas stakeholder theorists contend that the mitigation of financial risks and ESG controversies in enhancing ESG performance is a function of board gender diversity (e.g., Shakil 2021). We combine the two perspectives and argue that women on board affect both EM and ESG performance and that women on board moderate this relationship. This suggests that corporate firms that embrace board gender equality are more likely to avoid "triggering manipulation behaviour" from corporate managers. Thus, more funds are used for investments in value-adding ESG activities.

Fourth, we provide a novel explanation of the variations in ESG performance. Our study is among the first to integrate the agency theory (Jensen 1986) and stakeholder theory (Freeman 1984) to explain ESG performance in corporate firms. We provide theoretical evidence that the firm's CG mechanism is significant to determine the level at which the firm pursues ESG-oriented goals and ESG activities. Thus, we also provide evidence that firms with more women on board are more likely to achieve improved ESG goals and initiatives. We provide several robustness tests and establish that EM affects ESG performance even in profitable firms with weak return on assets.

The rest of the paper is organized as follows. Section two discusses the related literature and hypotheses development. Section three provides the research methods and techniques used in the study. Section four presents the results of the data analysis while section five discusses the implications of the findings and concludes the paper.

Literature review and hypotheses development

EM and ESG

Resulting from opportunistic short-term tactics, EM is used to alter financial reports to mislead stakeholders about the firm's performance or for contractual purposes (Healy and Wahlen 1999; Dechow et al. 1996; Xie et al. 2003; Gargouri et al. 2010; Choi et al. 2018). These practices have been widely criticized in the literature as they could affect drastically a firm's long-term sustainability and reduce the credibility of financial information (Ehsan et al. 2021). In this regard, stakeholders become more vigilant and sceptical about financial reporting (Choi et al. 2013). Meanwhile, managers could engage in ESG practices to gain the trust of both internal and external stakeholders by satisfying their interests and fostering long-term relationships (Escrig-Olmedo 2019).

Prior studies (Gras-Gil et al. 2016; Choi et al. 2018; Kim et al. 2019; Buertey et al. 2020; Ehsan et al. 2021; Palacios-Manzano et al. 2021; Yang and Tang 2021; Velte 2020) have reported mixed and inconclusive findings on the effect of both individual and combined ESG actions on EM. However, empirical evidence on the impact of EM on ESG remains limited. Most studies have addressed the effect of EM on CSR and the results were mixed. For instance, one stream of research supporting the managerial opportunistic perspective, derived from the agency theory, perceived CSR as an entrenchment strategy to hide manipulative practices and mislead stakeholders (Gras-Gil et al. 2016). In line with this point of view, Prior et al. (2008) find, using a sample of 593 firms from 26 countries over the period 2002–2004, a positive effect of EM practices on CSR. The authors consider CSR activities as an ideal way to protect managers against the negative consequences of EM and to decrease the threat of scrutiny and stakeholders' activism and vigilance toward EM. Since CSR practices increase stakeholder satisfaction (Gavana et al. 2017), managers who are involved in EM might be more prone to using CSR activities to divert stakeholders' attention and conceal their opportunistic behaviour.

On the other hand, prior studies have reported a negative effect of EM on CSR. In this regard, Martinez-Ferrero et al. (2015) argue, using a sample of 1960 listed non-financial companies from 26 countries, that in companies where managers have fewer incentives to indulge in EM activities, greater attention seems to be paid to stakeholders which promote the adoption of socially responsible practices. More recently, Ehsan et al. (2021) demonstrate a negative association between CSR and EM among manufacturing firms from Pakistan. In support of the long-term perspective derived from the stakeholder theory, authors contend that managers seek to report true, trustworthy, and transparent information. Hence, concerned with maintaining healthy and sustainable relationships with stakeholders, managers who engage in less manipulative practices are more prone to providing CSR activities as a strategy to reinforce quality reporting.

Meanwhile, the debate on how EM constrains ESG performance seems yet to be discussed in sustainability literature. However, we argue that managerial opportunistic behaviour in income smoothing and real expenditure on actual ESG investment could alter ESG goals and objectives. Firms often use substantive and symbolic approaches to present themselves in the market as being committed to sustainability practices (Eliwa et al. 2021). According to the substantive approach, firms take the opportunity to greenwash poor earnings quality to avoid unwanted scrutiny from stakeholders who do not scrutinize managers disclosing

higher sustainability activities. Thereby, making managers conceal irregularities in earnings following the lack of stringent regulations on ESG reporting. In contrast, the symbolic approach addresses a situation where firms engage in opportunistic behaviour by disclosing a higher ESG commitment, contrary to their poor sustainability performance. For instance, S&P 500 firms hide their poor performance to intensify impressive ESG disclosure (Nazari et al. 2017). Managers also underestimate the high costs of ESG-related investments by manipulating real discretionary expenses on R&D and sustainability thereby engaging in brownwashing (Kim and Lyon 2015).

Therefore, firms can either engage in greenwashing or brownwashing by manipulating ESG investments resulting in performance-decreasing and performance-increasing opportunistic behaviours, which may distort actual ESG performance. Recently, scholars (Kim and Lyon 2015; Lyon and Montgomery 2015; Mohmed et al. 2019; Rezaee and Tuo 2019; Zharfpeykan 2021) have noted that greenwashing in sustainable investments is a source of earnings manipulations since organizations disseminate disinformation about sustainability reporting to present an environmentally responsible public image. Therefore, greenwashing in sustainable investments could undermine sustainable goals, thereby, resulting in poor ESG performance. Moreover, following the assumption of the managerial opportunism hypothesis, corporate insiders and managers pursue their interests by overinvesting in sustainability practices, which have value-decreasing effects (Choi et al. 2013; Harjoto and Jo 2011). Thus, firms engaging in high managerial entrenchment with weak governance tend to over-invest in CSR activities that have value-decreasing effects on sustainability performance. In a recent study conducted in Germany, Velte (2019) notes a negative impact of EM on ESG performance, relating such findings to the high risk of stakeholder trust triggered by earnings manipulations. Based on this review, we assert our first hypothesis:

H1 EM is negatively associated with ESG performance.

Moderating role of board size on EM and ESG

Board size refers to the total number of directors on the board. Board size plays a vital monitoring role in stakeholder engagement in various sustainability practices and initiatives (Buertey et al. 2020; Van Hoang et al. 2021). Theoretical views have lent support to the agency theory that a smaller board size plays a relevant role in lowering EM practices, which in turn, influences the level of sustainability investments (Jensen 1993; Dechow et al. 1996; Abdou et al. 2021). This view contradicts the resource dependence theory that advocates for larger board size, arguing that more resource provisions are effective in averting corporate failures and securing critical resources required to design and implement sustainable goals (Hillman and Dalziel 2003).

Complementing the agency theory, and in relation to sustainability, larger boards exercise their oversite responsibility over management in formulating strategic policies and goals for the firm including the reduction of corporate failures and especially those concerning sustainability practices that align with the larger stakeholder group (Hillman and Dalziel 2003; Ntim and Soobaroyen 2013; Van Hoang et al. 2021). The diverse expertise, experience and skills of a large board are potential board capital attributes that are used to serve on multiple board committees including ethical and CSR committees. Such diversity in corporate board capital will lead to the formulation and implementation of sustainability policies (Buertey et al. 2020). Moreover, a larger board is more efficient in carrying out CSR agendas that often require more workload allocation (Jizi 2017), complimented by higher managerial monitoring that CEOs are difficult to control (Ntim and Soobaroyen 2013). However, larger boards are detrimental to governance efficiency (Hussain et al. 2018). For example, a larger number of directors take more time to negotiate and reach agreements on strategic decisions because of greater communication problems and the dominance of powerful managers (Jensen 1986). Thus, reducing the variability of sustainability performance (Husted and de Sousa-Filho 2019).

The agency theorists favour smaller boards over larger boards, arguing that smaller boards enhance high optimal monitoring in reducing EM practices (Jensen 1986; Hussain et al. 2018). The assumption of the agency theory advocates for a smaller board, positing that the resource-monitoring role of directors is effective in firms with smaller boards (Jensen 1986). Smaller boards are better in the sense that they ensure efficient communication and increase commitment and accountability (Hussain et al. 2018). This supports the submission of Jizi (2017) that good coordination and enhanced communication breakdown are attributes of smaller boards that facilitate board members' performance. In contrast, smaller boards are detrimental to the firm's sustainable goals. The quality of sustainability practice and disclosure is a function of diversified expertise, which requires a larger board. Smaller boards might be less effective in their functions since both resource provisions and resource monitoring roles are required for better board effectiveness (Hillman and Dalziel 2003), dual roles that often come with a higher workload.

Previous studies posit that board size could influence sustainability performance (Birindelli et al. 2018; Giannetti et al. 2015; Ntim and Soobaroyen 2013; Gerged et al. 2021), suggesting that the resources provided through a larger board size are relevant for board effectiveness (Alkaraan et al. 2022). Based on the review and according to Van Hoang et al. (2021), firms seeking a higher environmental

innovation need larger boards with diverse expertise on sustainability initiatives to promote ESG performance. However, a larger board size may be detrimental to EM reduction goals. Thus, this study conjectures that from the agency perspective, smaller boards reduce EM, which results in additional capital available for investment in sustainability projects. Therefore, we hypothesized that:

H2 Board size moderates the relationship between EM and ESG performance.

Moderating the role of board gender diversity (BGD) on EM and ESG

The presence of women on the board of directors improves the oversight activities of the board of directors, which reduces the likelihood of opportunistic behaviours of managers and, as a result, reduces EM in companies. In this line, the results of Gull et al. (2018) show the role of women on board directors in decreasing EM in French firms. Also, Zalata et al. (2019), analysing observations of U.S. firms, have shown that female directors with a supervisory role have negative impacts on corporate accrual EM and therefore reduce the opportunistic behaviour of managers. But some research studies in the UK showed different results. For example, the study by Arun et al (2015) on UK companies suggested that the greater the number of women on the board of directors, the more conservative these companies become and the more likely they are to engage in EM activities.

Moreover, female directors on the board play a crucial role in improving transparency and reporting to stakeholders (Aladwey et al. 2021; Elmarzouky et al. 2021). The presence of women on the board of directors (BoD) increases the different opinions and the quality of the issues raised in the process of decision-making (Albitar et al. 2020) and leads to an effective board monitoring function. As a result, the quality of decisions related to the company's stakeholders and sustainable performance is improved. Different backgrounds and experiences of women on the board, and more communal characteristics (such as being supportive, empathic, and gentle) may lead women to pay more attention to stakeholder needs than their male counterparts (Manita et al. 2018).

Most previous research revealed that board gender diversity could facilitate sustainability performance (Fernandez-Feijoo et al. 2014; Ben-Amar et al. 2017; Aladwey et al. 2021). For example, in the Europe context, Velte (2016) examined the link between women on the board and sustainability performance in Germany and Austria and they concluded that contrary to the mass theory of at least 3 women on the board, even with a small percentage of women on the board in their sample (about 20%), the relationship is significant and positive. Some studies have attributed the positive link between BDG and ESG to female gender status (Velte 2016), women's complexity (such as special experience and expertise) and regulatory pressures (Cucari et al. 2018). Furthermore, aside from the role of female directors in reducing earnings manipulations in corporate boards, evidence has shown that they are more likely to invest excess free cash flows in sustainability initiatives due to their communication skills (Suttipun 2021), dedication to ethical standards (Arayssi et al. 2020), and interpersonal and intellectual characteristics (Shakil et al. 2020). A similar study by Van Hoang et al. (2021) found that the presence of more women on the U.S. board of directors reduces manipulations of environmental disclosure activities and enhances environmental quality.

