

ESG and board characteristics – an Australian study. How does audit tenure moderate the relationship between ESG performance and gender diversity?

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Abstract

Purpose – This study aims to examine the impact of audit committee (AC) independence, board gender diversity and chief executive officer (CEO) duality on the environmental, social and governance (ESG) performance of Australian listed firms over the period 2017–2023.

Design/methodology/approach – To examine the association between corporate governance characteristics and ESG performance, this study draws on stakeholder–agency theory and resource dependence theory. Empirically, the authors use fixed effects regression, controlling for both firm and year effects, to estimate the relationship between governance variables and ESG performance. To ensure the robustness of the results, the authors conduct additional analyses using two-stage least squares, generalised least squares and entropy balancing. These approaches address potential endogeneity, heteroskedasticity and autocorrelation concerns, thereby strengthening the reliability of the findings.

Findings – The results indicate that AC independence and board gender diversity are positively and significantly associated with ESG performance. In contrast, CEO duality is negatively associated with ESG performance. Furthermore, the moderation analysis reveals that audit tenure weakens the positive relationship between board gender diversity and ESG performance. Specifically, the interaction between gender diversity and longer audit tenure is negative and significant, suggesting that extended auditor–client relationships may reduce the effectiveness of gender-diverse boards in promoting ESG outcomes.

Originality/value – This study addresses a gap in the ESG literature by examining the role of AC independence, board gender diversity and CEO duality in influencing ESG performance among Australian listed firms. In addition, it investigates the moderating effect of audit tenure on the relationship between board gender diversity and ESG performance. From a theoretical perspective, the findings support the applicability of stakeholder–agency theory and resource dependence theory in explaining the governance–ESG relationship, gender diversity, AC, CEO duality, ESG, resource dependency theory and stakeholder–agency theory.

Keywords ESG, Audit committee, Gender diversity, CEO duality, Stakeholder–agency theory, Resource dependency theory

Paper type Research paper

1. Introduction

In the current economic climate, corporations face increasing scrutiny over their environmental, social and governance (ESG) practices. Firms are expected not only to deliver financial performance but also to demonstrate accountability in addressing environmental and social challenges. As a result, long-term success is increasingly linked to how effectively firms manage ESG-related risks and opportunities

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(Asante-Appiah and Lambert, 2022). Climate risks, in particular, have become financially material for institutional investors with long-term investment horizons (Krueger *et al.*, 2020). At a broader level, the United Nations' Sustainable Development Goals (SDGs) underscore the urgency of addressing global sustainability challenges and reinforce the importance of transparent and comparable ESG reporting (GRI, 2018).

Research on ESG and sustainability reporting has grown rapidly across Southeast Asia and the Asia-Pacific region. Prior studies highlight improvements in ESG disclosure and performance but also document significant variation across firms and industries. In Australia, evidence suggests that ESG practices have strengthened over time, particularly in governance-related dimensions (Galbreath, 2013; Gholami *et al.*, 2022). Board characteristics, such as gender diversity, have been shown to enhance corporate social responsibility (CSR) engagement and disclosure (Galbreath, 2018; Rao and Tilt, 2016b).

Despite these advances, important concerns remain regarding the quality and credibility of ESG reporting. Existing studies suggest that disclosure does not necessarily reflect substantive sustainability practices, particularly in the absence of strong stakeholder engagement and consistent reporting frameworks (Lokuwaduge and De Silva, 2022; Michelin *et al.*, 2019). This creates challenges for investors and other stakeholders in assessing firm-level ESG performance. Consequently, there is a need to better understand the governance mechanisms that drive meaningful ESG outcomes.

Australia provides a relevant setting to examine these issues. Regulatory attention and investor demand for ESG accountability have increased significantly in recent years. For example, the Chairman of the Australian Securities and Investments Commission (ASIC), Joe Longo, emphasised the importance of embedding ESG considerations into corporate strategy. At the same time, the rapid growth of socially responsible investment reflects rising stakeholder expectations around sustainability. Together, these developments place pressure on firms to strengthen both ESG performance and disclosure practices.

Despite the growing body of literature on ESG practices and corporate governance, several important gaps remain. Firstly, prior studies in the Australian context have largely focused on ESG disclosure and its association with financial performance, with limited attention given to how specific governance mechanisms influence ESG performance outcomes. In particular, the roles of audit committee (AC) independence, chief executive officer (CEO) duality and audit tenure remain underexplored, especially when considered alongside board gender diversity. Secondly, existing studies often examine these governance characteristics in isolation, without considering their potential interaction effects. Thirdly, there is limited evidence on how these relationships have evolved in the post-SDG era, where stakeholder expectations and regulatory pressures have intensified. Addressing these gaps, this study examines how key governance mechanisms jointly shape ESG performance among large Australian listed firms, while also considering the moderating role of audit tenure.

This study contributes to the literature by examining how specific governance mechanisms influence ESG performance among large Australian listed firms. In particular, we focus on AC independence, board gender diversity, CEO duality and audit tenure. While prior research has largely examined ESG disclosure and financial outcomes, this study shifts attention to governance structures that may shape ESG performance more directly. In addition, we investigate the moderating role of audit tenure in the relationship between board gender diversity and ESG outcomes, offering new insights into how governance mechanisms interact.

The AC plays a central role in overseeing reporting quality and enhancing transparency (Menon and Williams, 1994). As firms increasingly obtain assurance for sustainability reporting, its importance extends beyond financial reporting. At the same time, board gender diversity has been associated with stronger ethical orientation and improved

sustainability practices (Rao and Tilt, 2021). However, the role of CEO duality remains contested, with mixed evidence on its impact on disclosure and governance effectiveness.

Consistent with these perspectives, our findings indicate that AC independence and board gender diversity are positively associated with ESG performance. In contrast, CEO duality is negatively associated with ESG outcomes. Furthermore, the interaction between gender-diverse boards and longer audit tenure is negatively related to ESG performance, suggesting potential governance trade-offs.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature, outlines the theoretical framework and develops the hypotheses. Section 3 describes the research methodology. Section 4 presents the descriptive statistics, correlation analysis and empirical results and discussion, including additional analyses. The final section concludes with a summary of the key findings, implications, limitations and directions for future research.

2. Theory, literature review and hypothesis development

2.1 Theoretical framework

This study draws on stakeholder–agency theory and resource dependence theory as its primary theoretical foundations. A combined theoretical perspective is appropriate, as it addresses the limitations of traditional agency theory, which focuses primarily on conflicts between shareholders and managers. Stakeholder–agency theory extends this view by recognising that firms are accountable to a broader set of stakeholders, including employees, regulators and the wider community (Hill and Jones, 1992). This integrated perspective helps explain how governance mechanisms can mitigate conflicts not only between managers and shareholders but also among multiple stakeholder groups (Gerged, 2020; Zolotoy *et al.*, 2021).

Within this framework, governance mechanisms such as AC independence and CEO duality are viewed as critical in shaping monitoring effectiveness and aligning managerial actions with stakeholder interests. In addition, audit tenure is considered an important moderating factor, as it influences the strength of external monitoring and, consequently, the effectiveness of internal governance structures.

Furthermore, this study draws on resource dependence theory to explain the role of board gender diversity. This perspective suggests that organisations rely on external resources for survival and that board composition can enhance access to valuable resources, networks and legitimacy (Hillman *et al.*, 2007; Pfeffer and Salancik, 1978). Gender-diverse boards, in particular, contribute broader perspectives and improved decision-making, enabling firms to better address complex ESG challenges.

Overall, by integrating stakeholder–agency theory and resource dependence theory, this study provides a comprehensive framework for examining how internal governance mechanisms and external monitoring jointly influence ESG performance among large Australian listed firms. These theoretical linkages are further developed in the hypotheses and empirical analysis sections.

2.2 Literature review and hypotheses development

2.2.1 Literature review on environmental, social and governance studies. ESG issues have gained increasing prominence in recent years, with a growing body of research examining ESG performance across different institutional and market settings (Abbassi *et al.*, 2024; Bamahros *et al.*, 2022; Broadstock *et al.*, 2021; Zahid *et al.*, 2020). This expanding literature reflects the rising importance of sustainability considerations in corporate decision-making.

Prior studies provide mixed evidence on the financial and strategic implications of ESG performance. For instance, [Saleh et al. \(2023\)](#) document a negative relationship between ESG disclosures and cash holdings across European firms, suggesting potential trade-offs between sustainability engagement and liquidity management. In contrast, other studies highlight the economic benefits of ESG practices. [Lee et al. \(2021\)](#) find that high-ESG portfolios outperform low-ESG portfolios in terms of stock performance, diversification and risk management. Similarly, [Kim and Li \(2021\)](#) show that ESG engagement enhances corporate profitability and improves credit ratings, particularly for larger firms. Consistent with this, [Limkriangkrai et al. \(2017\)](#) report that firms with higher ESG ratings benefit from improved access to debt financing.

Beyond financial outcomes, ESG performance is also linked to governance and strategic decision-making. [Treepongkaruna et al. \(2024\)](#) find that firms with larger boards are better able to address ESG controversies, while [Lokuwaduge and De Silva \(2022\)](#) emphasise the importance of transparent ESG measurement and disclosure in effective business management. Moreover, ESG practices have been shown to remain resilient during periods of economic uncertainty, as evidenced by [Bialkowski and Slawik \(2022\)](#) in the context of the COVID-19 pandemic.

Overall, the ESG literature has evolved towards a more nuanced understanding of how ESG dimensions interact with internal governance structures and firm performance ([Li et al., 2021](#)). In this regard, the development of sustainability strategies provides firms with a framework to balance competing economic, environmental and social objectives ([Annesi et al., 2025](#)).

