

ESG Controversies and Market-Based Firm Performance: The Moderating Roles of Board Independence and Board Gender Diversity in ASEAN-5 Countries

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Abstract

ESG controversies expose firms to reputational, financial, and operational risks, yet research on emerging markets has concentrated on aggregate ESG performance rather than on controversy events, leaving their valuation consequences in Southeast Asia untested. The ASEAN-5 combines high ESG risk exposure with largely voluntary reporting and uneven enforcement across jurisdictions, conditions under which internal board oversight carries more of the monitoring burden. This study examines whether ESG controversies reduce market-based firm performance and whether board independence and board gender diversity moderate that relationship. Refinitiv controversy scores are multiplied by -1 so that higher values denote greater controversy involvement. Using an unbalanced panel of 1,970 firm-year observations from 586 non-financial firms over the 2020-2024 period, the study applies Moderated Regression Analysis within a two-way fixed effects model carrying firm and year effects, estimated with panel-corrected standard errors. Tobin's Q serves as the main dependent variable and market-to-book equity is used for robustness. ESG controversies reduce Tobin's Q by 0.0221 per point ($p < 0.01$), while the interaction terms for board independence (0.00120) and board gender diversity (0.00190) are positive and significant, indicating that both attenuate the loss. The findings hold under the alternative proxy and a one-year lagged specification addressing reverse causality. Because board composition is not randomly assigned, the evidence is associational rather than causal. The study extends agency theory by treating board attributes as boundary conditions on an externally triggered shock, and it shows that board structure conditions how far sustainability incidents depress valuation in the ASEAN-5

KEYWORDS

ESG controversies; market-based firm performance; board independence; board gender diversity; ASEAN-5.

Introduction

In recent years, embedding environmental, social, and governance (ESG) considerations into strategic decision-making has emerged as a defining paradigm that now shapes the global business landscape and how investment choices are made (Treepongkaruna et al., 2024a). As a result, the way firm performance is judged has moved beyond conventional financial indicators toward a broader evaluation that also weighs environmental footprint, social accountability, and the soundness of internal governance (Chen et al., 2023; Weston & Nnadi, 2023). Sound ESG practices are associated with long-term stability, operational efficiency, and systemic risk mitigation, which explains why ESG ratings and disclosures now guide the way institutional investors allocate capital (Chen et al., 2023; Fang & Guo, 2025; Ho et al., 2024; Jucá et al., 2024; Sharma et al., 2020). Attention to ESG achievement, however, leaves the opposite side of the same construct unexamined, namely the risk that materializes when firms fail to meet the expectations they have publicly endorsed.

However, behind the accelerated adoption of sustainability principles and ESG reporting lies a contradictory phenomenon that is increasingly common, a rise in ESG controversies. ESG controversies reflect negative publicity or detrimental events that arise when companies fail to fulfill their ethical, legal, or operational responsibilities in the environmental, social, or governance dimensions (Ghafoor & Gull, 2024; Treepongkaruna et al., 2024a). ESG controversy scores published by global rating agencies, such as Refinitiv, reflect the extent to which a business entity is involved in negative events that have come under the spotlight of international media, regulatory authorities, and civil society groups (Agnese et al., 2023). Participation in ESG conflicts engenders profound scepticism among stakeholders and precipitates a notable deterioration in reputation (García-Sánchez et al., 2025). As a result, rather than gaining positive legitimacy, companies involved in ESG controversies must face severe financial and operational consequences, including a decline in total factor productivity, restricted access to external financing, a significant drop in market valuation, and even threats to the company's overall business continuity (Ma & Ma, 2025; Passos & Campos-Rasera, 2024). Controversy risk is not the mirror image of strong ESG performance. ESG scores summarize the policies and commitments a firm reports, whereas controversy scores register conduct failures that external parties have already verified through media coverage, regulatory action, or litigation (Agnese et al., 2023; Menicacci & Simoni, 2024). A firm can hold a high ESG rating and still accumulate controversies, so the two constructs carry different information for investors and warrant separate empirical treatment (Elamer & Boulhaga, 2024; Xue et al., 2023).

There is a significant inconsistency between the ESG disclosures in sustainability reports and companies' actual operational practices, suggesting greenwashing (Fernandez, 2025; Solikhah, 2026; Yu et al., 2020). This misalignment underscores that ESG disclosures are often used merely as a symbolic mechanism to secure external legitimacy, without accompanying substantive internal risk-mitigation commitments (Solikhah, 2026). When ESG controversies come to light, the impact includes a decline in corporate reputation, which, in turn, leads to lower firm performance and market valuation (Jucá et al., 2024; Menicacci & Simoni, 2024). Investors promptly respond to such disputes by retracting capital, resulting in significant stock price volatility (Ilhan et al., 2023), elevated external capital costs (Rau & Yu, 2024), disruptions to operational supply chains (Lei & Yu, 2024), and consumer boycotts that result in a substantial decline in market share (Islam et al., 2021). Therefore, understanding how ESG controversies affect a company's firm performance and market value has become a critical and urgent research issue.

Although previous literature has extensively explored the relationship between ESG factors and firm performance (Alhasnawi et al., 2024; Solikhah & Weng, 2024), most of these studies concentrate on the favorable outcomes associated with overall ESG performance or scores (Ab Aziz et al., 2024; Albitar et al., 2020; Shaikh, 2022). In contrast, the specific impact of negative ESG controversies has been explored only rarely (Elamer & Boulhaga, 2024). Moreover, the literature exhibits marked geographical and institutional gaps, since the bulk of empirical evidence on ESG controversies originates from developed markets characterized by mature regulation and rigorous enforcement (Mendiratta et al., 2023). Consequently, detailed insight into how these controversies influence firms' operational and market outcomes in emerging economies, particularly in Southeast Asia and the ASEAN-5, remains scarce (Elamer & Boulhaga, 2024).

Evidence on ESG controversies in ASEAN has nonetheless

begun to accumulate, and the position of this study is stated against the closest prior work rather than against an untouched field. Ab Aziz et al. (2024) examined 1,212 observations of ASEAN-listed firms for 2017-2022 and measured governance through a composite board effectiveness index, so the separate contribution of each board attribute cannot be recovered from their estimates. Aziz et al. (2025) analyzed 1,414 ASEAN-5 observations for 2017-2023 with board gender diversity and the sustainability committee as moderators, and left board independence untested. Nisak & Solikhah (2026) studied ASEAN-5 non-financial firms for 2021-2024 but placed ESG controversies on the left-hand side of the equation, treating board structure as a determinant of controversy exposure rather than as a condition that shapes its valuation consequences. Abu Khalaf et al. (2025) tested board independence and board gender diversity together, yet in the MENA region, whose ownership concentration and enforcement environment differ from those of Southeast Asia. Three questions remain open across this body of work, whether the two board attributes attenuate the controversy effect when they are estimated side by side in one ASEAN-5 sample, whether the attenuation holds under valuation measures that are consistently market-based rather than mixed with accounting returns, and whether it survives once time-invariant firm and country characteristics are removed through fixed effects instead of random effects.