Past studies have considered the link between board gender diversity, sustainability, and EM as either the relation between board gender diversity and EM (Arun et al. 2015; Gull et al. 2018; Zalata et al. 2019) or board gender diversity and sustainability reporting (Manita et al. 2018; Shakil 2021; Shakil et al. 2020; Velte 2016). These differing perspectives have produced mixed findings. This research tries to establish a dual role of females on board in deterring managers from managing earnings to respond to ESG performance. Due to their gender characteristics, women increase the diversity of the board of directors, and through increasing the effectiveness of the board, they pay more attention to the needs of the firm's stakeholders, and in this way, sustainability performance is strengthened. On the other hand, increasing the effectiveness of the board reduces agency costs and EM, and therefore it is expected that females on the board strengthened the negative relationship between sustainability performance and EM. The present study examines the effect that female on the board has on the relationship between the two variables and tries to address whether more woman on board members have a significant impact on the relationship between EM and corporate sustainability performance. Therefore, considering the related theories and research conducted on the effect of board gender diversity on mitigating EM and improving ESG practices in UK companies. Thus, the third hypothesis of our research is formulated as follows.

H3 Board gender diversity moderates the relationship between EM and ESG performance.

Moderating role of independent board members on EM and ESG

Consistent with the assumption of the agency theory, the board of directors has a monitoring role (Hilman and Dalziel 2003). Independent board members have an objective judgment in the performance of the firm and are less under the control of the Chief Executive Officer (Jizi 2017). Independent members of the board of directors, as a type of outside

managers, have an incentive to create a reputation and to preserve their human capital, to convey the signal to the market of decision agents that they are experts in decision-making and can work in such a control system (Fama and Jensen 1983). Therefore, independent board members effectively improve board oversight (Beasly 1996; Fama and Jensen 1983), reduce information asymmetry and increase the quality of integrated reporting (Chouaibi et al. 2021; Hussainey et al. 2022; Albitar et al. 2022), and decrease financial fraud (Beasly 1996). Thus, an increasing proportion of independent board members increases the objectivity in monitoring the company's activities and reduces the opportunistic behaviours of managers which leads to reduced agency costs and abnormal accruals (Abdou et al. 2021; Klein 2002).

Beekes et al. (2004) posit that independent directors must fulfil two conditions if they are to effectively exercise their board monitoring function. First, the possession of sufficient incentives (i.e., by holding shares in the company) to monitor and second, the ability to understand the consequences of managerial actions over the financial reporting system. For instance, independent directors must be able to understand that a reduction in research and development expenditure would translate into a current earnings increase. Thus, knowledgeable independent directors use their superior knowledge and expertise to detect any earnings manipulations in managerial activities. Independent board members with expertise in greenwashing (Mohmed et al. 2019; Rezaee and Tuo 2019; Zharfpeykan 2021) and brownwashing (Kim and Lyon 2015) to delete over-investment and low disclosure of sustainability investment costs would reduce EM practices and enhance corporate sustainability performance. In contrast, independent board members with low knowledge about sustainability practices in the firm and industry are more likely to face tougher monitoring and rely less on the board for advice (Gracia Osma 2008). The resultant effect is a higher information asymmetry due to the low information disclosed to them. Independent board members that cannot distinguish between an opportunistic and efficient sustainability initiative or program to avoid a negative sustainability performance may be compromised due to a lack of specialized technical expertise in sustainability goals. Xie et al. (2003) also demonstrate another situation in which independent board members may fail in their monitoring role to reduce sustainability-related manipulations. The authors contend that independent directors with less frequent board meetings and high multiple directorships are less likely to reduce EM. The problem becomes more intense when such busy directors (board busyness practices) have longer tenures.

Furthermore, since the board of directors is responsible for developing sustainability strategies and formulating social programs for companies (Jizi 2017), independent board members are a way that can increase the board's concerns about environmental and sustainability issues (Shrivastava and Addas 2014). Independent board members protect their reputations and facilitate the disclosure of companies about social and environmental activities to show the market that the organization is focused on promoting social welfare in addition to improving financial performance (Arayssi et al. 2020). Therefore, "their reputation is closely linked to that of the firm and the outcomes of its actions, and so these directors have a strong interest in the company implementing socially responsible strategies" (García-Sanchez et al. 2019, p.556). Some studies (such as Shrivastava and Addas 2014; Jizi 2017; Hussain et al. 2018; Husted and de Sousa-Filho 2019; Lagasio and Cucari 2019) have established a positive relationship between board independence and ESG engagement. For example, Shrivastava and Addas (2014) in their international sample from 2010 to 2014 suggest that boards with more independent directors are more likely to have ESG disclosure scores. They stated that one way for companies to spread governance concerns for environmental standards is to continue to create space for independent board advisors (with no direct interest in the company's financial profitability), especially those with environmental expertise and passion. Jizi (2017), using the data of FTSE 350 UK firms from 2007 to 2012, showed a positive and significant effect of board independence on social and environmental disclosure, positing that the importance of board governance structure in establishing CSR strategies of companies that has a positive effect on the welfare of stakeholders. The results of Hussain et al (2018) in a sample of U.S. firms during 2007–2011 highlight the positive importance of independent board members on both environmental and social pillars of ESG performance.

Therefore, given the impact of board members' independence to reduce earnings manipulations and participate more in sustainability activities, it is expected that a high percentage of independent board members will alleviate the negative relationship between EM and sustainability performance. Our fourth hypothesis is as follows.

H4 Independent board members moderate the relationship between EM and ESG performance.

Moderating role of audit committee independence on EM and ESG

The resource dependence theory posits that directors on the board have the main task of resource provision function in the firm (Hilman and Dalziel 2003), and the presence of independent members in the audit committee increases the variety of resources available to the firm. In comparison to affiliate audit members, independent members of the audit committee are expected to have more expertise and objectivity (Carcello and Neal 2003). The independence of audit

committee membership increases the effectiveness of the oversight of financial reporting. Furthermore, independent committee members provide better oversight to preserve or develop their reputation capital (Abbott et al. 2004).

Previous research demonstrates that audit committee independence does not only affect financial reporting (Sultana et al. 2015; De Vlaminck and Sarens 2015), but it has also a direct impact on non- financial reporting and performance such as the voluntary disclosure of CSR (Appuhami et al. 2017), ESG reporting (Buallay and Al-Ajmi 2020), and the assurance of sustainability reporting (Al-Shaer and Zaman 2018). In this same stream of ESG practices research, Appuhami et al. (2017) worked with 300 Australian listed firms, and their evidence indicates that with the increase in the independence of the audit committee, the voluntary disclosure of CSR has also increased. Buallay and Al-Ajmi (2020) highlighted the positive effect of audit committee independency on ESG reporting. Similarly, Arif et al. (2021) emphasize the importance of the independent audit committee as a management control system that can improve sustainable reporting in oil and gas companies operating in Australian firms, noting that the positive impact of audit committee independence is stronger for the environmental pillar of ESG reporting than social and governance pillars. In contrast, Wang and Sun (2021) find no significant relationship between audit committee independence and social responsibility and environmental disclosures due to the special circumstances of China's governance and cultural systems, as well as the political and social connections that affect the activities of Chinese companies, which disrupt the independence of independent managers.

Meanwhile, a wide strand of research, in support of the agency theory, has put into evidence the role of audit committee independence in deterring fraudulent accounting practices. For example, Klein (2002) find, using a sample of U.S firms, a negative relationship between audit committee independence and abnormal accruals. Similarly, Saleh et al. (2007) show that the presence of an independent audit committee is associated with a reduction in EM practices. In contrast, other studies (Choi et al. 2013; Xie et al. 2003; Habbash et al. 2013) conclude the absence of such an effect. Given the mixed findings in the literature, meta-analysis studies (García-Sánchez et al. 2019; Lin and Hwang 2010; Inaam and Khamoussi 2016) have been conducted to investigate the association between EM and audit committee independence. They all conclude that audit committee independence is one of the major CG mechanisms that help to constrain EM. Overall, the presence of independent audit committee members is effective to oversee EM practices.

Accordingly, as audit committee independence play a crucial role in constraining opportunistic practices (i.e., EM) and in promoting higher transparency by engaging in ESG activities, we expect that audit committee independence acts as a moderator in the relationship between EM and ESG performance. Thus, our hypothesis is formulated as follows:

H5 The presence of independent members in the audit committee moderates the relationship between EM and ESG performance.

Research design and measurements

This section discusses the data, model, variable description, and measurements of the study. We also provide the empirical models of this study to ensure the testing of our proposed research hypotheses.

Data sources and sample

This study adopts the panel data estimation technique. The panel data structure requires both cross-sectional units (i.e., firms) and time series (sample period), implying that this study rests on the longitudinal research design, in which the change in a set of organization variables is assessed over time. This is unlike the cross-sectional design that lacks time dynamics in variables (Sekaran and Bougie 2016).

Therefore, we sampled 198 listed UK firms using the purposive sampling technique for the sample period 2016–2020 with total 967 firm-year observations, with (186 firms, 190 firms, 196 firms, 198 firms, 197 firms) for the years 2016, 2017, 2018, 2019, 2020, respectively. The appropriateness of the purposive sampling technique is in the ability of the researchers to use some inclusion criteria to select respondents or firms required to have data that would be tested to analyse the testable hypotheses (Sekaran and Bougie 2016). Following this submission, we observed two inclusion rules. First, we exclude all financial firms due to their specialized accounting principles and regulations adopted in the preparation and presentation of annual reports. Second, firms without data on the dependent variable (ESG performance) were not included in the study.

We source data on CG mechanisms from the BoardEx database for the computation of all our CG variables. ESG data were sourced from the Refinitiv Eikon database (S-Network ESG Best Practices Ratings) for the sampled UK firms. The ESG score is calculated in the range of 0 to 100 by Refinitiv Eikon Database, with 0 denoting the minimum score while 100 denotes the maximum score. Meanwhile, the environmental pillar score relates to issues surrounding the disclosure of greenhouse gas (GHG) emissions and environmental pollution. It has a total of 68 processed data points. The social pillar score and governance pillar score have four and three categories each with 62 and 56 processed data points. According to the Refinitiv Eikon database, the three main categories for the environmental pillar score

are emissions (12%), innovation (11%), and resource use (11%). The social pillar score has respective categories and percentages as the community (8%), human rights (4.5%), product responsibility (7%), and workforce (16%) while the governance pillar score with three main categories has CSR strategy (4.5%), management (19%), and shareholders (7%).