2.2.2 Audit committee independence and environmental, social and governance disclosure. ACs are widely recognised as a fundamental component of corporate governance mechanisms ([Menon and Williams, 1991](#)). Among their attributes, independence is considered critical for enhancing financial reporting quality. [Baxter and Cotter \(2009\)](#) argue that independent ACs improve the quality of financial statements and play an important role in the reporting process.

From an agency theory perspective, the separation of ownership and control creates conflicts between shareholders (principals) and management (agents). Independent ACs act as an effective monitoring mechanism, reducing managerial opportunism and enhancing reporting transparency. Extending this view, stakeholder theory emphasises that firms are accountable to a broader set of stakeholders beyond shareholders. In this context, independent ACs are more likely to promote transparency, ethical governance and credible ESG practices, thereby strengthening stakeholder trust and organisational legitimacy ([Altin, 2024](#)).

Empirical evidence generally supports the benefits of AC independence. Prior studies show that independent ACs are associated with higher earnings quality and lower discretionary accruals ([Bronson et al., 2009](#); [Safari, 2017](#)). In the ESG context, board independence has been linked to improved sustainability performance ([Hussain et al., 2018](#)), while AC independence is positively associated with the use of high-quality assurance providers ([Al-Shaer and Zaman, 2018](#)) and enhanced ESG reporting quality ([Arif et al., 2021](#); [Pozzoli et al., 2022](#)). Evidence from Australia also suggests a positive relationship between AC independence and CSR disclosure ([Appuhami and Tashakor, 2017](#)).

However, some studies report mixed findings, with limited or negative associations between board independence and non-financial disclosure ([Haniffa and Cooke, 2005](#); [Li et al., 2012](#)). Despite this, the dominant theoretical and empirical evidence suggests that independent ACs strengthen monitoring and enhance ESG outcomes.

Accordingly, drawing on agency and stakeholder theories, we expect that AC independence improves ESG performance. Therefore, we propose the following hypothesis:

H1. Australian firms with an independent AC have a positive association with ESG performance.

2.2.3 Board gender diversity and environmental, social and governance disclosure.

Research on board gender diversity and corporate governance has developed over several decades (Farrell and Hersch, 2005; Muttakin *et al.*, 2022; Oradi and Izadi, 2020; Wang and Coffey, 1992). More recently, attention has shifted towards the role of female directors in shaping sustainability and ESG outcomes (Amorelli and Garcia-Sanchez, 2021; Galbreath, 2018; Ling *et al.*, 2026; Rao and Tilt, 2016a).

From a stakeholder theory perspective, gender-diverse boards are more likely to be responsive to the needs of a broader range of stakeholders. Female directors are often associated with stronger ethical orientation, greater sensitivity to social and environmental concerns, and a more inclusive approach to decision-making (Manita *et al.*, 2018; Zahid *et al.*, 2020). As a result, firms with higher female representation on boards are better positioned to address increasing stakeholder expectations regarding sustainability and CSR (Rao and Tilt, 2021). Moreover, the presence of women on boards can signal stronger governance, transparency and accountability to external stakeholders (Wasiuzzaman and Wan Mohammad, 2020).

In addition, resource dependence theory suggests that board diversity enhances access to valuable resources, perspectives and external networks (Hillman *et al.*, 2000; Pfeffer and Salancik, 1978). Gender-diverse boards bring varied expertise and viewpoints, which improve decision-making quality and strengthen the firm's ability to manage complex ESG challenges (Albitar *et al.*, 2020).

Empirical evidence largely supports a positive relationship between board gender diversity and ESG outcomes. Prior studies find that female representation on boards is associated with higher ESG performance and disclosure (Galbreath, 2018; Rao and Tilt, 2016a; Uyar *et al.*, 2021). However, some studies report mixed findings, suggesting that the effect may depend on factors such as critical mass or institutional context (Manita *et al.*, 2018; Pizzi *et al.*, 2020).

Overall, drawing on stakeholder theory and resource dependence theory, we expect that board gender diversity enhances ESG performance. Accordingly, we propose the following hypothesis:

H2. Australian listed firms with gender-diverse boards have a positive association with ESG performance.

2.2.4 Chief executive officer duality and voluntary disclosure.

CEO duality arises when the roles of CEO and board chair are held by the same individual, resulting in a concentration of managerial power. From an agency theory perspective, this concentration of authority may weaken board independence and reduce the effectiveness of monitoring. Prior studies suggest that CEO duality can impair oversight, increase information asymmetry and lead to higher agency costs (Rechner and Dalton, 1991). As a result, powerful CEOs may prioritise personal or short-term financial objectives over long-term sustainability goals (Mahoney and Thom, 2006).

In the context of disclosure, CEO duality has been associated with lower levels of voluntary reporting, including CSR and ESG disclosures (Allegrini and Greco, 2013; Chau and Gray, 2010; Rashid *et al.*, 2020). These findings suggest that reduced board independence limits transparency and weakens accountability to stakeholders.

However, the empirical evidence remains mixed. Some studies find that CEO duality may enhance CSR disclosures in certain institutional settings, particularly where ownership is concentrated (Dias *et al.*, 2017; Handayanti *et al.*, 2022). Other studies report no significant

relationship between CEO duality and disclosure or firm performance (Cheng and Courtenay, 2006; Ho and Wong, 2001).

Despite these mixed findings, the dominant theoretical argument suggests that CEO duality weakens governance effectiveness and reduces the firm's responsiveness to stakeholder demands. Accordingly, drawing on agency theory, we expect CEO duality to negatively influence ESG performance. Therefore, we propose the following hypothesis:

H3. Australian firms with CEO duality have a negative association with ESG performance.

Audit tenure has attracted considerable attention in the corporate governance and auditing literature, particularly in relation to auditor independence and monitoring effectiveness. From an agency theory perspective, external auditors serve as an important monitoring mechanism that mitigates information asymmetry and constrains managerial opportunism. However, extended audit tenure may give rise to familiarity threats, whereby long-standing relationships between auditors and clients reduce professional scepticism and impair auditor independence (DeAngelo, 1981; Gul *et al.*, 2007). As a result, the effectiveness of external assurance in promoting transparency and accountability may diminish over time.

In the context of ESG reporting, auditor independence is particularly important due to the relatively discretionary and less standardised nature of sustainability disclosures. Prior studies suggest that longer audit tenure may reduce the credibility of non-financial reporting, as auditors may become less inclined to challenge managerial discretion in ESG-related disclosures (Ruiz-Barbadillo and Martinez-Ferrero, 2023). This can weaken the overall governance environment and reduce the effectiveness of other internal governance mechanisms.

At the same time, board gender diversity has been widely associated with stronger ESG engagement, as female directors are often found to enhance ethical oversight, stakeholder responsiveness and transparency (Rao *et al.*, 2012; Wasiuzzaman and Wan Mohammad, 2020). Drawing on stakeholder theory, gender-diverse boards are more likely to prioritise sustainability issues and respond to broader stakeholder expectations. Similarly, resource dependence theory suggests that diverse boards contribute valuable perspectives and external linkages that support ESG initiatives.

However, the effectiveness of gender-diverse boards in promoting ESG performance may depend on the strength of complementary governance mechanisms. When audit tenure is prolonged, the potential decline in auditor independence may weaken the external monitoring environment. This, in turn, may dampen the positive influence of gender-diverse boards, as reduced assurance quality limits the credibility and enforcement of ESG practices. In other words, while gender diversity enhances internal governance, extended audit tenure may undermine the external verification process necessary to sustain high-quality ESG performance.

Accordingly, we expect that longer audit tenure attenuates the positive relationship between board gender diversity and ESG performance. Therefore, we propose the following hypothesis:

H4. Audit tenure weakens the positive relationship between board gender diversity and ESG performance.

3. Data and methodology

3.1 Sample selection and documentation

After using standard exclusions, our initial data set consists of 1,824 firm-year observations for the period 2017–2023. We further eliminate 668 firm-year observations due to missing data, resulting in a final sample of 1,156 firm-year observations. This research focuses on

the top 261 listed firms in Australia (excluding those with missing ESG data), as they are subject to heightened scrutiny from multiple stakeholders regarding corporate and voluntary disclosures (Hackston and Milne, 1996). The selected period, spanning 2017–2023, allows for an updated analysis of ESG reporting in Australia following the introduction of the United Nations SDGs. ESG scores and financial data are sourced from the London Stock Exchange Group (LSEG) Refinitiv Workspace database.

The sample selection procedure is summarised in Table 1 Panel A. We have also included the final sample based on industry classification, which is depicted in Table 1 Panel B. From the classification, we observed that the top three largest industries in the final sample are basic materials (19.55%), financials (15.40%) and consumer cyclicals (14.10%). We have included all industries in this sample because all firms are subject to similar expectations and scrutiny from the stakeholders and regulators concerning ESG initiatives.