The gap is theoretical as well as empirical. Stakeholder Theory explains why controversies erode value, since stakeholders who withdraw trust also withdraw the resources and legitimacy on which a firm depends (Freeman, 1984; Suchman, 1995). Agency Theory explains why board oversight matters, since independent monitoring constrains the managerial conduct that produces such incidents in the first place (Fama & Jensen, 1983; Jensen & Meckling, 1976). The two mechanisms operate in sequence rather than in isolation, stakeholder sanctions convert a controversy into a valuation loss, and board monitoring governs how much of that loss reaches shareholders. Prior ASEAN-5 studies have not specified this combined framework before testing it, and the present study makes that specification explicit.

The ASEAN-5 region represents a growing center of economic activity with distinct institutional characteristics. Based on comparative risk profile data from Sustainability (2021), countries in Southeast Asia exhibit relatively high ESG risk exposure, yet this is accompanied by substantial unmanaged ESG risk and risk management scores that fall far below both the global average and European standards. This situation indicates that the institutional capacity of companies in ASEAN to mitigate sustainability risks remains limited, leaving them more exposed to ESG controversies than companies in developed regions. This vulnerability is exacerbated by a regulatory framework that relies largely on voluntary reporting, as well as weak enforcement mechanisms in the region.

Treating the five economies as one analytical setting rests on their shared regional architecture. Indonesia, Malaysia, the Philippines, Singapore, and Thailand are the founding members of ASEAN and host its deepest listed equity markets, and each is assessed under a common regional benchmark, the ASEAN Corporate Governance Scorecard administered by the ASEAN Capital Markets Forum, which is built on OECD corporate governance principles (OECD, 2023). Grouping them does not imply institutional uniformity. Indonesia operates a two-tier structure that separates the board of directors from the board of commissioners, whereas Singapore, Malaysia, Thailand, and the Philippines operate one-tier boards, and the five jurisdictions differ in independent director thresholds, tenure limits, and enforcement intensity (OECD, 2023). The estimation design accommodates this heterogeneity. Firm fixed effects absorb country attributes that stay constant over the

observation window, including board system design and the underlying regulatory regime, year fixed effects capture shocks common to the region, and GDP growth and inflation control for country conditions that vary over time.

The urgency of research in this region is further underscored by empirical evidence that ESG controversies in the ASEAN-5 are no longer merely theoretical risks but real financial and operational threats. In Malaysia, for instance, the palm oil conglomerate FGV Holdings Berhad saw its certification suspended by the Roundtable on Sustainable Palm Oil (RSPO) following accusations of forced labor and human trafficking; this prompted U.S. Customs and Border Protection (CBP) to issue a [Withhold Release Order \(WRO\) in 2020](#) that barred every one of its products from the U.S. market (CBP, 2020). A similar case befell Top Glove Corporation, the world's largest glove manufacturer, which was forced to pay USD 36 million in compensation over allegations of debt bondage against migrant workers. As a result, the company's shares were delisted from the Bursa Malaysia's responsible investment index, and its plan to list shares on the Hong Kong Stock Exchange was canceled (Impactt, 2021). Meanwhile, in Indonesia, Asia Pulp & Paper (APP), owned by the Sinar Mas Group, faced boycotts and mass contract terminations by global companies such as Carrefour, H&M, and Volkswagen, as well as the withdrawal of funding by international financial institutions like HSBC due to evidence of persistent tropical deforestation (Greenpeace International, 2023). These cases map onto the variables this study measures. Each incident belongs to the family of events that Refinitiv records within its 23 controversy topics, so a firm experiencing them registers greater controversy involvement on the ESGC measure used here. The consequences that followed operate through the same channel that Tobin's Q and market-to-book equity capture, since the loss of index membership and the cancelled listing at Top Glove, together with the terminated contracts and withdrawn financing at Asia Pulp & Paper, reduce the value investors assign to a firm's assets and equity. The remedial responses in each case, among them third-party audits, labor practice reviews, and the reconstitution of oversight functions, are board decisions, which is why board independence and board gender diversity enter the model as conditions on the size of the valuation loss rather than as separate determinants of performance.

Corporate governance functions as an essential internal line of defense for containing the damage that ESG controversies inflict on firm performance (Nisak & Solikhah, 2026; Wu et al., 2023). Within the Agency Theory framework, an effective board structure functions as an independent oversight mechanism to curb the agent's opportunistic behavior that could lead to operational violations or the concealment of sustainability issues for short-term gains (Jensen & Meckling, 1976; Yin & Xu, 2025). In this study, the effectiveness of this oversight function is examined with respect to two key characteristics of the board, board independence and board gender diversity. Capital market authorities in the ASEAN-5 have responded to this urgency through regulatory standardization, such as the Malaysian Code on Corporate Governance (MCCG) 2021, the Singapore Code of Corporate Governance 2018, and OJK Regulation No. 33/POJK.04/2014 in Indonesia, which expressly stipulate minimum shares of independent directors and encourage female board representation in order to reinforce oversight (OECD, 2023).

Although regulations have been adopted, empirical evidence about the efficacy of independent boards and gender diversity in alleviating sustainability risks in emerging markets is markedly uneven and fragmented (OECD, 2023). Some literature suggests that independent boards of directors can exercise strict, objective oversight, thereby accelerating corrective action when controversies arise (Liu et

al., 2020). However, other studies have found that independent boards in emerging markets are often merely symbolic or serve only to fulfill regulatory formalities (tokenism), without real executive power, making them ineffective at mitigating the impact of controversies (Treepongkaruna et al., 2024b). Conversely, gender diversity on boards is believed to foster greater ethical sensitivity, a broader range of stakeholder perspectives, and a stronger commitment to social and environmental issues (Gull et al., 2025; Issa & Hanaysha, 2023). Nevertheless, the effectiveness of women's leadership is often constrained by patriarchal cultural structures and high power distance in some ASEAN-5 countries (Zahid et al., 2025). These theoretical gaps and empirical inconsistencies underpin the need for a direct examination of the moderating roles of these two board characteristics.