Empirical model

We model the mathematical relationships between the variables in our formulated hypotheses. This study has three models: first, the relationship between EM and ESG performance. Second, the relationship between CG mechanisms and ESG performance, and third, the interaction of CG mechanisms and EM on ESG performance. In each of the models, we include control variables. Equation 1 provides the direct relationship between EM and ESG including CG mechanisms as additional control variables. Equation 2 provides the moderating role of CG on the relationship between EM and ESG. The study also tests the effect of EM on the individual pillar score (environmental, social, and governance) in addition to using ESG as a dependent variable.

$$\begin{aligned} ESG_{i,t} &= \beta_0 + \beta_1 DACC_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 IndepBM_{i,t} \\ &+ \beta_4 BGenderD_{i,t} + \beta_5 AuditCommIndep_{i,t} + \beta_{10} ROA_{i,t} \\ &+ \beta_{11} FSize_{i,t} + \beta_{12} Leverage_{i,t} + \beta_{13} LOSS_{i,t} \\ &+ \beta_{14} Year\_dummies_{i,t} + \beta_{15} Industry\_dummies_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{1}$$

$$\begin{aligned} ESG_{i,t} &= \beta_0 + \beta_1 DACC_{i,t} + \beta_2 BoardSize_{i,t} + \beta_3 IndepBM_{i,t} \\ &+ \beta_4 BGenderD_{i,t} + \beta_5 AuditCommIndep_{i,t} \\ &+ \beta_6 DACC * BoardSize_{i,t} + \beta_7 DACC * IndepBM_{i,t} \\ &+ \beta_8 DACC * BGenderD_{i,t} + \beta_9 DACC * AuditCommIndep_{i,t} \\ &+ \beta_{10} ROA_{i,t} + \beta_{11} FSize_{i,t} + \beta_{12} Leverage_{i,t} + \beta_{13} LOSS_{i,t} \\ &+ \beta_{14} Year\_dummies_{i,t} + \beta_{15} Industry\_dummies_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{2}$$

Variable measurements

EM

In line with previous studies, we use the "performance-matching model" of Kothari et al. (2005) to measure accrual EM. Based on the basic model of Jones (1991), Kothari et al. (2005) introduce a proxy for firm operating performance to alleviate the misspecification issue when applied to samples experiencing extreme financial performance. Normal accruals are, therefore, estimated using the following model:

$$\begin{aligned} \frac{TA_{it}}{A_{it-1}} &= \alpha_i \left(\frac{1}{A_{it-1}} \right) + \beta_{1i} \left(\frac{\Delta Sales_{it}}{A_{it-1}} \right) \\ &+ \beta_{2i} \left(\frac{PPE_{it}}{A_{it-1}} \right) + \left(\frac{ROA_{it}}{A_{it-1}} \right) + \varepsilon_{it} \end{aligned}$$

where TA is the total accruals measured as the difference between earnings before extraordinary items and discontinued operations and the operating cash flows. A represents the total assets in year t; Δsales is the change in sales; PPE represents the gross value of property, plant, and equipment in year t and ROA corresponds to the return on assets in year

Table 1 Variable's description and measurement

Variables	Proxies	Database (source)
Accruals EM	Performance-matching model of Kothari et al. (2005)	Thomson Reuters Eikon
Audit Committee Independence	The percentage of independent directors to the size of the audit committee	BoardEx database
Board size	The number of board directors, including a chairperson and independent directors	BoardEx database
Board independence	Percentage of strictly independent board members to total members in the board	BoardEx database
Board gender diversity	The ratio of female directors to the total number of directors	BoardEx database
ESG	ESG score	Thomson Reuters/S-Network ESG Best Practices Ratings
	Environmental pillar	
	Social pillar	
ESG	governance pillar	
Firm size	Natural logarithm of total assets	Thomson Reuters Eikon
Leverage	The ratio of total debt to total assets	Thomson Reuters Eikon
Profitability	The ratio of EBIT to total assets	Thomson Reuters Eikon
Loss	A dummy variable that reflects the existence of a loss during year t. A dummy variable of '1' if the net income is negative, and '0' if otherwise	Thomson Reuters Eikon

t. All variables are scaled by lagged total assets to alleviate heteroscedasticity concerns. In addition, all the continuous variables are winsorized at 1% and 99% to take account of extreme values. The residuals from the model above serve as our proxy for EM, noted hereafter DACC (Table 1).

Control variables

We included some control factors that have been used in CSR literature as consistent determinants of ESG performance. Hence, we included profitability (Helfaya and Moussa 2017), firm size (D'Amico et al. 2016; Helfaya and Moussa 2017), leverage (D'Amico et al. 2016; Helfaya and Moussa 2017), and loss (Xu et al. 2013) to avoid omitted variable bias (OVB) problem, model misspecification, and spurious regression estimates.

Results

We provide the results for several estimations and tests performed in this study including the descriptive statistics and correlation matrix (See Tables 2 and 3), main regression and moderation test results (See Tables 4, 5), and robustness tests' results (See Tables 6, 7, 8).

Results for descriptive statistics

Table 2 presents the results for the descriptive statistics for ESG scores, EM, CG mechanisms, and control variables as provided in panels A, B, C, and D, respectively. The ESG scores have a total score of 100%. The mean values in the study's sample are 53.07% for the overall ESG score, 45.00% for the environmental pillar score, 54.63% for the social pillar score, and 57.88% for the governance pillar score. Thus, it indicates that the environmental pillar score receives the lowest score among the ESG pillars, indicating that our sample UK firms have done less than average in managing environmental issues, and sustaining corporate environmental policy agendas. In addition, the sampled UK firms have a mean EM of −0.006 (which is close to zero) with minimum and maximum values of −1.325 and 2.757, respectively. This indicates that while on average, UK firms have less tendency to use income-increasing discretionary accruals to boost reported earnings, evidence also shows that some UK firms also engage more in EM practices.

Board size has a mean value of 8.59, which indicates that, on average, there are nine directors on the board of UK firms. Meanwhile, the average of independent board members is 58.48%, indicating that more than half (i.e., 50%) of board members in UK firms are independent directors. Approximately four (4) members constitute the audit committee size, with more than 89% being independent members of the audit committee. On average, about 25.1% of UK board members are female directors, with a maximum of 60% across all sampled UK firms. Thus, at least one in every four board members is a female director in the sampled UK firms. Total debt to total assets represented by leverage has an average of 5.23%. About 67.5% of the sampled UK firms experience loss in one of the year observations for the sample period. Firm size has a mean of 21.41 while on average, sampled UK firms have a profitability (measured using return on assets) value of 6.22%.

Table 2 Descriptive statistics

Variable	Obs	Mean	Std. Dev	Min	Max
Panel A: ESG scores					
ESG Score	990	53.072	17.748	1.075	94.229
Environmental pillar score	990	45.008	23.439	0.000	96.050
Social pillar score	990	54.633	20.480	1.773	96.627
Governance pillar score	990	57.888	21.130	0.213	97.826
Panel B: EM					
Earning management (DACC)	990	−0.006	1.257	−1.325	2.757
Panel C: corporate governance					
Board size	989	8.599	2.020	3	16
Independent board members	989	58.486	14.458	7.143	100
Board gender diversity	989	25.192	11.632	0	60
Audit committee independence	990	89.870	16.237	14.286	100
Panel D: control variables					
Profitability (ROA)	967	6.225	8.606	−36.972	45.690
Firm size	990	21.418	1.659	14.494	26.446
Leverage	990	5.239	2.483	0	10.201
LOSS	990	0.675	0.469	0	1

Table 3 Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ESG score	1.000												
(2) Environmental pillar score	0.843***	1.000											
(3) Social pillar score	0.884***	0.684***	1.000										
(4) Governance pillar score	0.688***	0.378***	0.405***	1.000									
(5) Earning management (DACC)	−0.070**	−0.055**	−0.065**	−0.043*	1.000								
(6) Board size	0.335***	0.348***	0.292***	0.174**	0.009	1.000							
(7) Independent board members	0.343***	0.201***	0.198**	0.471***	−0.023	0.078**	1.000						
(8) Board gender diversity	0.344***	0.239***	0.301***	0.287***	−0.025	0.067**	0.320***	1.000					
(9) Audit committee independence	0.272***	0.158***	0.122**	0.417***	−0.036	0.124**	0.496***	0.082**	1.000				
(10) Profitability (ROA)	−0.002	0.008	−0.019	−0.003	0.031	−0.023	0.012	0.008	0.011	1.000			
(11) Firm size	0.044*	−0.013	0.015	0.108**	−0.078*	−0.005	0.038	0.064**	0.065**	0.012	1.000		
(12) Leverage	0.373**	0.355***	0.340***	0.222***	0.008	0.366	0.146**	0.119	0.056**	−0.037	−0.144*	1.000	
(13) LOSS	0.035	0.061*	0.064**	−0.050**	0.233**	0.064	−0.047	0.038	−0.054*	0.013	−0.019	0.078**	1.000

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

Correlation results

Table 3 provides the results for the Pearson correlation matrix for ESG indicators, accruals EM, CG mechanisms, and control indicators. As expected, the environmental pillar and social pillar have a high positive association with the ESG score. The governance pillar score also shows a positive association with ESG score. However, this does not affect our multicollinearity decision since ESG score, and each ESG pillars form individual dependent variable in Tables 4, 5, 6. Furthermore, it is not surprising that EM has a negative association with ESG and ESG pillars. It is also not surprising that all the CG mechanisms have positive associations with ESG score and individual ESG pillars since it is expected that strong CG should enhance and improve sustainability practices in firms to achieve stakeholders' objectives. Concerning the control variables (profitability, firm size, leverage, and loss), profitability has a negative association with ESG score, governance, and social pillar scores. Firm size has a negative association with environmental pillar score, and LOSS has a negative association with governance pillar score. However, leverage has a positive association with ESG score and its pillar, an indication that firms incur a lower cost of debt finance following their ESG practices and are more likely to obtain more and less costly debt. The correlation matrix results also show that there is a positive (medium) correlation between independent board members and audit committee independence with a coefficient of 0.496, suggesting that approximately, 50% of independent board members are members of audit committee independence. Audit committee independence also shows a higher correlation between governance pillar score compared to environmental and social pillar scores.

Regression results

Table 4 presents the results for the multivariate relationship between EM and ESG performance. We include CG mechanisms as part of our control variables. Using the Hausman test for the appropriate model between the fixed effects model and the random effects model, the random effects model is appropriate. The RE model is appropriate because of its advantages to accommodate many dummies and time-invariant variables. The results show that EM is negatively related to ESG score and significant at the 5% level, indicating that firms pay heavily for altering financial reports for contractual purposes by recording lower ESG performance. It also suggests that firms that engage more in earnings manipulations experience lower ESG scores, which supports the assumption of agency theory that agency conflicts following managers' opportunism behaviour affect shareholders' objectives. Thus, hypothesis one (H1) is confirmed. The negative relationship between EM and ESG is

Table 4 Relationship between EM and ESG

Variables	(1) ESG score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
DACC	−0.829**	−1.082**	−1.049**	−0.173
	(0.383)	(0.544)	(0.481)	(0.456)
Board size	1.651***	2.684***	1.697***	0.550*
	(0.251)	(0.357)	(0.315)	(0.299)
Independent board members	0.173***	0.0969*	0.0706*	0.386***
	(0.0394)	(0.0560)	(0.0494)	(0.0469)
Board gender diversity	0.340***	0.310***	0.413***	0.222***
	(0.0448)	(0.0636)	(0.0562)	(0.0534)
Audit committee independence	0.150***	0.103**	0.0510	0.316***
	(0.0337)	(0.0478)	(0.0422)	(0.0401)
Profitability (ROA)	0.0161	0.0517	−0.0184	−0.00341
	(0.0543)	(0.0770)	(0.0680)	(0.0646)
Firm size	1.168***	0.743*	1.047***	1.726***
	(0.306)	(0.435)	(0.384)	(0.365)
Leverage	2.033***	2.386***	2.229***	1.531***
	(0.221)	(0.314)	(0.277)	(0.263)
LOSS	1.114	2.394	1.956	−1.250
	(1.036)	(1.470)	(1.298)	(1.232)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−22.09***	−20.49**	−5.980	−43.32***
	(7.018)	(9.961)	(8.797)	(8.352)
Observations	967	967	967	967
R-squared	0.346	0.243	0.234	0.343

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

also confirmed under the ESG pillars. We find that EM has significant negative coefficients for environmental pillar and social pillar scores. This finding supports previous studies that managers' indulgence in EM activities does not promote socially responsible practices (Ehsan et al. 2021; Martinez-Ferrero et al. 2015), and such manipulative indulgence lowers stakeholders' trust and satisfaction (Gavana et al. 2017; Velte 2019).