3.2 Measurement of dependent variable – environmental, social and governance scores

In line with previous research on sustainability reporting, ESG scores are obtained from the LSEG Refinitiv Workspace database, which provides three different measurements of ESG (Paolone et al., 2022; Pozzoli et al., 2022). LSEG Refinitiv ESG database evaluates the ESG performance of listed firms based on information reported across three different pillars (ESG) encompassing 10 different ESG topics. The measurements used reflect the materiality, data availability and the relevance of the industry. We adopt the logarithm of 1 plus the ESG score (*ESG_SCORE*) and the logarithm of 1 plus the ESG combined score (*ESG_COMB*), both scores obtained from the database. The ESG combined score is discounted for significant ESG controversies affecting the corporations covered by LSEG. The ESG score is a weighted average of the ESG pillar scores, with the weighting scheme determined by Refinitiv's methodology. To ensure that our results are not driven by this scheme, we construct the variable *ESG_AVE* as an equally weighted average of the three

Table 1 Sample distribution

<i>Panel A. Sample selection</i>		<i>Observations</i>	
Firm-year observations based on ASX 300			1,824
Less: missing values in ESG scores			528
Less: missing values in independent variables			122
Less: singleton observations			18
Final sample			1,156
Final number of firms			261
<i>Panel B. Final sample industry distribution based on the Refinitiv Business Classification (TRBC)</i>			
	<i>No. of firms</i>	<i>No. of observations</i>	<i>% of total observations</i>
Academic and educational services	1	5	0.43
Basic materials	53	226	19.55
Consumer cyclicals	37	163	14.10
Consumer non-cyclicals	17	76	6.57
Energy	11	50	4.33
Financials	40	178	15.40
Health care	21	94	8.13
Industrials	29	130	11.25
Real estate	25	117	10.12
Technology	24	102	8.82
Utilities	3	15	1.30
Total	261	1,156	100

Source(s): Authors' own work

pillars, assigning the same weight to each dimension. We further take the logarithm of “1 plus *ESG_AVE*”. Taken together, these measures allow us to examine whether our findings are robust to alternative constructions of ESG performance, rather than relying on a single measure. Definitions of the dependent variables can be found in [Appendix](#).

3.3 Independent variables measurement

3.3.1 Independent audit committee. Independent AC (*AC_IND*) is measured by adopting the percentage of board members who are independent. Such measures have been adopted extensively and consistently in the corporate governance research involving the sustainability and financial reporting ([Al-Shaer and Zaman, 2018](#); [Appuhami and Tashakor, 2017](#); [Ghafran et al., 2022](#)).

3.3.2 Gender diversity of board members. We measure gender diversity of board members by using a continuous variable (*GEND*). A typical measure of gender diversity is adopting the percentage of female directors to overall directors on the board ([Ahmed and Hussain, 2024](#); [Groening, 2019](#)). This proxy has been used in previous literature involving female directors on the board ([Reddy and Jadhav, 2019](#); [Sellami and Cherif, 2020](#)).

3.3.3 Chief executive officer duality. We measure CEO duality diversity using a dichotomous variable (*CEOD*), which is universally adopted by academics in studies associated with CEO attributes ([Krause et al., 2014](#)). An indicator variable where firm *i* is scored one (1) if the same individual occupies the roles of chairperson of the board and CEO at the end of time period *t*; otherwise, it will be scored zero (0).

3.4 Measurement control variables

In harmony with previous research on ESG and sustainability, we are controlling for variables that are closely linked with sustainability reporting and board characteristics ([Orazalin, 2019](#); [Zampone et al., 2022](#)). We control for policy for board size (*POL*), firm size (*TA*), CEO board member (*CEOM*), board tenure (*BTEN*) and audit tenure (*ATEN*) as past literature indicates that such variables have an effect on sustainability reporting and governance mechanisms. The definition of these control variables is provided in [Appendix](#).

3.5 Regression model

Regression analyses are conducted to assess the relationship between independent variables and ESG performance. The first regression model examines *ESG_SCORE_{it}* in relation to AC independence, gender diversity and CEO duality, while controlling for year-fixed and firm-fixed effects. This analysis is performed using [equation \(1\)](#) as follows:

$$ESG_SCORE_{it} = \beta_0 + \beta_1 AC_IND_{it} + \beta_2 GEND_{it} + \beta_3 CEOD_{it} + \beta_4 POL_{it} + \beta_5 TA_{it} + \beta_6 CEOM_{it} + \beta_7 BTEN_{it} + \beta_8 ATEN_{it} + \varepsilon_{it}$$

The key variables of interest are *AC_IND_{it}*, *GEND_{it}* and *CEOD_{it}*. The coefficients for these variables are expected to be significant in the *ESG_SCORE_{it}* model.

The second regression model examines *ESG_COMB_{it}* in relation to AC independence, gender diversity and CEO duality, while controlling for year-fixed and firm-fixed effects. This analysis is performed using [equation \(2\)](#) as follows:

$$ESG_COMB_{it} = \beta_0 + \beta_1 AC_IND_{it} + \beta_2 GEND_{it} + \beta_3 CEOD_{it} + \beta_4 POL_{it} + \beta_5 TA_{it} + \beta_6 CEOM_{it} + \beta_7 BTEN_{it} + \beta_8 ATEN_{it} + \varepsilon_{it}$$

The key variables of interest are *AC_IND_{it}*, *GEND_{it}* and *CEOD_{it}*. The coefficients for these variables are expected to be significant in the *ESG_COMB_{it}* model.

The third regression model examines ESG_AVE_{it} in relation to AC independence, gender diversity and CEO duality, while controlling for year-fixed and firm-fixed effects. This analysis is performed using equation (3) as follows:

$$ESG_AVE_{it} = \beta_0 + \beta_1 AC_IND_{it} + \beta_2 GEND_{it} + \beta_3 CEOD_{it} + \beta_4 POL_{it} + \beta_5 TA_{it} + \beta_6 CEOM_{it} + \beta_7 BTEN_{it} + \beta_8 ATEN_{it} + \epsilon_{it}$$

The key variables of interest are AC_IND_{it} , $GEND_{it}$ and $CEOD_{it}$. The coefficients for these variables are expected to be significant in the ESG_AVE_{it} model.

The fourth regression model examines the moderating effect of audit tenure on the relationship between board gender diversity and ESG performance. The interaction term is constructed as the product of board gender diversity (GEND) and audit tenure (ATEN). This analysis is performed using equation (4) as follows:

$$ESG_{it} = \beta_0 + \beta_1 AC_IND_{it} + \beta_2 GEND_{it} + \beta_3 CEOD_{it} + \beta_4 POL_{it} + \beta_5 TA_{it} + \beta_6 CEOM_{it} + \beta_7 BTEN_{it} + \beta_8 ATEN_{it} + \beta_9 (GEND_{it} \times ATEN_{it}) + \epsilon_{it}$$

The model controls for firm-fixed and year-fixed effects. The coefficient of the interaction term (i.e. β_9) is expected to be significant. ESG_{it} is alternatively measured using ESG_SCORE_{it} , ESG_COMB_{it} and ESG_AVE_{it} .

4. Empirical results

4.1 Descriptive statistics and correlations

Table 2 details the descriptive statistics of the dependent variables (ESG ratings), independent and control variables that are used in this study. The mean aggregate for ESG_SCORE is 3.868 with a median of 3.965 and a relatively narrow standard deviation (0.44), suggesting a moderate but meaningful variation in ESG performance across the sample data. In addition, both ESG_COMB and ESG_AVE have similar statistics. This variation reinforces investigation into firm-level corporate governance mechanisms such as board composition and audit attributes. An average of 85.88% of the AC members are independent and this reflects the current norm for large public companies in Australia. This

Table 2 Descriptive statistics of the variables used in the analysis

Variable	Observation	Mean	SD	P25	Median	P75
<i>Dependent variables</i>						
ESG_SCORE	1,156	3.868	0.440	3.603	3.965	4.200
ESG_COMB	1,156	3.830	0.422	3.578	3.920	4.132
ESG_AVE	1,156	3.824	0.459	3.553	3.918	4.177
<i>Independent/control variables</i>						
AC_IND	1,156	85.88	22.00	75	100	100
$GEND$	1,156	30.32	12.48	20	30	37.5
$CEOD$	1,156	0.095	0.294	0	0	0
POL	1,156	0.932	0.252	1	1	1
TA	1,156	21.66	1.842	20.46	21.57	22.73
$CEOM$	1,156	0.902	0.297	1	1	1
$BTEN$	1,156	6.201	2.769	4.540	5.711	7.313
$ATEN$	1,156	6.571	3.427	4	6	8
<i>Instrumental variables</i>						
AC_MGT	1,156	0.861	0.346	1	1	1

Source(s): Authors' own work

observation underlines the importance and adherence to the [Australian Securities Exchange \(2019\)](#) Principle 2 recommendation to structure the board to be effective and add value. Female directors have a mean percentage of 30.32% with a standard deviation of 12.48. Although the 40% recommended target set by Australian Institute of Company Directors has not been reached, this study captures the essence of differing levels of gender presentation in influencing ESG performance in large Australian listed firms. The average audit tenure (*ATEN*) is 6.571 with a standard deviation of 3.427, implying that audit tenure typically revolves around 6.6 years. The potential ramifications of audit tenure ranging from familiarity with the business operations to independence impairment are reflected in the interaction effects with gender diversity in the additional tests. The variable *BTEN* representing board tenure has a mean of 6.2 years suggesting that on average the board members are rotated every six years. Such board tenure is considered a good balance in terms of having experienced members while ensuring a consistent inflow of new skillsets to the board. The mean value of firm size (*TA*) is 21.66 (logged total assets), implying a skew towards large firms. This is in line with the inclusion of top ASX-listed companies, which are more likely to be subjected stakeholder expectations and ESG scrutiny. Indicating that the separation of the CEO and chairperson roles is a common practice in Australia, CEO duality (*CEOD*) is observed in only 9.5% of the sample. This statistic supports the ASX recommendations on separating the role of CEO and the chairperson to reduce excessive power in one individual. Collectively, the descriptive statistics reveal variation across major governance characteristics that strengthens the empirical basis for examining their effects on ESG performance.

Table 3 presents the Pearson correlation coefficients for all the variables in this study, including the three dependent variables: *ESG_SCORE*, *ESG_COMB* and *ESG_SUM*. The review of the correlation matrix reveals a few key insights.