The present study seeks to fill the gaps described above by examining the effect of ESG controversies on firm performance and by testing the moderating contribution of board independence and board gender diversity. It concentrates on non-financial firms in the ASEAN-5 over the study window, employing 1,970 observations in total. Three questions direct the analysis. The first asks whether involvement in ESG controversies lowers the market valuation of non-financial firms in the ASEAN-5, and it is addressed through H1. The second asks whether a higher proportion of independent directors weakens that reduction, which H2 examines. The third asks whether a higher proportion of female directors produces a comparable attenuation, which H3 examines. Firm performance throughout refers to market-based valuation, operationalized through Tobin's Q as the primary measure and market-to-book equity as the robustness measure, so that the objectives, the hypotheses, and the empirical measures describe one construct.

The study offers four contributions, presented from theory to practice. The theoretical contribution joins Stakeholder Theory and Agency Theory into one sequential mechanism, in which stakeholder sanctions convert a controversy into a valuation loss and board monitoring determines the share of that loss the firm absorbs. This specification extends Agency Theory beyond its customary application to the direct link between governance and performance by treating board attributes as boundary conditions on an externally triggered shock (Fama & Jensen, 1983; Freeman, 1984). The empirical contribution is the joint estimation of board independence and board gender diversity as moderators within a single ASEAN-5 sample, which allows their relative strength to be compared rather than inferred across separate studies. The geographical contribution is cross-country evidence for 2020-2024, a window that follows the tightening of sustainability reporting requirements across the region and that earlier ASEAN controversy studies do not cover. The practical contribution is guidance for regulators calibrating board composition rules and for institutional investors pricing controversy exposure in ASEAN-5 portfolios.

Theoretical Review Stakeholder Theory

According to Stakeholder Theory (Freeman, 1984), a firm's enduring survival and prosperity hinge not merely on maximizing shareholder value but equally on how well it manages its ties with the full set of stakeholders, namely employees, customers, suppliers, surrounding communities, regulators, and the natural environment (Donaldson & Preston, 1995). From this perspective, corporate performance is inherently linked to meeting the ethical and social expectations of these various stakeholder groups (Jones, 1995). Companies gain social legitimacy to operate when they align their business activities with prevailing societal sustainability norms (Suchman, 1995).

When a firm engages in ESG problems, such as human

rights abuses, severe environmental degradation, or governance compliance failures, its social legitimacy can diminish substantially (García-Sánchez et al., 2025). According to Stakeholder Theory, this loss of legitimacy triggers direct economic sanctions from stakeholders, such as consumer boycotts of products, a decline in employee productivity due to a loss of motivation, suppliers tightening trade terms, and regulators imposing heavy financial fines (Islam et al., 2021; Passos & Campos-Rasera, 2024). Disruptions in these relationships can increase transaction costs and disrupt a company's operating cash flow. Consequently, the capital market responds negatively to such disruptions, as reflected in falling Tobin's Q and Market-to-Book Equity ratios (Jucá et al., 2024). The connection between these sanctions and the two performance proxies used in this study is direct rather than incidental. Tobin's Q relates the market value of a firm's equity and debt to the book value of its assets, while market-to-book equity relates the market value of equity to its book value, so both ratios respond to revisions in expected future cash flows while the accounting denominator adjusts slowly (Fama & French, 1992). The sanctions described above act on that numerator, since lost customers reduce projected revenue, tightened supplier terms raise input costs, and regulatory penalties impose direct cash outflows. The ASEAN-5 setting intensifies this transmission, because institutional investors in the region rely on third-party ESG data rather than on direct monitoring, so a recorded controversy reaches them as a discrete signal and prompts portfolio reallocation before domestic enforcement takes effect (Ilhan et al., 2023; Xue et al., 2023). Where formal enforcement is slow, price formation becomes the faster sanctioning channel, and market-based ratios register the loss earlier than accounting-based measures do (Mendiratta et al., 2023).

Agency Theory

The framework formulated by Jensen & Meckling (1976) supplies a lens for interpreting the internal governance breakdowns that give rise to such controversies. Agency Theory assumes a separation between the functions of ownership (the principal) and management (the agent), leading to conflicts of interest and information asymmetry (Eisenhardt, 1989). In the context of sustainability, managers often face short-term incentives to maximize financial profits by neglecting investments in environmental and social risk mitigation or by engaging in greenwashing, projecting a public image that is ESG-friendly while concealing actual operational

violations (Yu et al., 2020).

To curb this opportunistic behavior by agents, which risks undermining the company's long-term performance, effective internal oversight mechanisms are required through the board of commissioners or directors' structure (Fama & Jensen, 1983). In emerging economies like the ASEAN-5, where external investor protections are typically weak, internal governance serves as the first line of defense. A strong board structure, as reflected by the proportion of board independence and board gender diversity, serves to reduce information asymmetry, improve the quality of compliance oversight, and compel management to promptly take substantive corrective actions to mitigate the spread of negative impacts when ESG controversies arise (Gull et al., 2025; Treepongkaruna et al., 2024a).

Board attributes enter this study as conditions on a relationship rather than as direct determinants of valuation, and the distinction rests on when monitoring becomes economically consequential. A board does not generate the controversy, since the event originates in operational or supply chain conduct and reaches the market through external reporting. What the board governs is the firm's response to that event, namely the speed of internal verification, the depth of remediation, and the credibility of the disclosure that follows (Treepongkaruna et al., 2024a; Wu et al., 2023). In periods without a controversy there is no oversight failure to correct, so variation in board composition carries limited information for investors pricing the firm. Once a controversy surfaces, that same variation becomes informative, because it indicates how much of the underlying problem is likely to be resolved and how much residual risk remains to be priced. The expected influence of board independence and board gender diversity falls on the slope of the relationship between controversies and performance rather than on its intercept, which is the empirical meaning of a moderating effect as distinct from a direct effect (Elamer & Boulhaga, 2024; Ghafoor & Gull, 2024).

Theoretical Synthesis. The two theories describe consecutive stages of a single mechanism rather than competing explanations. Stakeholder Theory specifies the first stage, a controversy withdraws social legitimacy, stakeholders impose economic sanctions through boycotts, contract renegotiation, regulatory penalties, and the withdrawal of financing, and those sanctions lower expected cash flows while raising the return investors require, which the capital market records as a decline in Tobin's Q and market-to-book equity (Freeman, 1984; Islam et al., 2021; Suchman, 1995).