Concerning the control variables, the CG mechanisms are all positively related to ESG score, indicating that strong CG can enhance corporate sustainability performance by increasing ESG scores. It also confirms that the CG variables are good moderators for the relationship between EM and ESG. Board size is positive and significantly related to ESG performance at the 1% level, suggesting that firms with large board size have higher ESG scores. This finding supports the assumption of the resource dependence theory that the firm benefits from the resource provision functions of the board of directors in designing and implementing sustainability-related activities to achieve stakeholders' goals. This finding is in line with that reported by Arayssi et al. (2020) and Birindelli et al. (2018) that board size increases ESG performance.

Board gender diversity has a positive and significant relationship with ESG performance and across ESG pillars at the 1% level, in support of prior findings on the positive impacts of females on board on sustainability practices (Ben-Amar et al. 2017; Buallay et al. 2020; Fernandez-Feijoo et al. 2014; Shakil et al. 2020; Van Hoang et al. 2021; Suttipun 2021). In line with resource dependency theory (Hillman et al. 2002), it implies that more females on board given their gender characteristics and skills through improving resources available in the firms would improve ESG performance. The results are also consistent with the findings of Velte (2016) and Romano et al. (2020) which were conducted in European countries. Our findings contradict the results established by Cucari et al. (2018) that females on boards reduce ESG disclosure, arguing that regulatory pressure affecting women's presence on the board may inhibit their gender equality goal toward sustainable performance.

Independent board members have a significant positive coefficient with ESG score and individual ESG pillars. This suggests that the monitoring and oversight function

Table 5 The moderating role of CG on the relationship between ESG and EM

Variables	(1) ESG score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
DACC	1.832**	1.531**	3.513**	1.061
	(1.681)	(3.822)	(3.211)	(3.361)
Board size	2.126***	3.211***	2.264***	0.863***
	(0.242)	(0.344)	(0.302)	(0.286)
DACC * board size	−0.0250	−0.199	0.0161	0.0347
	(0.193)	(0.275)	(0.241)	(0.228)
Independent board members	0.201***	0.119**	0.104**	0.413***
	(0.0397)	(0.0566)	(0.0496)	(0.0471)
DACC * independent board members	−0.116***	−0.0729*	−0.145***	−0.121***
	(0.0307)	(0.0438)	(0.0384)	(0.0364)
Board gender diversity	0.372***	0.351***	0.428***	0.280***
	(0.0430)	(0.0612)	(0.0537)	(0.0509)
DACC * board gender diversity	0.142**	0.141**	0.180**	0.00177
	(0.0347)	(0.0494)	(0.0434)	(0.0411)
Audit committee independence	0.134***	0.0838*	0.0298	0.309***
	(0.0340)	(0.0484)	(0.0425)	(0.0403)
DACC * audit committee independence	0.0386	0.0355	0.0270	0.0666**
	(0.0268)	(0.0382)	(0.0335)	(0.0318)
Profitability (ROA)	0.00886	0.0458	−0.0261	−0.0130
	(0.0546)	(0.0777)	(0.0682)	(0.0647)
Firm size	0.773***	0.271	0.612*	1.423***
	(0.297)	(0.423)	(0.371)	(0.352)
Leverage	0.480***	0.598***	0.499***	0.371***
	(0.0655)	(0.0933)	(0.0819)	(0.0777)
Loss	1.415	2.881*	2.247*	−1.141
	(1.071)	(1.416)	(1.332)	(1.245)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−16.15**	−13.51	4.531	−39.84***
	(6.889)	(9.811)	(8.609)	(8.165)
Observations	967	967	967	967
R-squared	0.335	0.225	0.225	0.337

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

of the board of directors enhances sustainability reporting. Our results are consistent with the findings of Arayssi et al. (2020), suggesting that independent board members facilitate the social and environmental activities of the firm. Other studies have documented a positive relationship between independent board members and ESG score and related sustainability performance measures (Husted and de Sousa-Filho 2019; Jizi 2017), which agrees with the agency theory that board monitoring role enhances board effectiveness including activities related to ESG performance (Chouaibi et al. 2021; Fama and Jensen 1983; Hillman and Dalziel 2003). These findings are inconsistent with Naciti (2019) who found a negative relationship between board independence and ESG performance. In addition, our results show that independent board members more significantly enhance the governance pillar score than environmental and social pillars, contributing to the overall ESG score. Thus, firms improve their ESG performance with more independent directors on the board. The results for our descriptive statistics also revealed that the governance pillar score has the highest mean value among the ESG pillars, confirming that UK firms have better monitoring roles.

Meanwhile, audit committee independence has a positive and significant coefficient for ESG score, environmental pillar score, and governance pillar score at 1%, 5%, and 1%, respectively, supporting past studies that document similar findings (Al-Shaer and Zaman 2018; Arif et al. 2021;

Table 6 Endogeneity—2SLS approach using industry means as an instrumental variable

Variables	(1) ESG score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
Industry average DACC	−0.721*	−0.863*	−0.868*	−0.166
	(0.378)	(0.535)	(0.473)	(0.445)
Board size	2.117***	3.218***	2.235***	0.680***
	(0.243)	(0.343)	(0.304)	(0.286)
Independent board members	0.190***	0.116**	0.0888*	0.399***
	(0.0398)	(0.0563)	(0.0499)	(0.0469)
Board gender diversity	0.360***	0.332***	0.439***	0.235***
	(0.0454)	(0.0641)	(0.0568)	(0.0534)
Audit committee independence	0.140***	0.0905*	0.0371*	0.311***
	(0.0341)	(0.0482)	(0.0427)	(0.0401)
Profitability (ROA)	0.00419	0.0368	0.0308	−0.0119
	(0.0550)	(0.0777)	(0.0689)	(0.0647)
Firm size	0.699**	0.234*	0.512	1.355***
	(0.299)	(0.422)	(0.374)	(0.351)
Leverage	0.498***	0.599***	0.533***	0.380***
	(0.0655)	(0.0926)	(0.0820)	(0.0771)
LOSS	0.396	4.608	3.860	−1.649
	(1.536)	(5.427)	(4.806)	(2.518)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−14.38**	−11.60**	−3.357*	3.890**
	(6.989)	(9.878)	(8.748)	(1.802)
Observations	967	967	967	967
R-squared	0.327	0.218	0.192	0.311

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

Baullay and Al-Ajmi 2020; Raimo et al. 2021). Our findings indicate that the expertise and the variety of resources that are provided by independent directors in the audit committee enhance the ESG performance of the sampled UK firms, which further supports the resource dependence theory as posited by Hillman and Dalziel (2003). Our results on audit committee independence, however, contradict that established by Wang and Sun (2021) that found an insignificant relationship between audit committee independence and ESG score, which they attribute to country-special cultural systems and political ties of independent directors.

Firm size and leverage are significant and positively related to ESG. This suggests that firms with large-size are more likely to implement ESG activities than their small-sized counterparts. Similarly, since ESG investments required huge capital (Shakil 2021), UK firms tend to have access to more debt finance to fund ESG-related activities since ESG practices induce and trigger a lower cost of capital (Gjergji et al. 2021). Our results support previous studies that found a positive size-ESG link (Ntim and Soobaroyen 2013), and debt-ESG link (Gjergji et al. 2021).

Results of the moderation test

We perform further analysis on the impact of accruals EM on ESG score and individual ESG pillars (environmental, social, and governance) by moderating CG mechanisms. The goal is to establish whether CG mechanisms would moderate the negative impacts of EM on environmental, social, and governance (ESG) performance. The results are provided in Table 5.

Table 5 provides the moderation results. In Table 5, CG mechanisms are conditioned on the relationship between EM and ESG to moderate DACC on both ESG score and ESG pillar scores. When board size moderates (i.e., DACC*Board Size), the coefficient is negative and insignificant ($b=-0.0250$, $p>0.10$). Thus, hypothesis two (H2) is not supported.

Meanwhile, the positive coefficient of the board gender diversity interaction term indicates that the effect of board gender diversity on reducing EM towards enhancing ESG performance is significant, suggesting that women on board are more likely to reduce the negative effects of EM on ESG practices ($b=0.142$, $p<0.05$). Thus, hypothesis three (H3) is

Table 7 Endogeneity—2SLS approach using industry means as an instrumental variable (Moderating analysis)

Variables	(1) ESG score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
Industry average DACC	0.426	0.134	0.829	0.199
	(0.417)	(0.592)	(0.520)	(0.493)
Board size	2.037***	3.193***	2.127***	0.759***
	(0.244)	(0.346)	(0.303)	(0.288)
DACC * board size	0.0103	−0.0102	0.0312	0.0107
	(0.0221)	(0.0313)	(0.0275)	(0.0261)
Independent board members	0.377***	0.355***	0.433***	0.284***
	(0.0433)	(0.0615)	(0.0540)	(0.0512)
DACC * independent board members	0.00942	−0.00120	0.0180**	0.00840
	(0.00589)	(0.00837)	(0.00734)	(0.00696)
Board gender diversity	0.198***	0.110*	0.106**	0.413***
	(0.0401)	(0.0569)	(0.0499)	(0.0473)
DACC * board gender diversity	0.00835	0.000576	0.0132**	0.0135**
	(0.00514)	(0.00729)	(0.00640)	(0.00607)
Audit committee independence	0.0143	0.0131	0.0151	0.0151
	(0.0241)	(0.0231)	(0.0211)	(0.0212)
DACC * audit committee independence	0.142***	0.0935*	0.0368	0.316***
	(0.0341)	(0.0483)	(0.0424)	(0.0402)
Profitability (ROA)	−0.00236	−0.000391	−0.00792	0.00422
	(0.00605)	(0.00859)	(0.00754)	(0.00715)
Firm size	−0.00107	0.0375	−0.0388	−0.0200
	(0.0549)	(0.0780)	(0.0685)	(0.0649)
Leverage	0.770***	0.315	0.588	1.405***
	(0.298)	(0.423)	(0.372)	(0.352)
Loss	0.501***	0.614***	0.527***	0.380***
	(0.0656)	(0.0932)	(0.0818)	(0.0776)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−15.90**	−14.70	2.449	−39.18***
	(6.921)	(9.825)	(8.623)	(8.178)
Observations	967	967	967	967
R-squared	0.327	0.220	0.220	0.333

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

confirmed. The results are consistent for environmental and social pillar scores with the interaction term (DACC*Board Gender Diversity) having significant positive association with environmental pillar score (b = 0.141, $p<0.05$), and social pillar score (b = 0.180, $p<0.05$).

In contrast, although the coefficients of the interaction terms of independent board members (DACC*Independent Board Members) are negative across the ESG score and ESG pillars, the magnitudes of their coefficients, when compared to the coefficients of DACC in Table 4, are lower, suggesting that while independent board members may reduce EM practices, it may not be strong enough to erode EM practices. Thus, hypothesis four (H4) is not supported. This is unlike the board gender diversity where the interaction terms have positive coefficients, indicating that women on the board as a CG mechanism are stronger than more independent male directors on the board. This may also imply that male directors play dual opposing directorship roles. While they try to reduce earnings manipulation, at the same time do engage in entrenchment opportunities, thus, lowering their board monitoring effectiveness.