Firstly, all three dependent variables, that is, *ESG_SCORE*, *ESG_COMB* and *ESG_SUM* exhibit a significant association with AC independence (*AC_IND*) at the 1% level. Secondly, the three ESG scores are also significantly correlated with board gender-diversity, our second independent variable (*GEND*) at the 1% level. Thirdly, the dependent variables indicate a positive association with CEO duality, our third independent variable (*CEOD*) at the 5% level. Fourthly, all the dependent variables have significant correlation with firm size (*TA*) at the 1% level, suggesting that larger companies tend to have more emphasis on ESG initiatives ([Udayasankar, 2008](#)).

Beyond the dependent variables, which are analysed separately in the regressions, none of the correlations in the matrix exceed the multi-collinearity threshold of 0.80 ([Hair et al., 1995](#)). Consequently, we do not find any unusual correlations that would raise concerns regarding multi-collinearity in our regression models.

4.2 Results and discussion

Table 4 presents the main regression results examining the relationship between ESG performance and the key governance variables: AC independence (*AC_IND*), board gender diversity (*GEND*) and CEO duality (*CEOD*). The models exhibit strong explanatory power, with adjusted R^2 values of 85.4%, 79.2% and 84.9% across the three ESG measures. These values are consistent with prior studies examining ESG and corporate governance relationships ([Asante-Appiah and Lambert, 2022](#)).

Consistent with *H1*, AC independence is positively and significantly associated with all three ESG measures (*ESG_SCORE*, *ESG_COMB* and *ESG_SUM*) at the 1% level. This finding supports agency theory, which posits that independent ACs enhance monitoring and reduce managerial opportunism. It also aligns with stakeholder-oriented arguments that independent oversight promotes accountability and transparency to a broader set of stakeholders. The result is consistent with prior evidence ([Al-Shaer and Zaman, 2018](#);

Table 3 Pairwise correlation

Variables	ESG_SCORE	ESG_COMB	ESG_AVE	AC_IND	GEND	CEOD	POL	TA	CEOM	BTEN	ATEN
<i>ESG_SCORE</i>	1										
<i>ESG_COMB</i>	0.9574***	1									
<i>ESG_AVE</i>	0.9811***	0.9351***	1.0000								
<i>AC_IND</i>	0.3085***	0.2844***	0.3349***	1.0000							
<i>GEND</i>	0.4591***	0.4390***	0.4414***	0.1182***	1.0000						
<i>CEOD</i>	0.0381	0.0326	0.0431	-0.1606***	0.0119	1.0000					
<i>POL</i>	0.3092***	0.3064***	0.3088***	0.0625**	0.1665***	-0.0874***	1.0000				
<i>TA</i>	0.6297***	0.5160***	0.6485***	0.2620***	0.2939***	0.0808***	0.1893***	1.0000			
<i>CEOM</i>	-0.0421	-0.0466	-0.0347	0.0135	-0.0874***	-0.0719**	-0.0430	0.0163	1.0000		
<i>BTEN</i>	-0.0181	0.0042	-0.0218	0.0254	-0.1799***	0.1539***	-0.1547***	-0.0409	-0.0268	1.0000	
<i>ATEN</i>	0.0757**	0.0715**	0.0665**	0.1001***	0.0627**	0.1258***	-0.0429	0.0533*	-0.0174	0.2042***	1.0000

Pairwise correlation between *AC_IND* and instrumental variable *AC_MGT*

Variables	<i>AC_IND</i>
<i>AC_MGT</i>	0.3754***

Note(s): *, ** and *** represent significance at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

Table 4 Fixed effects regression estimates

Variables	(1) <i>ESG_SCORE</i>	(2) <i>ESG_COMB</i>	(3) <i>ESG_AVE</i>
<i>AC_IND</i>	0.0035*** (4.709)	0.0032*** (4.036)	0.0041*** (5.078)
<i>GEND</i>	0.0031*** (3.502)	0.0036*** (3.544)	0.0035*** (3.696)
<i>CEOD</i>	-0.1628** (-2.249)	-0.1698** (-2.370)	-0.1943** (-2.326)
<i>POL</i>	0.0569 (0.828)	0.0793 (1.148)	0.0410 (0.572)
<i>TA</i>	0.1420*** (5.146)	0.1527*** (5.050)	0.1538*** (5.309)
<i>CEOM</i>	-0.0194 (-0.562)	0.0135 (0.314)	-0.0250 (-0.700)
<i>BTEN</i>	0.0052 (0.610)	0.0028 (0.322)	0.0032 (0.326)
<i>ATEN</i>	-0.0044 (-1.041)	-0.0003 (-0.041)	-0.0054 (-1.154)
Constant	0.3725 (0.651)	0.0516 (0.082)	0.0505 (0.084)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	1,156	1,156	1,156
<i>R</i> -squared	0.888	0.841	0.885
Adjusted <i>R</i> -squared	0.854	0.792	0.849
<i>F</i> -statistic	12.21	10.33	13.32

Note(s): Robust *t*-statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

Arif *et al.*, 2021; Pozzoli *et al.*, 2022) and highlights the importance of AC independence in strengthening ESG performance.

In line with *H2*, board gender diversity is positively and significantly associated with ESG performance across all model specifications at the 1% level. This finding supports both stakeholder theory and resource dependence theory. From a stakeholder perspective, gender-diverse boards are more responsive to environmental and social concerns, while from a resource dependence perspective, they provide broader expertise and external linkages that enhance ESG outcomes. The result is consistent with prior studies (Romano *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020) and suggests that gender diversity contributes meaningfully to firms' sustainability performance.

Consistent with *H3*, CEO duality is negatively and significantly associated with ESG performance at the 5% level across all measures. This finding supports agency theory, which suggests that concentration of power weakens board independence and reduces effective monitoring. It also aligns with prior studies (Allegrini and Greco, 2013; Rashid et al., 2020) indicating that firms with CEO duality may prioritise short-term financial objectives over broader ESG considerations. This result reinforces governance best practices that advocate for the separation of the CEO and chair roles to enhance oversight and accountability.

Among the control variables, firm size (TA) is positively and significantly associated with ESG performance, suggesting that larger firms are more likely to engage in ESG activities. This is consistent with the view that larger firms face greater stakeholder scrutiny and possess more resources to invest in sustainability initiatives (D'Amato and Falivena, 2020).

Overall, the findings provide strong support for *H1–H3* and demonstrate that both internal governance mechanisms (AC independence and board gender diversity) and leadership structure (CEO duality) play significant roles in shaping ESG performance.

4.3 Additional analysis

4.3.1 Moderation effect between gender diverse board and audit tenure. Given that ESG disclosures are commonly included in annual reports and subject to external assurance, audit tenure is examined as a moderating variable. From an agency theory perspective, prolonged auditor–client relationships may impair auditor independence due to familiarity threats, thereby weakening external monitoring effectiveness (Singer and Zhang, 2018; Zheng et al., 2019)

To test *H4*, we interact audit tenure (*ATEN*) with board gender diversity (*GEND*). The results in Table 5 show that the interaction term (*GEND* × *ATEN*) is negative and statistically significant across all ESG measures. This finding supports *H4* and indicates that audit

Table 5 Interaction between gender and auditor tenure			
Variables	(1) ESG_SCORE	(2) ESG_COMB	(3) ESG_AVE
<i>AC_IND</i>	0.0037*** (4.888)	0.0034*** (4.262)	0.0043*** (5.196)
<i>GEND</i>	0.0071*** (4.402)	0.0093*** (5.072)	0.0071*** (4.222)
<i>CEOD</i>	−0.1696** (−2.332)	−0.1797** (−2.480)	−0.2005** (−2.394)
<i>POL</i>	0.0450 (0.630)	0.0620 (0.840)	0.0302 (0.408)
<i>TA</i>	0.1332*** (4.918)	0.1399*** (4.735)	0.1458*** (5.104)
<i>CEOM</i>	−0.0166 (−0.496)	0.0176 (0.421)	−0.0225 (−0.645)
<i>BTEN</i>	0.0047 (0.555)	0.0022 (0.249)	0.0028 (0.284)
<i>ATEN</i>	0.0153** (2.576)	0.0284*** (3.277)	0.0125** (1.979)
<i>GEND</i> × <i>ATEN</i>	−0.0006*** (−3.357)	−0.0009*** (−3.934)	−0.0006*** (−2.906)
Constant	0.4447 (0.791)	0.1569 (0.255)	0.1159 (0.197)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	1,156	1,156	1,156
<i>R</i> -squared	0.890	0.845	0.886
Adjusted <i>R</i> -squared	0.856	0.797	0.851
<i>F</i> -statistic	11.40	10.35	12.21

Note(s): Robust *t*-statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

tenure weakens the positive relationship between board gender diversity and ESG performance.

This result suggests that while gender-diverse boards enhance ESG outcomes, their effectiveness depends on the strength of external monitoring. When audit tenure is shorter, auditors are more likely to exercise independence and professional scepticism, reinforcing the governance role of diverse boards. In contrast, extended audit tenure may reduce audit quality and weaken the credibility and enforcement of ESG practices, thereby attenuating the positive influence of board diversity. This finding is consistent with prior evidence that long auditor tenure may compromise audit independence (de Jong *et al.*, 2020; Ruiz-Barbadillo and Martinez-Ferrero, 2023).

Figure 1 further illustrates this moderating effect when alternative ESG proxies are used as the dependent variable. When auditor tenure is shorter (one standard deviation below the mean), gender diversity exhibits a strong positive association with ESG performance, as indicated by the steep upward slope. In contrast, when auditor tenure is longer (one standard deviation above the mean), the slope becomes considerably flatter, indicating that the positive effect of gender diversity diminishes and, in some cases, becomes negligible. This pattern is consistently observed across different ESG measures, although the degree of attenuation varies. Overall, the results suggest that the positive relationship between gender diversity and ESG performance is more pronounced when audit tenure is short but becomes weaker as audit tenure increases. This highlights the interaction between internal governance (board diversity) and external assurance (audit tenure) in shaping ESG outcomes.