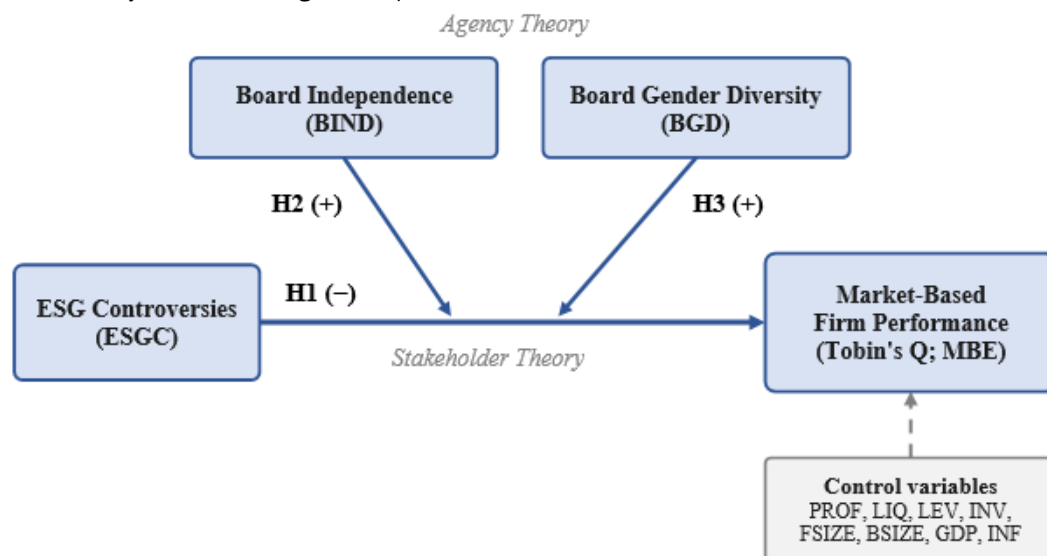


Figure 1. Conceptual framework of the study

Agency Theory specifies the second stage, the size of that decline is not fixed, because the managerial incentive to conceal or understate sustainability failures is constrained by the board (Jensen & Meckling, 1976; Yu et al., 2020). A board that is independent of management and diverse in composition shortens the interval between incident and remediation, raises the credibility of the information released to the market, and narrows the gap between what management knows and what investors can verify (Fama & Jensen, 1983; Gull et al., 2025). The proposition tested in this study combines both stages, stakeholder sanctions establish the direction of the valuation effect, while board monitoring governs its magnitude. Figure 1 sets out the resulting model.

ESG Controversies and Market-Based Firm Performance

ESG controversies are a tangible manifestation of unmanaged sustainability risks and act as a very strong negative signal to financial markets (Agnese et al., 2023; Ilhan et al., 2023). When a firm's involvement in an environmental, social, or governance failure becomes public, the market promptly reevaluates the entity's future cash flow potential (Menicacci & Simoni, 2024). According to Stakeholder Theory, controversies pose substantial reputational risks that disrupt contractual relationships with key stakeholders, increase the risk premium demanded by investors, and significantly raise a company's cost of external capital (Rau & Yu, 2024).

In the ASEAN-5 region, the institutional characteristics of emerging markets exacerbate these negative impacts. This is because most countries in the region exhibit high levels of unmanaged ESG risks and sustainability management

capabilities that fall below the global average. Under such conditions, the occurrence of ESG controversies is viewed by global institutional investors as an indicator of a company's systemic failure to mitigate tail risk (Treepongkaruna et al., 2024a). A rapid market reaction in the form of massive capital outflows depresses stock prices, lowers market performance valuations as measured by Tobin's Q, and reduces the market-to-book equity ratio (Jucá et al., 2024).

Interpreting the hypotheses that follow requires the coding of the controversy measure to be fixed in advance, since the raw score published by Refinitiv runs opposite to intuition. In its original form the score assigns 100 to a firm with no recorded controversy in a given year, so a lower value marks heavier involvement. This study multiplies the score by -1, which reverses the ordering, a firm free of controversy takes the value -100, whereas a firm with intensive controversy exposure takes a value closer to zero. A higher ESGC value denotes greater involvement in ESG controversies, and a negative coefficient on ESGC indicates that greater involvement lowers market-based firm performance. This reading is applied without variation in the hypotheses, the results, and the discussion. On the basis of this reasoning, the first hypothesis is proposed as follows.

H1: ESG controversies have a negative effect on the market-based firm performance of non-financial sector companies in the ASEAN-5.

The Moderating Role of Board Independence

Agency Theory holds that how effectively a board monitors management depends chiefly on the extent to which it remains independent of the firm's executives' interests (Fama & Jensen, 1983). Independent board members, who have no financial or family ties to management, have strong reputational incentives to act objectively to safeguard the interests of the principal and all stakeholders (Jensen & Meckling, 1976). In the context of sustainability risk management, high board independence ensures a more transparent, critical, and accountable operational oversight process (Liu et al., 2020).

When a company faces an ESG controversy, an independent board serves as a vital internal check-and-balance mechanism. It has the authority to evaluate management failures, demand transparency of information, and direct the allocation of resources toward substantive remediation measures, rather than merely superficial actions (Treepongkaruna et al., 2024a). Having independent directors conveys a favorable signal to the capital market that the company's internal governance continues to function effectively even during a crisis (Treepongkaruna et al., 2024a). These strong oversight and governance signals are expected to alleviate market skepticism, mitigate investor capital outflows, and dampen the harmful effect of ESG controversies on firm performance. The argument rests on independence operating as a structural condition for objective review rather than as a guarantee of it, since formal independence does not by itself establish that directors exercise substantive influence over management (Treepongkaruna et al., 2024b). Drawing on this argument, the second hypothesis is stated as follows.

H2: Board independence weakens the negative impact of ESG controversies on market-based firm performance.

The Moderating Role of Board Gender Diversity

Gender diversity is treated in this study as a structural property of the board rather than as a set of traits attributed to individual directors. A board drawn from a wider range of backgrounds assembles a broader information set, is less exposed to convergent judgment among members who share professional and social networks, and subjects management proposals to a wider range of challenge (Gull et al., 2025; Issa & Hanaysha, 2023). Empirical work associates greater female representation with more thorough monitoring and with stronger orientation toward non-shareholder constituencies and reports these associations at the level of board composition rather than as properties of the individuals concerned (Lin et al., 2022; Wasiuzzaman & Wan Mohammad, 2020; Zahid et al., 2025).