Similarly, we found that the monitoring effect of audit committee independence is not significant for ESG score pillar scores except for the governance pillar score. That is, the interaction variable (i.e., DACC*Audit Committee Independence) does not indicate significant results for the ESG score in model 1 (b = 0.0386, p > 0.10) but significant for the governance pillar score. Since our hypotheses are placed on

Table 8 Additional analysis using absolute discretionary accruals (ADA)

Variables	(1) ESG Score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
ADA	−0.0632*	−0.0123*	−0.048*	−0.0060
	(0.076)	(0.084)	(0.775)	(0.0083)
Board size	2.109***	3.206***	0.881***	2.228***
	(0.243)	(0.344)	(0.286)	(0.304)
Independent board members	0.190***	0.115**	0.399***	0.0886*
	(0.0399)	(0.0564)	(0.0469)	(0.0499)
Board gender diversity	0.361***	0.334***	0.235***	0.440***
	(0.0455)	(0.0643)	(0.0534)	(0.0569)
Audit committee independence	0.141***	0.0927*	0.311***	0.0390
	(0.0341)	(0.0482)	(0.0401)	(0.0427)
Profitability (ROA)	0.000171	0.0325	−0.0141	−0.0361
	(0.0551)	(0.0778)	(0.0647)	(0.0689)
Firm size	0.741**	0.287	1.366***	0.559
	(0.298)	(0.422)	(0.351)	(0.373)
Leverage	0.501***	0.604***	0.379***	0.535***
	(0.0656)	(0.0927)	(0.0771)	(0.0821)
LOSS	2.151	4.570	2.660	−3.897
	(3.847)	(5.435)	(2.518)	(4.814)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−15.08**	−12.77**	−38.26***	2.799
	(7.027)	(9.928)	(8.254)	(8.794)
Observations	967	967	967	967
R-squared	0.275	0.186	0.251	0.211

the aggregate ESG score, we confirm that hypothesis five (H5) is not supported.

The coefficients for all the control variables are statistically significant except for profitability which is not for ESG score and across ESG pillars. Overall, our results depict that when CG is conditioned on the relationship between ESG and EM, the coefficients of DACC become positive, suggesting that conditioning CG mechanisms on the relationship between EM and ESG could further conceal managerial opportunistic behaviour by reducing the threat to stakeholders' activism while enhancing ESG performance.

Robustness tests

To confirm the robustness of our findings on whether EM negatively impacts ESG and that ESG is positively related to the interaction of EM and corporate governance, we performed a few robustness tests discussed in what follows. Overall, the results of our robustness tests are consistent with our findings.

Endogeneity concern

Considerable numbers of studies have investigated the effect of ESG performance on EM with conflicting findings (Buertey 2020; Cho and Chun 2015; Velte 2020), which could be attributed to some methodological weaknesses such as endogeneities. We submit that there can be possible endogeneities for studies also establishing the effect of EM on ESG performance (Choi et al. 2013; Velte 2019). We adequately control for endogeneity using the industry mean as an instrumental variable by applying the two-stage least square (2SLS) estimator. We employed the industry average DACC as an instrument in employing the 2SLS. There is a long-standing tradition in corporate finance in the use of industry averages as instruments (Bacha and Ajina 2019; Chan et al. 2012). We assume that the exogenous part of EM varies across industries because the relative mix of accrual components can differ across industries, with the endogenous part varying within industries (Barth et al. 2005; Dechow et al. 1998). For example, Barth et al. (2005) noted that firms in the manufacturing sector have more persistent receivables because they encounter similar economic conditions and

accounting practices. The condition of exogenous and endogenous components of the original variable for its industry average to be classified as an instrument follows the suggestion of Larcker and Rusticus (2010) in the use of industry averages as instruments in dealing with endogeneity problems. The results of the 2SLS are presented in Tables 6 and 7 our findings are consistent with the baseline results. The result in Table 6 shows that EM impacts ESG score and ESG pillars negatively, consistent with our main findings. In addition, the result in Table 7 reveals that board gender diversity and audit committee independence are significant moderators, an improvement on the baseline results for audit committee independence. We attribute this change to the inclusion of the industry average DACC which is related to industry type. Auditors who specialize in the client's industry are expected to provide a higher level of audit quality than non-specialists (Abbott and Parker 2000). Thus, firms with high audit committee independence are more likely to engage directors who are industry-specialists. As such, industry-specialists are more likely to mitigate industry-specific earnings manipulations.

Absolute discretionary accruals

Past studies on EM have measured it using absolute and signed discretionary accruals (Cohen and Malkogianni 2021; Jackson 2017). Firms engaging in income smoothing can

Table 9 The moderating role of CG on the relationship between ESG and EM (using *absolute discretionary accruals*)

Variables	(1) ESG score	(2) Environmental pillar score	(3) Social pillar score	(4) Governance pillar score
ADA (unsigned)	1.790	0.891	3.025	0.524
	(2.754)	(3.923)	(3.442)	(3.265)
Board size	2.126***	3.211***	2.264***	0.863***
	(0.240)	(0.342)	(0.300)	(0.284)
ADA * board size	−0.0250	−0.199	0.0161	0.0347
	(0.191)	(0.273)	(0.239)	(0.227)
Independent board members	0.372***	0.351***	0.428***	0.280***
	(0.0427)	(0.0608)	(0.0533)	(0.0506)
ADA * independent board members	0.0420	0.0416	0.0806*	0.00177
	(0.0345)	(0.0491)	(0.0431)	(0.0408)
Board gender diversity	0.201***	0.119**	0.104**	0.413***
	(0.0394)	(0.0562)	(0.0493)	(0.0468)
ADA * board gender diversity	−0.116***	−0.0729*	−0.145***	−0.121***
	(0.0305)	(0.0435)	(0.0382)	(0.0362)
Audit committee independence	0.0142	0.0162	0.0113	0.0131
	(0.0216)	(0.0381)	(0.0351)	(0.0341)
ADA * audit committee independence	0.134***	0.0838*	0.0298	0.309***
	(0.0338)	(0.0481)	(0.0422)	(0.0400)
Profitability (ROA)	0.0386	0.0355	0.0270	0.0666**
	(0.0266)	(0.0379)	(0.0333)	(0.0316)
Firm size	0.00886	0.0458	−0.0261	−0.0130
	(0.0542)	(0.0772)	(0.0678)	(0.0643)
Leverage	0.773***	0.271	0.612*	1.423***
	(0.295)	(0.420)	(0.369)	(0.350)
Loss	2.151	4.570	2.660	−3.897
	(3.847)	(5.435)	(2.518)	(4.814)
Year dummies	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y
Constant	−16.15**	−13.51	1.531	−39.84***
	(6.889)	(9.745)	(8.551)	(8.110)
Observations	967	967	967	967
R-squared	0.261	0.174	0.212	0.213

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

be better identified using the absolute value of the discretionary accruals, as such the absolute (unsigned) discretionary accruals capture the management's opportunistic use of discretionary accruals. The absolute value of EM can detect whether firms engage in income-increasing or income-decreasing accruals to meet earnings targets (Klein 2002; Wang 2006). Thus, we re-estimate our empirical model using absolute (unsigned) discretionary accruals (ADA) as shown in Tables 8 and 9. Our results in Table 8 are consistent with the baseline relationship between signed EM and ESG performance for ESG score, and across ESG pillar scores except for governance pillar score, which is negatively insignificant. The results of the moderating role of board gender diversity and audit committee independence were also consistent with those documented in Table 7 except that board gender diversity is negative. We attribute this result to the fact that the absolute DACC for the sampled firms used in this study might be income-decreasing.

Accounting for autocorrelation

We further test for any possible problem of autocorrelation. We address this issue using yearly sample analysis. Our results are presented in Table 10 depict that EM reduces ESG score, consistent with our baseline findings. Thus, our findings do not suffer from any autocorrelation problem.

Controlling for heterogeneity

To control for heterogeneity issues stemming from differences in ESG performance, we re-estimate our analysis using quantile regression on the 25th percentile, 50th percentile, and 75 percentiles of ESG. Our findings are provided in Table 11. Our results for EM and ESG are consistent across percentiles. We find that the negative impacts of EM increase as the percentile increases.

Subsample analysis

In our subsample analysis, we find that the association between EM and ESG is highly negative and statistically significant for the subsample of firms with loss, supporting the argument that EM practices decline accounting performance and environmental sustainability. Importantly, the results are consistent despite controlling for corporate governance-related variables such as board size, board independent members, board gender diversity, and audit committee independence since CG mechanisms can impact ESG performance (Arayssi, et al. 2020; García-Sánchez et al. 2019;

Table 10 Relationship between EM and ESG (yearly sample analysis)

Variables	(1) 2016	(2) 2017	(3) 2018	(4) 2019	(5) 2020
DACC	−0.0710*	−0.0697*	−0.0863*	−0.0932*	−0.0649*
	(0.0313)	(0.0261)	(0.0227)	(0.0179)	(0.0153)
Board size	0.0278	0.0569***	0.0268*	0.0297**	0.0523***
	(0.0186)	(0.0159)	(0.0143)	(0.0119)	(0.0106)
Independent board members	0.00207	0.00565**	0.00891**	−0.00327**	0.00129*
	(0.00313)	(0.00263)	(0.00234)	(0.00192)	(0.00178)
Board gender diversity	0.00822**	0.00688**	0.00977***	0.00984***	0.00522***
	(0.00348)	(0.00294)	(0.00265)	(0.00232)	(0.00188)
Audit committee independence	0.00572**	0.00265*	0.00508**	0.00401**	0.00310*
	(0.00258)	(0.00221)	(0.00199)	(0.00162)	(0.00162)
Profitability (ROA)	0.00310	0.00113	0.00298	−0.00359	−0.00115
	(0.00451)	(0.00349)	(0.00306)	(0.00270)	(0.00253)
firm size	0.0118	0.0288	0.0117	0.0113	0.00580
	(0.0223)	(0.0187)	(0.0188)	(0.0144)	(0.0129)
Leverage	0.0107**	−0.000687	0.00965**	0.00997**	0.00569***
	(0.00505)	(0.00559)	(0.00373)	(0.00416)	(0.00207)
LOSS	0.142	0.0828	0.327	0.0682	0.0851
	(0.246)	(0.218)	(0.294)	(0.192)	(0.195)
Industry dummies	Y	Y	Y	Y	Y
Constant	2.499***	2.029***	2.598***	2.832***	2.903***
	(0.501)	(0.426)	(0.426)	(0.340)	(0.310)
Observations	175	192	204	212	187

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

Table 11 Quantile regression to test the heterogeneity of the effect

Variables	(1) ESG score 25th Percentile	(2) ESG score 50th percentile	(3) ESG score 75th percentile
DACC	−0.774*	−1.087**	−1.242**
	(0.444)	(0.478)	(0.568)
Board size	1.635***	1.740***	1.428***
	(0.291)	(0.313)	(0.373)
Independent board members	0.153***	0.182***	0.181***
	(0.0457)	(0.0492)	(0.0584)
Board gender diversity	0.349***	0.359***	0.395***
	(0.0520)	(0.0559)	(0.0665)
Audit committee independence	0.150***	0.157***	0.178***
	(0.0391)	(0.0420)	(0.0500)
Profitability (ROA)	−0.0278	−0.0687	0.0130
	(0.0629)	(0.0676)	(0.0804)
Firm size	1.257***	1.355***	2.002***
	(0.355)	(0.382)	(0.454)
Leverage	1.902***	1.789***	1.610***
	(0.256)	(0.276)	(0.328)
LOSS	2.413**	1.874	2.721*
	(1.200)	(1.291)	(1.535)
Year dummies	Y	Y	Y
Industry dummies	Y	Y	Y
Constant	−15.71*	−16.04*	−24.20**
	(8.134)	(8.749)	(10.40)
Observations	967	967	967

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

Jizi 2017; Lagasio and Cucari 2019; Naciti 2019; Raimo et al. 2021; Shakil 2021; Shakil et al. 2020). Meanwhile, across ESG score percentiles, we find the consistency of the findings of our CG variables as potential moderators, having positive impacts on ESG.