From a practical perspective, the findings suggest that firms seeking to enhance ESG performance should complement board diversity with strong external monitoring mechanisms. In particular, periodic auditor rotation may help preserve auditor independence and strengthen the effectiveness of governance structures in supporting ESG initiatives.

4.4 Robustness tests

4.4.1 Two-stage least-squares regression. We adopt two-stage least squares (2SLS) to deal with endogeneity issues in regression models that may take place due to omitted variables, measurement error and simultaneity. In the first stage, we use an instrumental variable AC management independence (*AC_MGTIND*) which appears to be strongly correlated with the endogenous variable. In the second stage of the 2SLS depicted in Table 6, all the independent variables of this study, AC independence (*AC_IND*), gender diversity (*GEND*) and CEO duality (*CEOD*) remain statistically and significantly associated with the dependent variables of *ESG_SCORE*, *ESG_COMB* and *ESG_AVE*.

Figure 1 Two-way interaction effect between gender and auditor tenure on ESG score

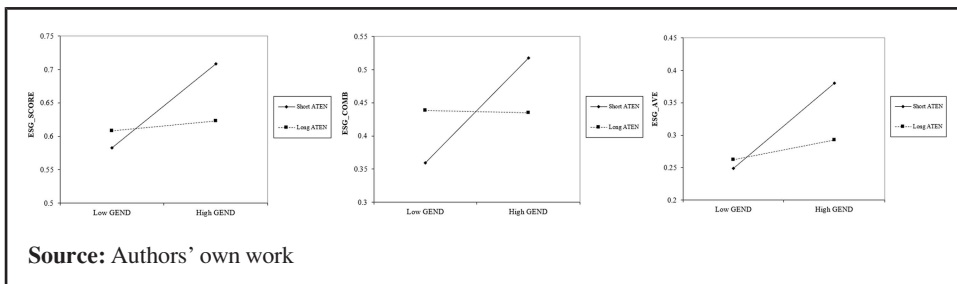


Table 6 2SLS estimates with both firm and year fixed effects

Variables	First-stage regression	Second-stage regression		
	Audit committee independence as dependent variable	(1) ESG_SCORE	(2) ESG_COMB	(3) ESG_EVE
AC_MGT	11.4520*** (3.539)			
AC_IND		0.0156*** (3.136)	0.0149*** (2.636)	0.0175*** (3.234)
GEND	-0.0453 (-0.710)	0.0036*** (3.067)	0.0040*** (3.305)	0.0040*** (3.201)
CEOD	0.5214 (0.220)	-0.1659** (-2.177)	-0.1729** (-2.331)	-0.1978** (-2.263)
POL	-5.2737 (-1.368)	0.1287 (1.633)	0.1483* (1.880)	0.1203 (1.424)
TA	5.2444*** (3.472)	0.0783** (2.002)	0.0916** (2.146)	0.0835** (1.974)
CEOM	2.1376 (1.135)	-0.0515 (-1.261)	-0.0173 (-0.344)	-0.0604 (-1.435)
BTEN	1.3787*** (3.907)	-0.0111 (-0.976)	-0.0128 (-1.046)	-0.0148 (-1.170)
ATEN	-0.1504 (-0.539)	-0.0028 (-0.558)	0.0013 (0.180)	-0.0036 (-0.648)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1,156	1,156	1,156	1,156
Number of firms	261	261	261	261
First-stage F-test of excluded instruments	12.53			
Endogeneity test (chi-stat)		10.847***	7.020***	11.769***
Cragg–Donald Wald F-statistic		29.32	29.32	29.32
Second-stage F-statistic		19.65	15.24	19.66

Note(s): Robust z-statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

These results suggest that there are no endogeneity concerns relating to omitted variables, measurement error and simultaneity that may appear in certain regression models.

4.4.2 Generalised least squares regression. To further validate the main results and the additional analysis of this study, we conduct a generalised least squares (GLS) analysis. To eliminate heteroskedasticity or autocorrelation in the error terms arising from the use of ordinary least squares, the GLS estimator is able to provide more efficient estimates (Musau *et al.*, 2015).

Models 1–6 of Table 7 present the results of the GLS estimator. The results from this table indicate that the three independent variables, namely, AC independence (*AC_IND*), board gender diversity (*GEND*) and CEO duality (*CEOD*) remained significantly associated across all dependent variables in this study. Similarly, all three independent variables are also significantly associated with the dependent variables for the models, including the interaction term between gender diversity and audit tenure (*GEND* ATEN*), suggesting that there are no heteroskedasticity or autocorrelation issues in both the main analysis and the additional analysis.

4.4.3 Fixed effects regressions using raw environmental, social and governance scores. As an alternative robustness check, we also re-estimated the fixed effects regressions using the raw ESG scores. The results reported in Table 8 are consistent with our baseline findings in Table 4. AC independence and gender diversity remain positively associated with ESG performance, whereas CEO duality is negatively associated with ESG performance. Empirically, this supplementary test validates the core findings for this study.

4.4.4 Entropy balancing. External auditors exercise greater independence and professional scepticism when audit tenure is shorter, whereas longer audit tenure may weaken and impair auditors' independence due to familiarity and complacency. To assess the effect of prolonged audit tenure, we apply the entropy balancing method to estimate the effect of long versus short audit tenure and reduce sample selection bias. The sample is

Table 7 GLS estimates

Variables	(1) ESG_SCORE	(2) ESG_SCORE	(3) ESG_COMB	(4) ESG_COMB	(5) ESG_AVE	(6) ESG_AVE
AC_IND	0.0031*** (11.855)	0.0032*** (11.873)	0.0034*** (15.162)	0.0036*** (16.545)	0.0036*** (15.943)	0.0042*** (20.377)
GEND	0.0021*** (6.012)	0.0045*** (6.940)	0.0032*** (8.811)	0.0070*** (9.110)	0.0023*** (5.852)	0.0042*** (6.274)
CEOD	-0.0740*** (-2.954)	-0.0678*** (-2.677)	-0.1358*** (-7.810)	-0.1435*** (-9.214)	-0.0860*** (-3.035)	-0.0833*** (-2.921)
POL	-0.0021 (-0.040)	-0.0161 (-0.313)	0.0082 (0.160)	-0.0069 (-0.144)	-0.0316 (-0.585)	-0.0383 (-0.725)
TA	0.1099*** (11.747)	0.1078*** (12.089)	0.1151*** (11.213)	0.0994*** (10.835)	0.1304*** (13.496)	0.1341*** (13.405)
CEOM	0.0157 (0.979)	0.0197 (1.224)	0.0200 (0.953)	0.0247 (1.131)	0.0115 (0.644)	0.0150 (0.847)
BTEN	0.0081*** (3.886)	0.0083*** (3.964)	0.0057** (2.572)	0.0063** (2.549)	0.0088*** (4.137)	0.0095*** (4.551)
ATEN	-0.0016 (-1.083)	0.0108*** (3.564)	-0.0024** (-1.983)	0.0171*** (5.120)	-0.0044*** (-2.871)	0.0041 (1.398)
GEND × ATEN		-0.0004*** (-4.890)		-0.0006*** (-6.899)		-0.0003*** (-3.822)
Constant	1.1676*** (5.994)	1.1212*** (5.948)	1.0039*** (4.739)	1.1699*** (6.128)	0.7449*** (3.735)	0.5359*** (2.602)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,156	1,156	1,156	1,156	1,156	1,156
Number of firms	261	261	261	261	261	261

Note(s): z-statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

Table 8 Fixed effects regression estimates using the raw ESG score without log transformation

Variables	(1) ESG_SCORE	(2) ESG_COMB	(3) ESG_AVE
AC_IND	0.1344*** (5.352)	0.1162*** (3.955)	0.1444*** (5.760)
GEND	0.1036*** (2.997)	0.1304*** (3.082)	0.1081*** (3.094)
CEOD	-5.7711*** (-2.627)	-6.3072*** (-3.003)	-6.4066*** (-2.713)
POL	-1.3053 (-0.782)	-0.1337 (-0.078)	-1.8313 (-1.147)
TA	4.2006*** (4.761)	4.8959*** (4.757)	4.2796*** (4.833)
CEOM	-0.1063 (-0.083)	1.4879 (0.832)	-0.3238 (-0.255)
BTEN	0.2977 (1.080)	0.1834 (0.608)	0.2697 (0.940)
ATEN	-0.0120 (-0.087)	0.2525 (0.847)	-0.0036 (-0.026)
Constant	-54.5043*** (-2.997)	-74.5502*** (-3.450)	-57.5263*** (-3.164)
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	1,156	1,156	1,156
R-squared	0.924	0.856	0.924
Adjusted R-squared	0.900	0.811	0.901
F-statistic	12.27	9.778	13.02

Note(s): Robust t-statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively

Source(s): Authors' own work

divided into treatment and control groups based on the median auditor tenure for each year, with the treatment group representing firms with long audit tenure and the control group representing firms with short audit tenure. Subsequently, the covariates in the control group are reweighted so that their mean, variance and skewness align with those of the treatment group. The results of this procedure are reported in Panel A of Table 9. Furthermore, the regression is re-estimated based on the balanced sample with the results shown in Panel B of Table 9. The findings reveal that the treatment variable (long auditor tenure) is significant and negative across all ESG measurements. This suggests that firms with longer auditor tenure exhibit lower ESG performance.