When an ESG controversy arises, this breadth of perspective is expected to shape the response the board authorizes. Boards with greater gender diversity have been associated with remediation that addresses the relationships damaged by the incident, including the settlement of labor disputes and the commissioning of independent environmental audits, rather than with adjustments to disclosure alone (Gull et al., 2025). Responses of this kind restore the social legitimacy that the controversy eroded (Suchman, 1995), and investors read a diverse board composition as an indication that comparable incidents will be handled with the same thoroughness, which limits the downward revision of valuation. The claim concerns board composition and its documented association with monitoring outcomes, not the disposition of individual directors. Because the analysis measures the proportion of female members on the board and observes valuation outcomes, it cannot observe deliberation, voting, or any other aspect of actual decision-making behavior, and the interpretation of H3 is bounded accordingly. In light of this reasoning, the third hypothesis is put forward as follows.

H3: Board gender diversity mitigates the negative impact of ESG controversies on market-based firm performance.

Methods

The study population comprises every non-financial firm listed on the stock exchanges of the ASEAN-5 economies over the 2020-2024 interval. Financial firms were left out of the sample because they carry distinctive reporting features, face particularly stringent liquidity and capital-ratio rules, and possess an operational account structure that is not directly comparable with the real sector. These conditions can introduce bias into the calculation of financial control variables,

such as leverage and asset intensity.

Sampling followed a purposive approach guided by defined criteria so as to preserve the internal validity of the panel dataset. The criteria apply to each firm-year rather than to each firm. A firm-year enters the panel when, in that year, the firm (1) is a non-financial firm listed on the stock exchange of one of the ASEAN-5 countries; (2) issues both an annual report and a sustainability report; (3) carries an ESG controversy score in the Refinitiv database; and (4) reports complete board governance data on independence and gender diversity together with the required financial metrics. A firm contributes between one and five observations, according to the number of years in which all four conditions hold. Based on these criteria, the final sample comprises 1,970 firm-year observations from 586 unique firms in an unbalanced panel format. The panel is unbalanced because firms enter and exit the listing across years and because listing status and data coverage vary across years, so no firm is required to be present in all five years. Table 1 traces the selection process from the initial pool of non-financial firm-year observations to the final sample. Criterion 2 restricts the sample to firms that issue sustainability reports, which may

introduce a degree of self-selection, since such firms tend to be more ESG-aware than the wider population. This restriction may attenuate the estimated negative effect of controversies and limits generalizability, since the findings apply most

Table 1. Sample Selection Procedure

Selection stage	Firm-years
Non-financial firm-year observations listed on the ASEAN-5 exchanges with Refinitiv coverage (2020-2024)	18,125
Less: firm-years without an ESG controversy (ESGC) score	(14,528)
Less: firm-years without complete board governance data (BIND, BGD)	(12)
Less: firm-years without market valuation (Tobin's Q)	(1,171)
Less: firm-years without complete financial control data	(444)
Final unbalanced panel (586 firms)	1,970

Source: Processed data (2026)

Table 2. Variables and Measurements

Label	Variable	Measurement	Expected sign	Data Source
Dependent variable				
TQ	Tobin's Q	The ratio of the market value of equity and total debt to total assets. (Ab Aziz et al., 2024; Wu et al., 2023)		Refinitiv Database
MBE	Market-to-Book Equity	Market Value of Equity / Book Value of Equity (Fama & French, 1992; Wu et al., 2023)		Refinitiv Database
Independent variable				
ESGC	ESG controversies	ESGC = $(-1) \times$ Refinitiv ESG Controversies Score, which aggregates 23 controversy topics. The raw score runs from 0 to 100 and the transformed score runs from -100 to 0; values closer to zero indicate a heavier controversy burden. (Ab Aziz et al., 2024; Xue et al., 2023)	- (H1)	Refinitiv Database
Moderating variables				
BIND	Board Independence	Proportion of independent board members in relation to the total number of board members. (Abu Khalaf, 2024; Elamer & Boulhaga, 2024; Mahyoub et al., 2024)	+	Refinitiv Database
BGD	Board Gender Diversity	The number of female board members divided by the total number of board members. (García-Amate et al., 2023; Lin et al., 2022)	+	Refinitiv Database
ESGC× BIND	Interaction term (moderation)	Product of ESGC and BIND, capturing how board independence moderates the ESGC-performance relationship.	+ (H2)	Author calculation
ESGC× BGD	Interaction term (moderation)	Product of ESGC and BGD, capturing how board gender diversity moderates the ESGC-performance relationship.	+ (H3)	Author calculation
Control variables				
PROF	Profitability	Net income divided by total assets (Elamer & Boulhaga, 2024; Wu et al., 2023)	+	Refinitiv Database
LIQ	Liquidity	Entire current assets divided by entire current liabilities. (Elamer & Boulhaga, 2024; Jucá et al., 2024)	+	Refinitiv Database
LEV	Leverage	Total liabilities to total assets (Debt-to-Asset Ratio). (Elamer & Boulhaga, 2024; Mahyoub et al., 2024)	-	Refinitiv Database
INV	Capital Investments	Capital Expenditures divided by Total Assets. (Jucá et al., 2024)	+	Refinitiv Database
FSIZE	Firm size	Natural logarithm of total assets (LnTA). (Jucá et al., 2024; Priharta & Gani, 2023; Wu et al., 2023)	-	Refinitiv Database
BSIZE	Board Size	Total number of members on the board. (Treepongkaruna et al., 2024a; Yin & Xu, 2025)	±	Refinitiv Database
GDP	Gross Domestic Product	Annual growth of Gross Domestic Product (GDP). (Abu Khalaf et al., 2025; Mahyoub et al., 2024)	+	World Bank Data
INF	Inflation	Annual percentage change in the Consumer Price Index (CPI). (Abu Khalaf et al., 2025)	-	World Bank Data

Source: Processed Data (2026)

directly to sustainability-reporting firms in the ASEAN-5 rather than to all listed firms.

The primary independent variable is the ESG Controversies Score, calculated from a comprehensive compilation of 23 material controversy topics across the environmental, social, and governance domains. In its original Refinitiv form, this score ranges from 0 to 100, where 100 denotes a firm free of any recorded controversy in a given year and lower values denote greater controversy involvement. To make the direction of the variable intuitive, the score is reverse-coded by multiplying it by -1, that is, ESGC = Refinitiv controversy score $\times$ (-1). The transformed variable ranges from -100 to 0, so that a higher ESGC value (closer to 0) indicates more intense controversy involvement, while -100 indicates no controversy. To ensure directional consistency wherein higher values intuitively represent greater controversy intensity, the original Refinitiv score is transformed (ESGC = Refinitiv Score $\times$ -1). Consequently, an ESGC value closer to zero indicates more severe controversy involvement, a direction applied uniformly across the descriptive statistics, hypotheses, and econometric estimations.