Furthermore, since the results in our first subsample analysis depicted that EM is insignificant although, with a negative impact on ESG, we further test whether heterogeneity in ROA matters. Tables 12, 13 provides the subsample results for firms with a higher ROA and firms with a lower ROA. We consistently find a negative relationship between EM and ESG score. Interestingly, we find that firms with a lower ROA are also likely to suffer from the negative impacts of EM, suggesting the need for better and stronger CG mechanisms. In both subsample analyses performed, the results for our CG mechanisms are statistically significant in enhancing ESG score.

Table 12 Subsample analysis based on financial performance (Firms with Loss Vs. firms with profit, based on Loss value = 0 or 1)

Variables	(1) Firm with loss	(2) Firms with profit
DACC	−2.188***	−0.396
	(0.760)	(0.451)
Board size	2.125***	1.343***
	(0.405)	(0.317)
Independent board members	0.0683	0.238***
	(0.0648)	(0.0493)
Board gender diversity	0.437***	0.304***
	(0.0679)	(0.0547)
Audit committee independence	0.168***	0.137***
	(0.0603)	(0.0409)
Profitability (ROA)	0.133	−0.0443
	(0.0830)	(0.0698)
Firm size	2.180***	0.876**
	(0.517)	(0.382)
Leverage	2.423***	1.963***
	(0.471)	(0.255)
LOSS	–	–
Constant	−46.91***	−13.03
	(12.07)	(8.486)
Observations	315	652
R-squared	0.401	0.339

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

Conclusion remarks

This study examines the effect of EM on ESG performance. We also investigate whether CG mechanisms reduce the effect of EM on ESG performance. The analysis of the longitudinal data of UK firms listed on the London Stock Exchange for the period 2016–2020 confirms that EM reduces ESG performance. This suggests that firms engaging in EM through greenwashing, brownwashing or managerial entrenchment manipulate sustainability investments, thus resulting in value-decreasing effects on ESG performance. Our findings indicate that an increasing level of EM would undermine the transparency and accountability of UK firms and brings about distrust among stakeholder (Escrig-Olmedo 2019).

Moreover, we find that board gender diversity is a crucial factor that impacts the association between EM and ESG performance. This finding is consistent with ESG and across the three pillars of ESG (environmental, social, and governance). This suggests that the negative impact of EM on ESG is less pronounced for firms with high board gender diversity, meaning that shareholders perceive lower EM practices from firms with higher board gender diversity due to female directors' commitment to effective board monitoring

Table 13 Subsample analysis based on financial performance (Firms with ROA < mean Vs. firms with ROA > mean)

Variables	(1) ESG score strong ROA ROA > mean	(2) ESG score weak ROA ROA < mean
DACC	−0.648	−1.106*
	(0.519)	(0.568)
Board size	1.178***	2.013***
	(0.353)	(0.369)
Independent board members	0.178***	0.172***
	(0.0555)	(0.0567)
Board gender diversity	0.334***	0.379***
	(0.0645)	(0.0582)
Audit committee independence	0.227***	0.0585
	(0.0450)	(0.0516)
Profitability (ROA)	0.0959	0.0386
	(0.111)	(0.107)
Firm size	1.470***	1.002**
	(0.434)	(0.437)
Leverage	2.197***	1.952***
	(0.319)	(0.309)
LOSS	1.834	−0.0867
	(1.405)	(1.528)
Constant	−31.60***	−13.59
	(9.720)	(10.28)
Observations	516	451
R-squared	0.373	0.328

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

functions. Firms reduce information asymmetries to enhance their ESG score by increasing women's participation on the board since female directors restrain EM practices, increase debt capital to finance ESG initiatives, access the widest talent pool, demonstrate greater risk aversion and ethical behaviour, and follow conservative financial reporting rules and standards. Moreover, several industry campaigns in the UK have resulted in about 34 per cent of posts being currently held by women on boards at FSTE 350 companies.

Female independent directors can oversee the activities of different board committees by getting involved in sustainability practices to avoid male directors' opportunistic behaviour in diverting earmarked ESG funds for private gains (Buertey et al. 2020; Manita et al. 2018; Shakil 2021; Suttipun 2021). Since lower EM reflects the presence of female directors to reduce the probability of default, improve the quality of the BoD dialogue process, and favour environmental sustainability practices and innovation, higher gender equality on the boards could signal their ability to enhance sustainable investments and lower EM practices (Dixon et al. 2020; Romano et al. 2020).

However, board independent members, the board size, and audit committee independence do not significantly moderate the EM effect on ESG performance. We attribute the insignificant impact of board independent members to moderate the relationship between EM and ESG performance to several reasons. First, the powers of independent directors to monitor managerial activities are reduced in the presence of CEO duality. Firms with the practice of CEO duality are likely to have independent directors more controlled and influenced by CEOs' decisions. Second, board busyness or over-boarding risk attribute of independent directors. Independent directors with high multiple directorships are less likely to be frequent in board meetings, and thus, reduces their availability to exercise board monitoring functions over financial activities of expenditure manipulated by managers due to earnings pressure. Third, less expertise in sustainability initiatives and practices may reduce independent directors' monitoring role in detecting earnings manipulations in sustainability expenditures, thus, having less advice on greenwashing and brownwashing aspects of sustainability practices. This supports the assertion of Peasneell et al. (2000) that while the UK's institutional setting creates adequate incentives for independent board members, there are doubts about whether these directors could distinguish between the consequences of sustainability initiatives developed by managers and financial disclosure of sustainability activities. So, independent board members do not moderate the relationship between EM and ESG performance due to their inability to evaluate the consequences of economic, social, and governance sustainability activities. Thus, further greenwashing and brownwashing practices (a practice of earnings manipulation) in sustainability programmes by managers are devoid of effective monitoring by independent board members, which may result in value-decreasing effects on corporate outcomes.

Implications

Theoretically, the findings of this study contribute to the agency theory and stakeholder theory by suggesting that the monitoring role of female directors and other CG mechanisms have attenuating effects on EM in over- or under-sustainability investments. Strong CG can promote corporate board diversity. In the presence of weak CG practices, not all CG attributes are effective for firms all the time. Firms with better ESG performance benefit more from board gender diversity. That is, increasing the number of women on board is relevant for driving environmental and social initiatives and performance. However, some CG mechanisms such as audit committee independence only impact governance scores. Thus, an increase in the overall ESG performance and individual ESG scores depends on the type of CG mechanisms adopted as to whether these mechanisms

can maintain a maximum objective between attenuating EM practices and enhancing sustainability performance.

We also contribute to studies that emphasize that earnings manipulations and managerial opportunism behaviour distort and decline sustainability performance (García-Sánchez et al. 2020; Velte 2019) by showing that when the level of EM increases, firms suffer from poor ESG performance. Moreover, high EM following managerial entrenchment results in the overestimation of sustainability investments, which have value-decreasing effects. So, firms with high EM practices require strong CG mechanisms to attenuate EM and restrict managers' greenwashing and brownwashing behaviours in sustainability initiatives. These CG inputs would further provide practical implications for stakeholders. In practice, managerial opportunism behaviour does not only affect financial performance but is also expected to reduce the capital and resources required to enhance ESG performance. The lowest score of the environmental pillar attests to this implication that resources required to implement environmental management and low carbon emissions are diverted for managerial personal use. In the absence of conditioning CG on EM-ESG nexus to attenuate the negative effects of EM, our findings indicate that CG contributes positively to ESG performance and across ESG pillar scores with EM still showing negative coefficients. Based on our findings, we find that board gender diversity has a strong moderating impact on sustainability performance while board size and board independence are weak CG mechanisms.

Our study also adds to the heterogeneous implications of ESG performance. Based on our robustness tests, we find a negative association between the three percentile scores of ESG and EM. We confirm that the effects of EM on ESG scores are low for firms with the lowest percentiles and high for others with the highest percentiles, thus, showing how bad EM can erode sustainability performance. Firms participating in EM, believing that some profits are still in the books of accounts may sooner experience share price mispricing or overvaluation. We provide considerable evidence for investors that the presence of profits should not form a large percentage of their socially responsible investment (SRI) decisions following their ethical mindsets. Investors need to gauge the firms' ROA on the industry's mean as a better strategic direction in investing in SRIs and how the firms have performed sustainably. Our findings show that firms with weak ROA (i.e., below firms' ROA average) still suffer from the constraint effect of EM on ESG performance, and otherwise for firms with strong ROAs above the industry's mean.

Limitations and future research

As with every other study, we noted that our study has a few limitations. First, although among the CG mechanisms that we moderated for the association between EM and ESG, we find strong and consistent support for board gender diversity but not for board size, board independent members, and audit committee independence. We believe that there are better CG mechanisms such as institutional ownership, shareholder activism and board meeting frequency that can moderate the link between EM and ESG. Future studies could explore these possible moderators. Secondly, we account for the sign and absolute accrual-based measures of EM without considering the real-based measure of EM. Future research may explore this as CG mechanisms may play a different role in accruals and real earnings manipulations. As we understand in CG literature that the diversity and experience of female directors enhance their board performance, the absence of how the board capital attributes of female directors would not further explain the heterogeneous effects of board gender diversity on EM and ESG score. Thus, future studies may explore the heterogeneous effect of female directors' capital attributes (such as education, expertise, experience, political ties, social interlocking, and age) on EM and ESG performance. Moreover, other relevant CG mechanisms that can be considered by future researchers are board diligence, CEO power, promoter's equity holdings, and institutional ownership. For instance, due to the financial knowledge of institutional shareholders, they promote the proliferation of good sustainability practices by engaging corporate executives in ethical and environmental investments. monitoring corporate disclosures to enhance corporate legitimacy (Ntim and Soobaroyen 2013). Also, adverse sustainability practices are discouraged when institutional ownership is high (Choi et al. 2013).

References

Abbott, L.J., S. Parker, and G.F. Peters. 2004. Audit committee characteristics and restatements. *Auditing: A Journal of Practice & Theory* 23 (1): 69–87. https://doi.org/10.2308/aud.2004.23.1.69.

Abdou, H.A., N.N. Ellelly, A.A. Elamer, K. Hussainey, and H. Yazdifar. 2021. Corporate governance and earnings management nexus: Evidence from the UK and Egypt using neural networks. *International Journal of Finance & Economics* 26 (4): 6281–6311. https://doi.org/10.1002/ijfe.2120.

Abdoush, T., K. Hussainey, and K. Albitar. 2022. Corporate governance and performance in the UK insurance industry pre, during and post the global financial crisis. *International Journal of Accounting & Information Management* 30 (5): 617–640.

Aladwey, L., A. Elgharbawy, and M.A. Ganna. 2021. Attributes of corporate boards and assurance of corporate social responsibility reporting: Evidence from the UK. *Corporate Governance: The International Journal of Business in Society*. https://doi.org/10.1108/CG-02-2021-0066.