Table 9 Entropy balance results

Variables	Before balance			Control (shorter auditor tenure)		
	Treatment (longer auditor tenure)			Mean	Variance	Skewness
	Mean	Variance	Skewness	Mean	Variance	Skewness
<i>Panel A. Covariate balance</i>						
AC_IND	86.83	476.1	-2.17	85.4	488.1	-1.843
GEND	30.28	157.2	-0.154	30.33	155.1	-0.236
CEOD	0.123	0.108	2.29	0.081	0.074	3.076
POL	0.928	0.067	-3.312	0.934	0.062	-3.48
TA	21.65	3.414	0.426	21.66	3.387	0.388
CEOM	0.905	0.086	-2.76	0.901	0.089	-2.684
BTEN	6.678	9.783	2.081	5.959	6.427	1.116
<i>After balance</i>						
AC_IND	86.83	476.1	-2.17	86.82	476.1	-2.169
GEND	30.28	157.2	-0.154	30.28	157.2	-0.153
CEOD	0.123	0.108	2.29	0.124	0.109	2.287
POL	0.928	0.067	-3.312	0.928	0.067	-3.308
TA	21.65	3.414	0.426	21.64	3.413	0.429
CEOM	0.905	0.086	-2.76	0.905	0.086	-2.757
BTEN	6.678	9.783	2.081	6.677	9.789	2.079
<i>Panel B. Entropy balance sample regressions</i>						
	(1)	(2)	(3)			
Variables	ESG_SCORE	ESG_COMB	ESG_AVE			
AC_IND	0.0035*** (4.791)	0.0033*** (4.084)	0.0041*** (5.140)			
GEND	0.0013 (1.418)	0.0019* (1.794)	0.0016 (1.605)			
CEOD	-0.1190** (-2.015)	-0.1277** (-2.165)	-0.1429** (-2.205)			
POL	0.3188** (2.411)	0.3572*** (2.595)	0.3011** (2.200)			
TA	0.1267*** (4.500)	0.1334*** (4.220)	0.1359*** (4.879)			
CEOM	-0.0511 (-1.468)	-0.0315 (-0.736)	-0.0673* (-1.899)			
BTEN	0.0078 (1.034)	0.0052 (0.643)	0.0070 (0.875)			
ATEN (treatment)	-0.0972*** (-3.513)	-0.0954*** (-3.084)	-0.1092*** (-3.600)			
Constant	0.5411 (0.903)	0.3205 (0.476)	0.2873 (0.482)			
Firm fixed effects	Yes	Yes	Yes			
Year fixed effects	Yes	Yes	Yes			
Observations	1,156	1,156	1,156			
R-squared	0.895	0.851	0.893			
Adjusted R-squared	0.863	0.805	0.860			
F-statistic	11.54	9.407	12.44			
Note(s): Robust <i>t</i> -statistics in parentheses. *, ** and *** represent significant at the 10, 5 and 1% level, respectively						
Source(s): Authors' own work						

5. Theoretical implications

This study offers important theoretical contributions by more explicitly linking governance mechanisms to ESG performance through stakeholder–agency theory and resource dependence theory.

Firstly, the findings provide strong support for stakeholder–agency theory by demonstrating how governance structures shape firms' responsiveness to multiple stakeholder interests. The positive association between AC independence and ESG performance suggests that independent oversight enhances accountability and encourages management to align with broader stakeholder expectations. In contrast, the negative relationship between CEO duality and ESG performance supports agency theory by showing that concentration of power weakens board monitoring and reduces attention to sustainability objectives. Furthermore, the moderating effect of audit tenure refines this theoretical perspective by highlighting that weakened external monitoring

due to prolonged auditor–client relationships can undermine the effectiveness of internal governance mechanisms. Specifically, the finding that long audit tenure weakens the positive impact of board gender diversity on ESG performance demonstrates that both internal and external governance mechanisms must function jointly to reduce agency costs and information asymmetry.

Secondly, the study extends resource dependence theory by providing empirical evidence on the strategic value of board gender diversity in the ESG context. The positive association between female board representation and ESG performance suggests that diverse boards contribute not only additional perspectives and expertise but also stronger connections to external stakeholders. This enhances firms' ability to respond to environmental and social challenges and strengthens their legitimacy. Importantly, the results refine this theoretical lens by showing that the benefits of board diversity are contingent on the quality of external monitoring, as reflected in the moderating role of audit tenure.

Overall, this study advances the literature by integrating stakeholder–agency and resource dependence perspectives, demonstrating that ESG performance is shaped by the interaction between internal governance structures and external assurance mechanisms. This provides a more nuanced understanding of how governance systems operate in promoting sustainable corporate outcomes.

6. Practical and policy implications

The findings of this study provide several practical and policy implications for firms, regulators and governance bodies within the Australian context. Firstly, the results highlight the importance of effective board structures in enhancing ESG performance. In particular, the positive association between AC independence and ESG performance supports Recommendation 2.1 of the ASX Corporate Governance Council Principles and Recommendations ([Australian Securities Exchange, 2019](#)), which emphasises the need for independent directors, especially within ACs, to strengthen oversight and accountability.

Secondly, the negative relationship between CEO duality and ESG performance provides empirical support for Recommendation 2.5 of the ASX guidelines, which advocates for the separation of the roles of CEO and chair. This separation promotes balanced decision-making and enhances board independence, which is particularly important for advancing ESG strategies and ensuring broader stakeholder accountability.

Thirdly, the findings reinforce the importance of board gender diversity in improving ESG outcomes. Consistent with Recommendation 1.5 of the ASX guidelines, which encourages greater female representation on boards, our results suggest that gender diversity contributes meaningfully to governance quality and sustainability performance. This indicates that diversity initiatives should be viewed not merely as symbolic compliance measures, but as strategic mechanisms that enhance firms' responsiveness to environmental and social challenges.

Importantly, this study also provides practical insights into the role of audit tenure. The finding that extended audit tenure weakens the positive impact of board gender diversity on ESG performance highlights the need for strong external monitoring to complement internal governance mechanisms. In practice, this suggests that ACs should actively evaluate auditor independence and consider implementing periodic auditor rotation or tendering processes. From a regulatory perspective, bodies such as ASIC and the ASX may consider reinforcing guidance on audit tenure and independence to ensure the credibility of ESG disclosures.

At the same time, policymakers should be mindful of potential trade-offs. For example, mandatory auditor rotation may increase audit costs or reduce audit effectiveness during transition periods due to learning effects. Similarly, focusing solely on numerical gender

diversity targets without fostering inclusive board dynamics may limit the effectiveness of such initiatives. Overall, the findings suggest that a holistic governance approach integrating board independence, gender diversity and robust external audit oversight is essential for enhancing ESG performance. Aligning internal governance structures with strong and independent external assurance mechanisms will be critical in improving the credibility and effectiveness of sustainability practices in the Australian corporate environment.

7. Limitations and future research

As far as limitations are concerned, this study is confined to Australia's institutional settings and the results may not generalise to other countries. Secondly, there is a likelihood that there may be other factors that have not been controlled for although an exhaustive range of control variables has been used. Thirdly, the study is reliant on secondary data and limited to large listed firms. Nonetheless, the possibility of such exclusions has insignificant consequence as the intention of this study is to investigate the relationship between ESG performance and board characteristics and not its causality. Subsequent research can explore other aspects of board characteristics like busy boards or the existence of a sustainability committee.

8. Conclusion

Despite its limitations, this study provides vital information and an update on the relationship between ESG performance and board characteristics in Australia. The implication from this study enhances the understanding and mechanism of AC independence, female directors in promoting the ESG agenda. Using a sample of 1296 firm-years for the period 2017–2023, we find that firms with independent AC have elevated ESG outcomes. We also find that gender-diverse boards are associated with higher ESG performance. Contrariwise, the findings of powerful CEOs impeding the ESG initiatives in listed Australian firms suggest that corporate decision makers and stakeholders to consider segregating the role of CEO and chairperson to improve board oversight. Similarly, extended audit tenure negatively moderates and weakens the positive association between gender diversity and ESG performance. The above findings corroborate the theoretical frameworks of stakeholder–agency theory and resource dependency theory used in this study. Moreover, the alternative measurements of our independent and dependent variables confirm the robustness of the main findings. We also address endogeneity issues, heteroskedasticity and autocorrelation concerns associated with studies on ESG performance by performing 2SLS regression analysis, GLS estimates regressions and entropy balancing. By addressing these different attributes of board characteristics, this research contributes to the debate surrounding ESG and sustainability practices in Australia.

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References

Abbassi, K., Alam, A., Bhuiyan, M.B.U. and Islam, M.T. (2024), "Does female director expertise on audit committees matter for carbon disclosures? Evidence from the United Kingdom", *Journal of International Accounting, Auditing and Taxation*, Vol. 55, pp. 1-15.