Two metrics are used to operationalize the dependent variable in order to bolster the validity of the results, with firm performance represented by Tobin's Q as a market-based valuation indicator. Market-to-book equity (MBE) is deployed as an alternative dependent variable in robustness checks to confirm that coefficient signs stay consistent when the model is re-estimated. To control for other factors affecting corporate performance, this model includes eight control variables covering financial characteristics, board governance, and the macroeconomic conditions of the sample countries. A complete breakdown of the variable operationalizations is presented in Table 2.

The chosen analytical technique is Moderated Regression Analysis (MRA) within a linear panel-data framework, used to assess how ESG Controversies (ESGC) influence firm performance, measured by Tobin's Q (TQ), with board independence (BIND) and board gender diversity (BGD) acting as moderators. The research model is expressed mathematically as follows.

Model 1:

$$TQ_{it} = \alpha_0 + \beta_1 ESGC_{it} + \beta_2 PROF_{it} + \beta_3 LIQ_{it} + \beta_4 LEV_{it} + \beta_5 INV_{it} + \beta_6 FSIZE_{it} + \beta_7 BSIZE_{it} + \beta_8 GDP_{ct} + \beta_9 INF_{ct} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Model 2:

$$TQ_{it} = \alpha_0 + \beta_1 ESGC_{it} + \beta_2 BIND_{it} + \beta_3 (ESGC_{it} \times BIND_{it}) + \beta_4 PROF_{it} + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \beta_7 INV_{it} + \beta_8 FSIZE_{it} + \beta_9 BSIZE_{it} + \beta_{10} GDP_{ct} + \beta_{11} INF_{ct} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Model 3:

$$TQ_{it} = \alpha_0 + \beta_1 ESGC_{it} + \beta_2 BGD_{it} + \beta_3 (ESGC_{it} \times BGD_{it}) + \beta_4 PROF_{it} + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \beta_7 INV_{it} + \beta_8 FSIZE_{it} + \beta_9 BSIZE_{it} + \beta_{10} GDP_{ct} + \beta_{11} INF_{ct} + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

The subscript i indexes firms, t indexes years from 2020 to 2024, and c indexes the country in which firm i is listed, so that GDP and INF vary by country and year rather than by firm. TQ denotes Tobin's Q and is replaced by MBE in the

robustness estimation. The term α_0 is the constant, β_1 to β_{11} are the slope coefficients, μ_i is the firm fixed effect that absorbs unobserved firm characteristics remaining constant across the window, including country of listing, board architecture, and industry membership, λ_t is the year fixed effect that absorbs conditions common to all firms in a given year, and ε_{it} is the idiosyncratic error term.

Data processing was performed using EViews 13 software across several testing stages, including panel-data model suitability tests, multicollinearity tests, heteroscedasticity tests, serial correlation, and cross-sectional dependence tests, with the serial correlation test constructed from the estimated residuals. In addition, every continuous variable was winsorized at the 1st and 99th percentiles to limit the effect of outliers on the regression estimates (Aziz et al., 2025).

Model selection followed the sequence established for panel data. The Chow test compared the pooled specification against the fixed effects specification, and the Hausman test compared fixed effects against random effects, with both tests favoring fixed effects across all three models. The estimated specification is a two-way fixed effects model carrying firm and year effects, which removes time-invariant firm heterogeneity, including country of listing and board system, together with year-specific conditions shared across the region.

A panel spanning five countries over five years raises three inference problems that conventional standard errors do not accommodate. Residual variance may differ across firms, residuals of the same firm may be correlated across adjacent years, and residuals of firms in different countries may move together in response to regional shocks. Residual diagnostics identify two of the three. The Panel Cross-section Heteroskedasticity LR Test rejects constant variance across firms ($\chi^2 = 5,910.471$; $p < 0.01$) and the CD test of Pesaran (2021) rejects cross-sectional independence (CD = 43.611; $p < 0.01$), while the test described by Wooldridge (2010), obtained by regressing the first-differenced residuals of the fixed effects estimation on their own lag and testing whether the resulting coefficient equals -0.5, does not detect first-order serial correlation within firms ($F(1, 406) = 0.000$; $p = 0.989$). The same thing holds in Models 2 and 3, where the heteroskedasticity statistic reaches 5,826.567 and 5,718.067 and the CD statistic reaches 35.784 and 35.892, each significant at the one per cent level, while the serial correlation test again fails to reject its null ($p = 0.956$ and $p = 0.987$). Table 3 reports the three tests for all three specifications. Following Beck & Katz (1995), the fixed effects model is estimated using Panel-Corrected Standard Errors (PCSE), which adjust the covariance matrix for heteroscedasticity across panels and contemporaneous cross-sectional correlation. This treatment suits multi-country panels of the kind assembled here, where firms across the ASEAN-5 face common regional shocks such as commodity price movements and coordinated regulatory reform. No weighting scheme or autoregressive term accompanies the correction. All coefficients reported in the results section are accompanied by panel-corrected standard errors, so the significance levels reflect corrected rather than

Table 3. Residual Diagnostic Test Results

Diagnostic test	Model 1	Model 2	Model 3	Decision
Panel Cross-section Heteroskedasticity LR Test (χ^2)	5,910.471*** (0.0000)	5,826.567*** (0.0000)	5,718.067*** (0.0000)	H_0 rejected, heteroskedasticity across firms present
Wooldridge test for first-order serial correlation (F)	0.000 (0.9885)	0.003 (0.9557)	0.000 (0.9873)	H_0 not rejected, serial correlation not detected
Pesaran CD test (z)	43.611*** (0.0000)	35.784*** (0.0000)	35.892*** (0.0000)	H_0 rejected, cross-sectional dependence present

Source: Processed Data (2026)

default inference.

Two further features of the design address the possibility that the estimated relationships run in the opposite direction to the one specified. Firms with stronger market valuation may attract more capable directors, and firms with weaker sustainability records may retain weaker boards, either of which would generate an association without the causal ordering assumed. The firm fixed effects absorb the time-invariant component of this problem, since estimation compares each firm against its own record over time rather than against other firms. Beyond that, the model is re-estimated with every explanatory variable entered at a one-year lag, so that the explanatory variable is measured before the valuation outcome it is used to explain. Results from the lagged specification are reported in the robustness section

Result and Discussion

Descriptive statistics were computed to summarize the distributional properties of all study variables, namely their minimum, maximum, mean, and standard deviation. As shown in Table 4, the final sample encompassed 1,970 observations constituting an unbalanced panel of non-financial firms across the ASEAN-5. The 586 firms in the panel contribute between one and five annual observations each, and their distribution across countries and years is set out in Table 4.