Albitar, K., K. Hussainey, N. Kolade, and A.M. Gerged. 2020. ESG disclosure and firm performance before and after IR: The moderating role of governance mechanisms. *International Journal of Accounting & Information Management* 28 (3): 429–444. https://doi.org/10.1108/IJAIM-09-2019-0108.

Albitar, K., T. Abdoush, and K. Hussainey. 2022. Do corporate governance mechanisms and ESG disclosure drive CSR narrative tones? *International Journal of Finance & Economics*. https://doi.org/10.1002/ijfe.2625.

Alkaraan, F., K. Albitar, K. Hussainey, and V.G. Venkatesh. 2022. Corporate transformation toward Industry 4.0 and financial performance: The influence of environmental, social, and governance (ESG). *Technological Forecasting and Social Change* 175: 121423.

Al-Shaer, H., and M. Zaman. 2018. Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment* 27 (7): 973–986. https://doi.org/10.1002/bse.2046.

Appuhami, R., and S. Tashakor. 2017. The impact of audit committee characteristics on CSR disclosure: An analysis of Australian firms. *Australian Accounting Review* 27: 400–420. https://doi.org/10.1111/auar.12170.

Arayssi, M., M. Jizi, and H.H. Tabaja. 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. https://doi.org/10.1108/SAMPJ-05-2018-0136.

Arif, M., A. Sajjad, S. Farooq, M. Abrar, and A.S. Joyo. 2021. The impact of audit committee attributes on the quality and quantity of environmental, social and governance (ESG) disclosures. *Corporate Governance: The International Journal of Business in Society* 21 (3): 497–514. https://doi.org/10.1108/CG-06-2020-0243.

Arun, T.G., Y.E. Almahrog, and Z.A. Aribi. 2015. Female directors and earnings management: Evidence from UK companies. *International Review of Financial Analysis* 39: 137–146. https://doi.org/10.1016/j.irfa.2015.03.002.

Bacha, S., and A. Ajina. 2019. CSR performance and annual report readability: Evidence from France. *Corporate Governance: The International Journal of Business in Society* 20 (2): 201–215. https://doi.org/10.1108/CG-02-2019-0060.

Barth, M.E., W.H. Beaver, J.R. Hand, and W.R. Landsman. 2005. Accruals, accounting-based valuation models, and the prediction of equity values. *Journal of Accounting, Auditing & Finance* 20 (4): 311–345. https://doi.org/10.1177/0148558X0502000401.

Beasley, M. S. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. *Accounting Review*, 443–465. http://www.jstor.org/stable/248566

Beekes, W., P. Pope, and S. Young. 2004. The link between earnings timeliness, earnings conservatism and board composition: Evidence from the UK. *Corporate Governance: An International Review* 12 (1): 47–59. https://doi.org/10.1111/j.1467-8683.2004.00342.x.

Ben-Amar, W., M. Chang, and P. McIlkenny. 2017. Board gender diversity and corporate response to sustainability initiatives: Evidence from the carbon disclosure project. *Journal of Business Ethics* 142 (2): 369–383. https://doi.org/10.1007/s10551-015-2759-1.

Birindelli, G., S. Dell'Atti, A.P. Iannuzzi, and M. Savioli. 2018. Composition and activity of the board of directors: Impact on ESG performance in the banking system. *Sustainability* 10 (12): 4699. https://doi.org/10.3390/su10124699.

Buallay, A., and J. Al-Ajmi. 2020. The role of audit committee attributes in corporate sustainability reporting: Evidence from banks in the Gulf Cooperation Council. *Journal of Applied Accounting Research* 21 (2): 249–264. https://doi.org/10.1108/JAAR-06-2018-0085.

Buallay, A., R. Hamdan, E. Barone, and A. Hamdan. 2022. Increasing female participation on boards: Effects on sustainability reporting. *International Journal of Finance & Economics* 27 (1): 111–124. https://doi.org/10.1002/ijfe.2141.

Buertey, S., E.J. Sun, J.S. Lee, and J. Hwang. 2020. Corporate social responsibility and earnings management: The moderating effect of corporate governance mechanisms. *Corporate Social Responsibility and Environmental Management* 27 (1): 256–271. https://doi.org/10.1002/csr.1803.

Carcello, J.V., and T.L. Neal. 2003. Audit committee characteristics and auditor dismissals following "new" going-concern reports. *The Accounting Review* 78 (1): 95–117. https://doi.org/10.2308/accr.2003.78.1.95.

Chan, L., T.Y. Chen, S. Janakiraman, and S. Radhakrishnan. 2012. Reexamining the relationship between audit and nonaudit fees: Dealing with weak instruments in two-stage least squares estimation. *Journal of Accounting, Auditing & Finance* 27 (3): 299–324. https://doi.org/10.1177/0148558X11409154.

Cho, E., and S. Chun. 2015. Corporate social responsibility, real activities earnings management, and corporate governance: Evidence from Korea. *Asia-Pacific Journal of Accounting & Economics* 23 (4): 400–431. https://doi.org/10.1080/16081625.2015.1047005.

Choi, B.B., D. Lee, and Y. Park. 2013. Corporate social responsibility, corporate governance and earnings quality: Evidence from Korea. *Corporate Governance: An International Review* 21 (5): 447–467. https://doi.org/10.1111/corg.12033.

Choi, H., B. Choi, and J. Byun. 2018. The relationship between corporate social responsibility and earnings management: Accounting for endogeneity. *Investment Management and Financial Innovations* 15 (4): 69–84.

Chouaibi, S., Y. Chouaibi, and G. Zouari. 2021. Board characteristics and integrated reporting quality: Evidence from ESG European companies. *EuroMed Journal of Business*. https://doi.org/10.1108/EMJB-11-2020-0121.

Cohen, S., and I. Malkogianni. 2021. Sustainability measures and earnings management: Evidence from Greek municipalities. *Journal of Public Budgeting, Accounting & Financial Management* 33 (4): 365–386. https://doi.org/10.1108/JPBAFM-10-2020-0171

Cucari, N., S. Esposito de Falco, and B. Orlando. 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. https://doi.org/10.1002/csr.1452.

D'Amico, E., D. Coluccia, S. Fontana, and S. Solimene. 2016. Factors influencing corporate environmental disclosure. *Business Strategy and the Environment* 25 (3): 178–192. https://doi.org/10.1002/bse.1865.

De Vlaminck, N., and G. Sarens. 2015. The relationship between audit committee characteristics and financial statement quality: Evidence from Belgium. *Journal of Management & Governance* 19 (1): 145–166. https://doi.org/10.1007/s10997-013-9282-5.

Dechow, P.M., R.G. Sloan, and A.P. Sweeney. 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research* 13 (1): 1–36. https://doi.org/10.1111/j.1911-3846.1996.tb00489.x.

Dechow, P.M., S.P. Kothari, and R.L. Watts. 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics* 25 (2): 133–168. https://doi.org/10.1016/S0165-4101(98)00020-2.

Ehsan, S., A. Tariq, M.S. Nazir, M.S. Shabbir, R. Shabbir, L.B. Lopez, and W. Ullah. 2021. Nexus between corporate social responsibility and earnings management: Sustainable or opportunistic. *Managerial and Decision Economics*. https://doi.org/10.1002/mde.3396.

Eliwa, Y., Aboud, A., & Saleh, A. (2021). ESG practices and the cost of debt: Evidence from EU countries. *Critical Perspectives on*

Accounting, 79, 102097. https://doi.org/10.1016/j.cpa.2019.102097

Elmarzouky, M., K. Albitar, and K. Hussainey. 2021. Covid-19 and performance disclosure: Does governance matter? *International Journal of Accounting & Information Management* 29 (5): 776–792. https://doi.org/10.1108/IJAIM-04-2021-0086.

Escrig-Olmedo, E., M.Á. Fernández-Izquierdo, I. Ferrero-Ferrero, J.M. Rivera-Lirio, and M.J. Muñoz-Torres. 2019. Rating the raters: Evaluating how ESG rating agencies integrate sustainability principles. *Sustainability* 11 (3): 915. https://doi.org/10.3390/su11030915.

Fama, E.F., and M.C. Jensen. 1983. Separation of ownership and control. *The Journal of law and Economics* 26 (2): 301–325.

Fernandez-Feijoo, B., S. Romero, and S. Ruiz-Blanco. 2014. Women on boards: Do they affect sustainability reporting? *Corporate Social Responsibility and Environmental Management* 21 (6): 351–364. https://doi.org/10.1002/csr.1329.

Freeman, R.E. 1984. *Strategic management: A stakeholder approach*. Boston: Pitman.

Garcia Osma, B. 2008. Board independence and real earnings management: The case of R&D expenditure. *Corporate Governance: An International Review* 16 (2): 116–131. https://doi.org/10.1111/j.1467-8683.2008.00672.x.

García-Sánchez, I.M., M.E. Gómez-Miranda, F. David, and L. Rodríguez-Ariza. 2019. Board independence and GRI-IFC performance standards: The mediating effect of the CSR committee. *Journal of Cleaner Production* 225: 554–562. https://doi.org/10.1016/j.jclepro.2019.03.337.

Gargouri, R.M., R. Shabou, and C. Francoeur. 2010. The relationship between corporate social performance and earnings management. *Canadian Journal of Administrative Sciences* 27 (4): 320–334. https://doi.org/10.1002/CJAS.178.

Gavana, G., P. Gottardo, and A.M. Moisello. 2017. Earnings management and CSR disclosure. *Family vs non-family firms. Sustainability* 9 (12): 2327. https://doi.org/10.3390/su9122327.

Gerged, A.M., K. Albitar, and L. Al-Haddad. 2021. Corporate environmental disclosure and earnings management—The moderating role of corporate governance structures. *International Journal of Finance & Economics*. https://doi.org/10.1002/ijfe.2564.

Giannetti, M., G. Liao, and X. Yu. 2015. The brain gain of corporate boards: Evidence from China. *The Journal of Finance* 70 (4): 1629–1682. https://doi.org/10.1111/jofi.12198.

Gjergji, R., L. Vena, S. Sciascia, and A. Cortesi. 2021. The effects of environmental, social and governance disclosure on the cost of capital in small and medium enterprises: The role of family business status. *Business Strategy and the Environment* 30 (1): 683–693. https://doi.org/10.1002/bse.2647.

Gras-Gil, E., M.P. Manzano, and J.H. Fernández. 2016. Investigating the relationship between corporate social responsibility and earnings management: Evidence from Spain. *BRQ Business Research Quarterly* 19 (4): 289–299. https://doi.org/10.1016/j.brq.2016.02.002.

Griffin, P.A., H.A. Hong, Y. Liu, and J.W. Ryou. 2021. The dark side of CEO social capital: Evidence from real earnings management and future operating performance. *Journal of Corporate Finance* 68: 101920. https://doi.org/10.1016/j.jcorpfin.2021.101920.

Gull, A.A., M. Nekhili, H. Nagati, and T. Chtioui. 2018. Beyond gender diversity: How specific attributes of female directors affect earnings management. *The British Accounting Review* 50 (3): 255–274. https://doi.org/10.1016/j.bar.2017.09.001.

Habbash, M., C. Sindezingue, and A. Salama. 2013. The effect of audit committee characteristics on earnings management: Evidence from the United Kingdom. *International Journal of Disclosure and Governance* 10, 13–38. https://doi.org/10.1057/jdg.2012.2

Harjoto, M.A., and H. Jo. 2011. Corporate governance and CSR nexus. *Journal of Business Ethics* 100 (1): 45–67. https://doi.org/10.1007/s10551-011-0772-6.