- Ahmed, A. and Hussain, A. (2024), "Board gender diversity and corporate cash holdings: evidence from Australia", *International Journal of Accounting & Information Management*, Vol. 32 No. 4, pp. 622-650.
- Al-Shaer, H. and Zaman, M. (2018), "Credibility of sustainability reports: the contribution of audit committees", *Business Strategy and the Environment*, Vol. 27 No. 7, pp. 973-986.
- Albitar, K., Hussainey, K., Kolade, N. and Gerged, A.M. (2020), "ESG disclosure and firm performance before and after IR: the moderating role of governance mechanisms", *International Journal of Accounting & Information Management*, Vol. 28 No. 3, pp. 429-444.
- Allegrini, M. and Greco, G. (2013), "Corporate boards, audit committees and voluntary disclosure: evidence from Italian listed companies", *Journal of Management & Governance*, Vol. 17 No. 1, pp. 187-216.
- Altin, M. (2024), "Audit committee characteristics and firm performance: a cross-country meta-analysis", *Management Decision*, Vol. 62 No. 5, pp. 1687-1719.
- Amorelli, M.F. and Garcia-Sanchez, I. (2021), "Trends in the dynamic evolution of board gender diversity and corporate social responsibility", *Corporate Social Responsibility and Environmental Management*, Vol. 28 No. 2, pp. 537-554.
- Annesi, N., Battaglia, M., Ceglia, I. and Mercuri, F. (2025), "Navigating paradoxes: building a sustainable strategy for an integrated ESG corporate governance", *Management Decision*, Vol. 63 No. 2, pp. 531-559.
- Appuhami, R. and Tashakor, S. (2017), "The impact of audit committee characteristics on CSR disclosure: an analysis of Australian firms", *Australian Accounting Review*, Vol. 27 No. 4, pp. 400-420.
- Arif, M., Sajjad, A., Farooq, S., Abrar, M. and Joyo, A.S. (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*, Vol. 21 No. 3, pp. 497-514.
- Asante-Appiah, B. and Lambert, T.A. (2022), "The role of the external audit in managing environmental, social and governance (ESG) reputation risk", *Review of Accounting Studies*, Vol. 28 No. 4, pp. 2589-2641, doi: [10.1007/s11142-022-09706-z](https://doi.org/10.1007/s11142-022-09706-z).
- Australian Securities Exchange (2019), *ASX Corporate Governance Principles and Recommendations*, 4th Edition.
- Bamahros, H.M., Alquhaif, A., Qasem, A., Wan-Hussin, W.N., Thomran, M., Al-Duais, S.D., Shukeri, S.N. and Khojally, H.M.A. (2022), "Corporate governance mechanisms and ESG reporting: evidence from the Saudi stock market", *Sustainability*, Vol. 14 No. 10, pp. 1-20.
- Baxter, P. and Cotter, J.F. (2009), *Audit Committees and Earnings Quality*. *Accounting & Finance*, Vol. 49, pp. 267-290.
- Bialkowski, J. and Slawik, A. (2022), "Does companies' ESG performance make a difference for New Zealand's stock market investors during the COVID-19 pandemic?", *Sustainability*, Vol. 14 No. 23, pp. 1-12.
- Broadstock, D.C., Chan, K., Cheng, L.T.W. and Wang, X. (2021), "The role of ESG performance during times of financial crisis: evidence from Covid-19 in China", *Finance Research Letters*, Vol. 38, pp. 1-11.
- Bronson, S., N., Carcello, J.V., Hollingsworth, C.W. and Neal, T.L., (2009), "Are fully independence audit committees really necessary?", *Journal of Accounting and Public Policy*, Vol. 28 No. 4, pp. 265-280.
- Chau, G. and Gray, S.J. (2010), "Family ownership, board independence and voluntary disclosure: evidence from Hong Kong", *Journal of International Accounting, Auditing and Taxation*, Vol. 19 No. 2, pp. 93-109.
- Cheng, C.M. and Courtenay, S.M. (2006), "Board composition, regulatory regime and voluntary disclosure", *The International Journal of Accounting*, Vol. 41 No. 3, pp. 262-289.
- D'Amato, A. and Falivena, C. (2020), "Corporate social responsibility and firm value: do firm size and age matter? Empirical evidence from European listed companies", *Corporate Social Responsibility and Environmental Management*, Vol. 27 No. 2, pp. 909-924.
- de Jong, B., Hijink, S. and In't Veld, L. (2020), "Mandatory audit firm rotation for listed companies: the effects in Netherlands", *European Business Organization Law Review*, Vol. 21 No. 4, pp. 937-966.
- DeAngelo, L.E. (1981), "Auditor size and audit quality", *Journal of Accounting and Economics*, Vol. 3 No. 3, pp. 183-199.

- Dias, A., Lima Rodrigues, L. and Craig, R. (2017), "Corporate governance effects on social responsibility disclosures", *Australasian Accounting, Business and Finance Journal*, Vol. 11 No. 2, pp. 1-22.
- Farrell, K.A. and Hersch, P.L. (2005), "Additions to corporate boards: the effect of gender", *Journal of Corporate Finance*, Vol. 11 Nos 1-2, pp. 85-106.
- Galbreath, J. (2013), "ESG in focus: the Australian evidence", *Journal of Business Ethics*, Vol. 118 No. 3, pp. 529-541.
- Galbreath, J. (2018), "Is board gender diversity linked to financial performance? The mediating mechanism of CSR", *Business & Society*, Vol. 57 No. 5, pp. 863-889.
- Gerged, A.M. (2020), *Factors Affecting Corporate Environmental Disclosure in Emerging Markets: The Role of Corporate Governance Structures Business Strategy and the Environment*, Vol. 30 No. 1, pp. 609-629.
- Ghafran, C., O'Sullivan, N. and Yasmin, S. (2022), "When does audit committee busyness influence earnings management in the UK? Evidence on the role of the financial crisis and company size", *Journal of International Accounting, Auditing and Taxation*, Vol. 47, doi: [10.1016/j.intaccudtax.2022.100467](https://doi.org/10.1016/j.intaccudtax.2022.100467).
- Gholami, A., Sands, J. and Shams, S. (2022), "The impact of corporate ESG performance disclosure across Australian industries", *Australasian Accounting, Business and Finance Journal*, Vol. 16 No. 4, pp. 180-200.
- GRI (2018), "Business reporting on the SDGs", available at: www.globalreporting.org/information/SDGs/Pages/Reporting-on-the-SDGs.aspx
- Groening, C. (2019), "When do investors value board gender diversity?", *Corporate Governance: The International Journal of Business in Society*, Vol. 19 No. 1, pp. 60-79.
- Gul, F.A., Jaggi, B. and Krishnan, G.V. (2007), "Auditor independence: evidence on the joint effects of auditor tenure and nonaudit fees", *AUDITING: A Journal of Practice & Theory*, Vol. 26 No. 2, pp. 117-142.
- Hackston, D. and Milne, M.J. (1996), "Some determinants of social and environmental disclosures in New Zealand companies", *Accounting, Auditing & Accountability Journal*, Vol. 9 No. 1, pp. 77-108.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1995), *Multivariate Data Analysis*, 4th Edition, Prentice Hall, Englewood Cliffs, New Jersey (NJ).
- Handayanti, P., Tham, Y.H., Yuningsih, Y., Rochayatun, and S., Meldona. (2022), "Audit quality, corporate governance, firm characteristics and CSR disclosures – evidence from Indonesia", *Journal of Corporate Accounting and Finance*, Vol. 33 No. 3, pp. 65-78.
- Haniffa, R.M. and Cooke, T.E. (2005), "The impact of culture and governance on corporate social reporting", *Journal of Accounting and Public Policy*, Vol. 24 No. 5, pp. 391-430.
- Hill, C. and Jones, T. (1992), "Stakeholder-agency theory", *Journal of Management Studies*, Vol. 29 No. 2, pp. 131-154.
- Hillman, A.J., Cannella, A.A. and Paetzold, R.L. (2000), "The resource dependence role of corporate directors: strategic adaption of board composition in response to environmental change", *Journal of Management Studies*, Vol. 37 No. 2, pp. 236-255.
- Hillman, A.J., Shropshire, C. and Cannella, A.A. Jr, (2007), "Organizational predictors of women on corporate boards", *Academy of Management Journal*, Vol. 50 No. 4, pp. 941-952.
- Ho, S.M. and Wong, K.S. (2001), "A study of the relationship between corporate governance structures and the extent of voluntary disclosure", *Journal of International Accounting, Auditing and Taxation*, Vol. 10 No. 2, pp. 139-156.
- Hussain, N., Rigoni, U. and Orij, R.P. (2018), "Corporate governance and sustainability performance: analysis of triple bottom line performance", *Journal of Business Ethics*, Vol. 149 No. 2, pp. 411-432.
- Kim, S. and Li, Z. (2021), "Understanding the impact of ESG practices in corporate finance", *Sustainability*, Vol. 13 No. 7, pp. 1-15.
- Krause, R., Semadeni, M. and Cannella, A.A. Jr, (2014), "CEO duality: a review and research agenda", *Journal of Management*, Vol. 40 No. 1, pp. 256-286.
- Krueger, P., Sautner, Z. and Starks, L.T. (2020), "The importance of climate risks for institutional investors", *The Review of Financial Studies*, Vol. 33 No. 3, pp. 1067-1111.
- Lee, D.D., Fan, J.H. and Wong, V.S.H. (2021), "No more excuses! performance of ESG-integrated portfolios in Australia", *Accounting & Finance*, Vol. 61 No. S1, pp. 2407-2450.