Coverage concentrates in Malaysia and Thailand, which together supply 68% of the panel, while the annual totals rise

from 267 observations in 2020 to a peak of 531 in 2022 before easing to 329 in 2024. The 2020 figure reflects the later onset of Refinitiv controversy coverage for a portion of the sample, and the 2024 figure reflects records that were still being compiled when the data were extracted. Neither pattern removes any country from any year, so all five markets remain represented across the observation window.

Table 5 presents the descriptive statistics for each variable

Table 5 indicates that the ESG controversy variable (ESGC) ranged from -100.000 to -8.5366. Given that the ESGC score has been multiplied by -1 to facilitate interpretation, values closer to zero indicate a higher level of controversy. The average ESGC value of -98.0499 indicates that the predominant portion of ASEAN-5 enterprises have a relatively low level of controversy. The key performance variable, Tobin's Q (TQ), averaged 1.4269, indicating that the market valuation of the sample companies exceeded their book value of assets. Regarding corporate governance, the average percentage of independent board members (BIND) was 51.81%, in line with the regulatory requirements of the ASEAN-5 region's securities exchanges. Meanwhile, gender representation on boards (BGD) averaged 28.90%, indicating moderate gender diversity in the sample companies' board composition.

Prior to estimating the panel data regression, a set of formal model selection tests was performed to identify the suitable model. The Chow test is used to compare the Common Effect Model (CEM) with the Fixed Effect Model (FEM), if the probability value is less than 0.05, the null of a redundant pooled specification is rejected and the FEM is selected instead

Table 4. Sample Distribution by Country and Year

Country	2020	2021	2022	2023	2024	Total	Percentage
Malaysia	51	154	252	194	137	788	40
Thailand	90	107	123	117	110	547	27
Singapore	63	64	68	64	34	293	15
Indonesia	39	47	58	42	44	230	12
Philippines	24	29	30	25	4	112	6
Total	267	401	531	442	329	1,970	100

Source: Processed data (2026)

Table 5. Descriptive Statistics Results

Variables	Obs	Mean	Median	Max	Min	Std. Dev.
TQ	1970	1.4269	1.0310	4.5432	0.3250	1.0577
MBE	1970	2.0663	1.3258	7.2590	0.1646	1.8835
ESGC	1970	-98.0499	-100.0000	-8.5366	-100.0000	9.8368
BIND	1970	51.8098	50.0000	99.7487	0.7538	19.2485
BGD	1970	28.9020	25.0000	99.3478	0.0000	21.7209
PROF	1970	0.0558	0.0468	0.7995	-1.6733	0.0980
LIQ	1970	2.2985	1.6564	34.3670	0.0504	2.5410
LEV	1970	0.4551	0.4467	1.8783	0.0292	0.2054
INV	1970	0.0436	0.0308	0.5086	0.0000	0.0450
FSIZE	1970	20.9664	21.0820	23.5160	16.3262	1.6333
BSIZE	1970	8.9909	9.0000	21.0000	2.0000	2.9629
GDP	1970	3.2525	3.5555	9.7568	-9.5183	4.1027
INF	1970	2.5419	2.4771	8.4781	-1.6107	2.3836

Source: Processed Data (2026)

Table 6. Chow test and Hausman test.

Chow Test					Hausman Test			
	Statistic	d.f.	Prob.	Results	Statistic	d.f.	Prob.	Results
Model 1	15.6652	(585.1371)	0.0000	Fixed-Effects Model	53.8824	9	0.0000	Fixed-Effects Model
Model 2	16.2014	(585.1369)	0.0000	Fixed-Effects Model	88.0393	11	0.0000	Fixed-Effects Model
Model 3	16.4432	(585.1369)	0.0000	Fixed Effects Model	107.3321	11	0.0000	Fixed Effects Model

Source: Processed Data (2026)

of the CEM. The Hausman test is then used to compare the Random Effect Model (REM) with the FEM, if the probability value is less than 0.05, the null that the REM is appropriate is rejected and the FEM is selected instead of the REM. As shown in Table 6, both tests yield a probability of 0.0000 for Models 1, 2, and 3, so the Fixed Effect Model is selected for all three specifications. The redundant fixed-effects test also indicates that the year (period) effects are significant, which supports estimating the model with both firm and year fixed effects.

Table 7 reports the inter-variable correlation matrix alongside the multicollinearity diagnostics; every correlation coefficient falls under 0.800, and all Variance Inflation Factor (VIF) values sit beneath 10.00. These outcomes suggest the model is free of serious multicollinearity, lending reliability to the parameter estimates.

The Moderated Regression Analysis (MRA) yielded three estimation models. Model 1 examines the direct effect of ESG on market-based firm performance using Tobin's Q as the main proxy; Model 2 evaluates board independence as a moderator of firm performance; and Model 3 assesses the moderating role of board diversity on firm performance. Collectively, these specifications are designed to probe both the direct influence of ESG controversy on firm performance and the interaction effects of the two moderators, with the three models' estimates compared side by side in Table 8.

The Table 8 results reveal that, in Model 1, the ESG Controversies (ESGC) variable carries a coefficient of -0.0221 significant at the 1% level, so ESGC exerts a significantly negative influence on firm performance. Given that the ESGC value is measured in the opposite direction, so that a higher value reflects greater controversy intensity, this negative coefficient confirms that an increase in ESG controversy intensity significantly suppresses a company's market performance. The direction can be verified directly from the coding, ESGC rises as a firm moves from -100 toward zero, which is the direction of increasing controversy, and the negative coefficient means Tobin's Q falls as ESGC rises. A one-point increase in ESGC, equivalent to a one-point deterioration on the inverted controversy scale, is associated with a reduction of 0.0221 in Tobin's Q, holding the remaining variables constant. Thus, Hypothesis 1 (H1) is accepted.

Model 2 investigates whether board independence (BIND) moderates the relationship between ESGC and firm performance[, and the ESGC*BIND interaction term registers

0.0012, significant at the 1% level. This shows that board independence (BIND) attenuates the adverse effect of ESG controversy on firm performance, and thus Hypothesis 2 (H2) is supported.

Model 3 examines board gender diversity (BGD) as a moderator of the relationship between ESGC and firm performance; the ESGC*BGD interaction coefficient of 0.0019, significant at the 1% level, indicates that gender diversity softens the negative impact of ESG controversies on firm performance, so Hypothesis 3 (H3) is supported.