Healy, P.M., and J.M. Wahlen. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 13 (4): 365–383. https://doi.org/10.2308/acch.1999.13.4.365.

Helfaya, A., and T. Moussa. 2017. Do board's corporate social responsibility strategy and orientation influence environmental sustainability disclosure? UK evidence. *Business Strategy and the Environment* 26 (8): 1061–1077. https://doi.org/10.1002/bse.1960.

Hillman, A.J., and T. Dalziel. 2003. Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review* 28 (3): 383–396. https://doi.org/10.5465/amr.2003.10196729.

Hillman, A.J., A.A. Cannella, and R.L. Paetzold. 2000. The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management Studies* 37 (2): 235–256. https://doi.org/10.1111/1467-6486.00179.

Hillman, A.J., A.A. Cannella Jr., and I.C. Harris. 2002. Women and racial minorities in the boardroom: How do directors differ? *Journal of Management* 28 (6): 747–763. https://doi.org/10.1177/014920630202800603.

Hussain, N., U. Rigoni, and R.P. Orij. 2018. Corporate governance and sustainability performance: Analysis of triple bottom line performance. *Journal of Business Ethics* 149 (2): 411–432. https://doi.org/10.1007/s10551-016-3099-5.

Hussainey, K., K. Albitar, and F. Alkaraan. 2022. Corporate narrative reporting on Industry 4.0 technologies: Does governance matter? *International Journal of Accounting & Information Management* 30 (4): 457–476. https://doi.org/10.1108/IJAIM-02-2022-0024.

Husted, B.W., and J.M. de Sousa-Filho. 2019. Board structure and environmental, social, and governance disclosure in Latin America. *Journal of Business Research* 102: 220–227. https://doi.org/10.1016/j.jbusres.2018.01.017.

Inaam, Z., and H. Khamoussi. 2016. Audit committee effectiveness, audit quality and earnings management: A meta-analysis. *International Journal of Law and Management* 58 (2): 179–196. https://doi.org/10.1108/IJLMA-01-2015-0006

Jackson, A.B. 2017. Discretionary accruals: earnings management... or not? *Abacus* 54 (2): 136–153. https://doi.org/10.1111/abac.12117

Jensen, M.C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review* 76 (2): 323–329.

Jensen, M.C. 1993. The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance* 48 (3): 831–880. https://doi.org/10.1111/j.1540-6261.1993.tb04022.x.

Jizi, M. 2017. The influence of board composition on sustainable development disclosure. *Business Strategy and the Environment* 26 (5): 640–655. https://doi.org/10.1002/bse.1943.

Kim, E.-H., and T.P. Lyon. 2015. Greenwash vs. brownwash: Exaggeration and undue modesty in corporate sustainability disclosure. *Organization Science* 26 (3): 705–723. https://doi.org/10.1287/orsc.2014.0949.

Kim, S.H., P. Udawatte, and J. Yin. 2019. The effects of corporate social responsibility on real and accrual-based earnings management: Evidence from China. *Australian Accounting Review* 29 (3): 580–594. https://doi.org/10.1111/auar.12235.

Klein, A. 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33 (3): 375–400. https://doi.org/10.1016/S0165-4101(02)00059-9.

Kothari, S.P., A.J. Leone, and C.E. Wasley. 2005. Performance-matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197. https://doi.org/10.1016/j.jacceco.2004.11.002.

Lagasio, V., and N. Cucari. 2019. Corporate governance and environmental social governance disclosure: A meta-analytical review. *Corporate Social Responsibility and Environmental Management* 26 (4): 701–711. https://doi.org/10.1002/csr.1716.

Larcker, D.F., and T.O. Rusticus. 2010. On the use of instrumental variables in accounting research. *Journal of Accounting and Economics* 49 (3): 186–205. https://doi.org/10.1016/j.jacceco.2009.11.004

Lin, J.W., and M.I. Hwang. 2010. Audit quality, corporate governance, and earnings management: A meta-analysis. *International Journal of Auditing* 14 (1): 57–77. https://doi.org/10.1111/j.1099-1123.2009.00403.x

Lyon, T.P., and J.W. Maxwell. 2011. Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy* 20 (1): 3–41. https://doi.org/10.1111/j.1530-9134.2010.00282.x.

Lyon, T.P., and A.W. Montgomery. 2015. The means and end of greenwash. *Organization & Environment* 28 (2): 223–249. https://doi.org/10.1002/bse.2058

Manita, R., M.G. Bruna, R. Dang, and L.H. Houanti. 2018. Board gender diversity and ESG disclosure: Evidence from the USA. *Journal of Applied Accounting Research* 19 (2): 206–224. https://doi.org/10.1108/JAAR-01-2017-0024.

Martinez-Ferrero, J., I.M. Garcia-Sanchez, and B. Cuadrado-Ballesteros. 2015. Effect of financial reporting quality on sustainability information disclosure. *Corporate Social Responsibility and Environmental Management* 22 (1): 45–64. https://doi.org/10.1002/csr.1330.

Mohmed, A., A. Flynn, and C. Grey. 2019. The link between CSR and earnings quality: Evidence from Egypt. *Journal of Accounting in Emerging Economies* 10 (1): 1–20. https://doi.org/10.1108/JAEE-10-2018-0109.

Naciti, V. 2019. Corporate governance and board of directors: The effect of a board composition on firm sustainability performance. *Journal of Cleaner Production* 237: 117727. https://doi.org/10.1016/j.jclepro.2019.117727.

Nazari, J.A., K. Hrazdil, and F. Mahmoudian. 2017. Assessing social and environmental performance through narrative complexity in CSR reports. *Journal of Contemporary Accounting & Economics* 13 (2): 166–178. https://doi.org/10.1016/j.jcae.2017.05.002.

Ntim, C.G., and T. Soobaroyen. 2013. Corporate governance and performance in socially responsible corporations: New empirical insights from a Neo-Institutional framework. *Corporate Governance: An International Review* 21 (5): 468–494. https://doi.org/10.1111/corg.12026.

Palacios-Manzano, M., E. Gras-Gil, and J.M. Santos-Jaen. 2021. Corporate social responsibility and its effect on earnings management: An empirical research on Spanish firms. *Total Quality Management & Business Excellence* 32 (7–8): 921–937. https://doi.org/10.1080/14783363.2019.1652586.

Peasnell, K.V., P.F. Pope, and S. Young. 2000. Accrual management to meet earnings targets: UK evidence pre-and post-Cadbury. *The British Accounting Review* 32 (4): 415–445. https://doi.org/10.1006/bare.2000.0134.

Prior, D., J. Surroca, and J.A. Tribó. 2008. Are socially responsible managers really ethical? Exploring the relationship between earnings management and corporate social responsibility. *Corporate Governance: An International Review* 16 (3): 160–177. https://doi.org/10.1111/j.1467-8683.2008.00678.x.

Raimo, N., F. Vitolla, A. Marrone, and M. Rubino. 2021. Do audit committee attributes influence integrated reporting quality? An agency theory viewpoint. *Business Strategy and the Environment* 30 (1): 522–534. https://doi.org/10.1002/bse.2635.

Rezaee, Z., and L. Tuo. 2019. Are the quantity and quality of sustainability disclosures associated with the innate and discretionary earnings quality? *Journal of Business Ethics* 155 (3): 763–786. https://doi.org/10.1007/s10551-017-3546-y.

Romano, M., A. Cirillo, C. Favino, and A. Netti. 2020. ESG (Environmental, Social and Governance) performance and board gender diversity: The moderating role of CEO duality. *Sustainability* 12 (21): 9298. https://doi.org/10.3390/su12219298.

Sekaran, U., and R. Bougie. 2016. *Research methods for business: A skill-building approach*. New York: Wiley.

Shakil, M.H. 2021. Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity. *Resources Policy* 72: 102144. https://doi.org/10.1016/j.resourpol.2021.102144.

Shakil, M.H., M. Tasnia, and M.I. Mostafiz. 2020. 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. https://doi.org/10.1108/IJBM-04-2020-0210.

Shrivastava, P., and A. Addas. 2014. The impact of corporate governance on sustainability performance. *Journal of Sustainable Finance & Investment* 4 (1): 21–37. https://doi.org/10.1080/20430795.2014.887346.

Sultana, N., H. Singh, and J.-L.W.M. Van der Zahn. 2015. Audit committee characteristics and audit report lag. *International Journal of Auditing* 19: 72–87. https://doi.org/10.1111/ijau.12033.

Suttipun, M. 2021. The influence of board composition on environmental, social and governance (ESG) disclosure of Thai listed companies. *International Journal of Disclosure and Governance* 18: 391–402. https://doi.org/10.1057/s41310-021-00120-6.

Van Hoang, T.H., W. Przychodzen, J. Przychodzen, and E.A. Segbotangni. 2021. Environmental transparency and performance: Does the corporate governance matter? *Environmental and Sustainability Indicators* 10: 100123. https://doi.org/10.1016/j.indic.2021.100123.

Velte, P. 2016. Women on management board and ESG performance. *Journal of Global Responsibility* 7 (1): 98–109. https://doi.org/10.1108/JGR-01-2016-0001.

Velte, P. 2019. The bidirectional relationship between ESG performance and earnings management–empirical evidence from Germany. *Journal of Global Responsibility* 10 (4): 322–338. https://doi.org/10.1108/JGR-01-2019-0001.

Velte, P. 2020. Environmental performance, carbon performance and earnings management: Empirical evidence for the European capital market. *Corporate Social Responsibility and Environmental Management* 28 (1): 42–53. https://doi.org/10.1002/csr.2030.

Wang, D. 2006. Founding family ownership and earnings quality. *Journal of Accounting Research* 44 (3): 619–656. https://doi.org/10.1111/j.1475-679X.2006.00213.x.

Wang, J., and J. Sun. 2021. The role of audit committees in social responsibility and environmental disclosures: evidence from Chinese energy sector. *International Journal of Disclosure and Governance*. https://doi.org/10.1057/s41310-021-00131-3.

Wang, Y., Y.G. Shan, Z. He, and C. Zhao. 2022. Other comprehensive income, corporate governance, and firm performance in China. *Managerial and Decision Economics* 43 (1): 262–271. https://doi.org/10.1002/mde.3382.

Xie, B., W.N. Davidson III., and P.J. DaDalt. 2003. Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance* 9 (3): 295–316. https://doi.org/10.1016/S0929-1199(02)00006-8.

Xu, Y., E. Carson, N. Fargher, and L. Jiang. 2013. Responses by Australian auditors to the global financial crisis. *Accounting & Finance* 53 (1): 301–338. https://doi.org/10.1111/j.1467-629X.2011.00459.x.

Yang, M., and W. Tang. 2021. Air pollution, political costs, and earnings management. *Emerging Markets Review*. https://doi.org/10.1016/j.ememar.2021.100867.

Zalata, A.M., C.G. Ntim, T. Choudhry, A. Hassanein, and H. Elzahar. 2019. Female directors and managerial opportunism: Monitoring versus advisory female directors. *The Leadership Quarterly* 30 (5): 101309. https://doi.org/10.1016/j.leaqua.2019.101309.

Zharfpeykan, R. 2021. Representative account or greenwashing? Voluntary sustainability reports in Australia's mining/metals and financial services industries. *Business Strategy and the Environment* 30 (4): 2209–2223. https://doi.org/10.1002/bse.2744.