- Li, J., Mangena, M. and Pike, R. (2012), "The effect of audit committee characteristics on intellectual capital disclosure", *The British Accounting Review*, Vol. 44 No. 2, pp. 98-110.
- Li, T.T., Wang, K., Sueyoshi, T. and Wang, D. (2021), "ESG: research progress and future prospect", *Sustainability*, Vol. 13 No. 21, pp. 1-28.
- Limkriangkrai, M., Koh, S. and Durand, R. (2017), "Environmental, social, and governance (ESG) profiles, stock returns and financial policy: Australian evidence", *International Review of Finance*, Vol. 17 No. 3, pp. 461-471.
- Ling, Y.H., Tham, Y.H. and Jong, L. (2026), "Steering the helm of sustainability: the role of sustainability committees and female directors", *Journal of Accounting & Organizational Change*, Vol. 22 No. 7, pp. 120-139, doi: [10.1108/JAOC-04-2025-0110](https://doi.org/10.1108/JAOC-04-2025-0110).
- Lokuwaduge, C.S.D. and De Silva, K.M. (2022), "ESG risk disclosure and the risk of green washing", *Australasian Accounting, Business and Finance Journal*, Vol. 16, pp. 146-159.
- Mahoney, L.S. and Thom, L. (2006), "An examination of the structure of executive compensation and corporate social responsibility: a Canadian investigation", *Journal of Business Ethics*, Vol. 69 No. 2, pp. 149-162.
- Manita, R., Bruna, M.G., Dang, R. and Houanti, L. (2018), "Board gender diversity and ESG disclosure: evidence from the USA", *Journal of Applied Accounting Research*, Vol. 19 No. 2, pp. 206-224.
- Menon, K. and Williams, D.D. (1991), "Credibility and initial public offerings", *The Accounting Review*, Vol. 66 No. 2, pp. 313-332.
- Menon, K. and Williams, C.A. (1994), "The use of audit committees for monitoring", *Journal of Accounting and Public Policy*, Vol. 13 No. 2, pp. 121-139.
- Michelon, G., Patten, D.M. and Romi, A.M. (2019), "Creating legitimacy for sustainability assurance practices: evidence from sustainability restatements", *European Accounting Review*, Vol. 28 No. 2, pp. 395-422.
- Musau, V.M., Waititu, A.G. and Wanjoya, A.K. (2015), "Modeling panel data: comparison of GLS estimation and robust covariance matrix estimation", *American Journal of Theoretical and Applied Statistics*, Vol. 4 No. 3, pp. 185-191.
- Muttakin, M.B., Chatterjee, B., Khan, A., Mihret, D.G., Roy, R. and Yaftian, A. (2022), "Corporate political donations, board gender diversity and corporate social responsibility: evidence from Australia", *Journal of Business Research*, Vol. 152 No. Nov, pp. 290-299.
- Oradi, J. and Izadi, J. (2020), "Audit committee gender and financial reporting: evidence from restatements", *Managerial Auditing Journal*, Vol. 35 No. 1, pp. 67-91.
- Orazalin, N. (2019), "Do board sustainability committees contribute to corporate environmental and social performance? The mediating role of corporate social responsibility strategy", *Business Strategy and the Environment*, Vol. 29 No. 1, pp. 140-153.
- Paolone, F., Pozzoli, M., Cuccan, N. and Bianco, R. (2022), "Longer board tenure and audit committee tenure. How do they impact environmental performance? A European study", *Corporate Social Responsibility and Environmental Management*, Vol. 30 No. 1, pp. 358-368.
- Pfeffer, J. and Salancik, G.R. (1978), *The External Control of Organizations: A Resource Dependence Perspective*, Harper & Row Publishers, New York.
- Pizzi, S., Rosati, F. and Venturelli, A. (2020), "The determinants of business contribution to the 2030 agenda: introducing the SDG reporting score", *Business Strategy and the Environment*, Vol. 30 No. 1, pp. 404-421.
- Pozzoli, M., Pagani, A. and Paolone, F. (2022), "The impact of audit committee characteristics on ESG performance in the European Union member states: empirical evidence before and during the Covid-19 pandemic", *Journal of Cleaner Production*, Vol. 371, p. 133411.
- Rao, K.K. and Tilt, C. (2016a), "Board diversity and CSR reporting: an Australian study", *Meditari Accountancy Research*, Vol. 24 No. 2, pp. 182-210.
- Rao, K.K. and Tilt, C.A. (2016b), "Board composition and corporate social responsibility: the role of diversity, gender, strategy and decision making", *Journal of Business Ethics*, Vol. 138 No. 2, pp. 327-347.
- Rao, K.K. and Tilt, C. (2021), "Gender and CSR decisions: perspectives from Australian boards", *Meditari Accountancy Research*, Vol. 29 No. 1, pp. 60-85.

- Rao, K.K., Tilt, C.A. and Lester, L.H. (2012), "Corporate governance and environmental reporting: an Australian study", *Corporate Governance*, Vol. 12 No. 2, pp. 143-163.
- Rashid, A., Shams, S., Bose, S. and Khan, H. (2020), "CEO power and corporate social responsibility (CSR) disclosure: does stakeholder influence matter?", *Managerial Auditing Journal*, Vol. 35 No. 9.
- Rechner, P.L. and Dalton, D.R. (1991), "CEO duality and organizational performance: a longitudinal analysis", *Strategic Management Journal*, Vol. 12 No. 2, pp. 155-160.
- Reddy, S. and Jadhav, A.M. (2019), "Gender diversity in boardrooms – a literature review", *Cogent Economics & Finance*, Vol. 7 No. 1, pp. 1-11.
- Romano, M., Cirillo, A., Favino, C. and Netti, A. (2020), "ESG (environmental, social and governance) performance and board gender diversity: the moderating role of CEO duality", *Sustainability*, Vol. 12 No. 21, pp. 1-16.
- Ruiz-Barbadillo, E. and Martinez-Ferrero, J. (2023), "Is tenure important in the sustainability assurance context? An empirical analysis of the informative value of the assurance statements", *Meditari Accountancy Research*, Vol. 31 No. 5, pp. 1483-1517.
- Safari, M. (2017), "Board and audit committee effectiveness in the post-ASX corporate governance principles and recommendations era", *Managerial Finance*, Vol. 43 No. 10, pp. 1137-1151.
- Saleh, I., Afifa, M.A. and Alkhawaja, A. (2023), "Environmental, social, and governance (ESG) disclosure, earnings management and cash holdings", *Evidence from a European Context Business Ethics, Environment & Responsibility*, pp. 1-14, doi: [10.1111/beer.12650](https://doi.org/10.1111/beer.12650).
- Sellami, Y.M. and Cherif, I. (2020), "Female audit committee directorship and audit fees", *Managerial Auditing Journal*, Vol. 35 No. 3, pp. 398-428.
- Singer, Z. and Zhang, J. (2018), "Auditor tenure and the timeliness of misstatement discovery", *The Accounting Review*, Vol. 93 No. 2, pp. 315-338.
- Treepongkaruna, S., Kyaw, K. and Jiraporn, P. (2024), "ESG controversies and corporate governance: evidence from board size", *Business Strategy and the Environment*, Vol. 33 No. 5, pp. 4218-4232.
- Udayasankar, K. (2008), "Corporate social responsibility and firm size", *Journal of Business Ethics*, Vol. 83 No. 2, pp. 167-175.
- Uyar, A., Kuzey, C., Kilic, M. and Karaman, A.S. (2021), "Board structure, financial performance, corporate social responsibility performance, CSR committee, and CEO duality: disentangling the connection in healthcare", *Corporate Social Responsibility and Environmental Management*, Vol. 28 No. 6, pp. 1730-1748.
- Wang, J. and Coffey, B.S. (1992), "Board composition and corporate philanthropy", *Journal of Business Ethics*, Vol. 11 No. 10, pp. 771-778.
- Wasiuzzaman, S. and Wan Mohammad, W.M. (2020), "Board gender diversity and transparency of environmental, social and governance disclosure: evidence from Malaysia", *Managerial and Decision Economics*, Vol. 41 No. 1, pp. 145-156.
- Zahid, M., Rahman, H.U., Ali, W., Khan, M., Alharti, M., Qureshi, M.I. and Jan, M. (2020), "Boardroom gender diversity: implications for corporate sustainability disclosures in Malaysia", *Journal of Cleaner Production*, Vol. 244, p. 118683.
- Zampone, G., Nicolo, G., Sannino, G. and De Iorio, S. (2022), "Gender diversity and SDG disclosure: the mediating role of the sustainability committee", *Journal of Applied Accounting Research*, Vol. 25 No. 1, pp. 171-193, doi: [10.1108/JAAR-06-2022-0151](https://doi.org/10.1108/JAAR-06-2022-0151).
- Zheng, L., Gill, S. and Wong, B. (2019), "Corporate social responsibility risk and auditor-client retention", *International Journal of Auditing*, Vol. 23 No. 1, pp. 95-111.
- Zolotoy, L., O'Sullivan, D., Martin, G.P. and Wiseman, R.M. (2021), "Stakeholder agency relationships: CEO stock options and corporate tax avoidance", *Journal of Management Studies*, Vol. 58 No. 3, pp. 783-814.

Appendix 1

Table A1 Variable definition		
Variable	Definition	Source
<i>Dependent variables</i>		
ESG_SCORE_{it}	Natural log of ESG score after adding 1, with ESG score being an overall company score based on the self-reported information in the environmental, social and corporate governance pillars	London Stock Exchange Group (LSEG) Refinitiv Workspace
ESG_COMB_{it}	Natural log of ESG combined score after adding 1, with the combined score being the ESG score with an ESG Controversies overlay	LSEG Refinitiv Workspace
ESG_AVE_{it}	Natural log of the unweighted average of environmental, governance and social pillar scores after adding 1. The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices	LSEG Refinitiv Workspace
<i>Independent/control variables</i>		
AC_IND_{it}	Percentage of independent board members on the audit committee as stipulated by the company	LSEG Refinitiv Workspace
$GEND_{it}$ $CEOD_{it}$	Percentage of females on the board. If the firm's chairperson is also the CEO, score = 1, otherwise score 0	LSEG Refinitiv Workspace LSEG Refinitiv Workspace
POL_{it}	If firm has policy on board size, score = 1, otherwise 0	LSEG Refinitiv Workspace
TA_{it}	Natural of total assets after adding 1, which represents the total assets reported by a company. In case the total assets is not reported, it will be the sum of the following items: total current assets, total non-current assets	LSEG Refinitiv Workspace
$CEOM_{it}$	If CEO of firm is a board member, score = 1, otherwise 0	LSEG Refinitiv Workspace
$BTEN_{it}$	The average number of years each board member has been on the board	LSEG Refinitiv Workspace
$ATEN_{it}$	The number of years current auditor is serving the organization	LSEG Refinitiv Workspace
<i>Instrumental variables</i>		
AC_MGT_{it}	If the company reports that all audit committee members are non-executives, score = 1, otherwise 0	LSEG Refinitiv Workspace
Source(s): Authors' own work		

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