Turning to the controls, the findings show Leverage (LEV) and Firm Size (FSIZE) exert a significantly negative effect at the 1% level throughout all models, whereas Liquidity (LIQ) is significantly negative at the 5% level only within Model 3. In contrast, Profitability (PROF) is consistently and significantly positive at the 1% level. Model 3 produced the largest R-squared, 0.8799, meaning the independent, moderating, and control variables jointly account for 87.99% of the variation in firm performance. The adjusted R-squared of 0.8273 penalizes the model for the number of parameters relative to the degrees of freedom, and it indicates that 82.73% of the variation is explained while the remaining 17.27% is not. A coefficient of determination at this level is characteristic of two-way fixed effects estimation rather than evidence of unusual explanatory power, because the firm and year dummies absorb the persistent component of Tobin's Q, which varies far more across firms than within them. The statistic accordingly measures how much variation the specification accounts for, and it carries no implication about causal identification.

Robustness Test

To verify the empirical model's consistency and dependability, a robustness check was undertaken in which the dependent-variable proxy Tobin's Q (TQ) was swapped for market-to-book equity (MBE) as an alternative gauge of firm performance. This procedure was intended to guarantee that the study's conclusions do not depend on any one measurement choice.

Re-estimating with the alternative specifications reported in Table 9 reveals that both the sign of the coefficients and the significance of the regressions hold steady across the differing performance metrics. The ESGC variable consistently exhibits a significant negative correlation with the MBE proxy. Governance interactions, namely ESGC*BIND and

Table 7. Correlation Matrix and Multicollinearity Tests

Variables	1	2	3	4	5	6	7	8	9	10	11	VIF
1 ESGC	1.000											1.015
2 BIND	0.099	1.000										1.018
3 BGD	-0.039	0.041	1.000									1.009
4 PROF	-0.013	0.046	0.061	1.000								1.048
5 LIQ	0.059	0.000	0.056	0.098	1.000							1.021
6 LEV	0.088	0.011	0.016	0.270	0.478	1.000						1.036
7 INV	0.012	0.044	0.085	0.152	0.088	0.007	1.000					1.009
8 FSIZE	0.192	0.034	0.149	0.152	0.320	0.388	0.062	1.000				1.053
9 BSIZE	0.103	0.024	0.316	0.042	0.204	0.205	0.003	0.312	1.000			1.019
10 GDP	0.015	0.005	0.154	0.030	0.105	0.114	0.000	0.185	0.230	1.000		1.194
11 INF	0.028	0.037	0.099	0.013	0.027	0.023	0.015	0.030	0.107	0.396	1.000	1.182

Source: Processed Data (2026)

ESGC*BGD, also consistently exert an influence. The agreement of the findings whether TQ or MBE is used indicates that the estimated relationships are not sensitive to the choice of valuation proxy.

By and large, the Table 9 estimates confirm that coefficient signs and significance levels stay uniform across the alternative corporate performance measures. This is apparent for the ESG Controversies (ESGC) variable, which retains a significantly negative effect at the 1% level in every model. As for the moderating effects, the ESGC*BIND interaction likewise stays positive and significant at the 1% level, and the ESGC*BGD interaction similarly keeps a positive coefficient that is significant at the 1% level. Such evidence affirms that the primary model's conclusions are stable across the two valuation proxies examined.

The second robustness procedure re-estimates the three models with every explanatory variable entered at a one-year lag against Tobin's Q in year t. Because the first observation year is consumed by the lag, the estimation window narrows to 2021 through 2024 and yields 1,555 firm-year observations from 551 firms. Table 10 reports the results.

The lagged estimates in Table 10 preserve every conclusion

drawn from the contemporaneous specification. Lagged ESG controversies retain a negative coefficient significant at the 1% level in all three models, and the magnitude rises from -0.0221 to -0.0322 in Model 1, so measuring controversies before the outcome strengthens rather than weakens the estimated relationship. The interaction with board independence registers 0.00142 and the interaction with board gender diversity 0.00229, both significant at the 1% level and both larger than their contemporaneous counterparts. Leverage and firm size retain negative coefficients at conventional levels, while the loss of the 2020 cross-section reduces explanatory power to an adjusted R-squared between 0.5726 and 0.5890. Agreement across the contemporaneous specification, the alternative dependent variable, and the lagged specification indicates that the reported relationships depend neither on a single measurement choice nor on the timing of the controversy variable.

The Impact of ESG Controversies on Firm Performance
A rise in ESG controversies was shown to diminish the,

Table 8. MRA Test Results

Variables	Model 1		Model 2		Model 3		Decision
	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	
C	17.0725 (5.5149)	3.0957	10.4093 (5.5163)	1.8870	13.4763 (5.4128)	2.4897	
ESGC	-0.0221*** (0.0043)	-5.1291	-0.0952*** (0.0118)	-8.1012	-0.0680*** (0.0073)	-9.2618	H1 Accepted
BIND			0.1158*** (0.0186)	6.2205			
ESGC*BIND			0.00120*** (0.00018)	6.6819			H2 Accepted
BGD					0.2003*** (0.0251)	7.9842	
ESGC*BGD					0.00190*** (0.00025)	7.7047	H3 Accepted
PROF	1.6452*** (0.5971)	2.7555	1.8327*** (0.5888)	3.1125	1.6494*** (0.5840)	2.8244	
LIQ	-0.0490 (0.0310)	-1.5811	-0.0499 (0.0305)	-1.6376	-0.0609** (0.0304)	-2.0053	
LEV	-2.1148*** (0.4994)	-4.2348	-2.0175*** (0.4917)	-4.1028	-1.9611*** (0.4891)	-4.0095	
INV	0.0380 (1.3240)	0.0287	0.0910 (1.3019)	0.0699	0.0771 (1.2936)	0.0596	
FSIZE	-0.7991*** (0.2614)	-3.0565	-0.8055*** (0.2580)	-3.1223	-0.8472*** (0.2558)	-3.3117	
BSIZE	0.0226 (0.0460)	0.4911	0.0028 (0.0453)	0.0618	-0.0046 (0.0451)	-0.1021	
GDP	-0.0259 (0.0209)	-1.2398	-0.0186 (0.0205)	-0.9053	-0.0250 (0.0204)	-1.2236	
INF	0.0137 (0.0201)	0.6803	0.0096 (0.0198)	0.4859	0.0154 (0.0197)	0.7825	
Observations	1970		1970		1970		
Firm fixed effects	Yes		Yes		Yes		
Year fixed effects	Yes		Yes		Yes		
R-Squared	0.8743		0.8784		0.8799		
Adjusted R-Squared	0.8194		0.8251		0.8273		
F-Statistic	15.9417		16.4779		16.7159		
Prob (F-Statistic)	0.0000		0.0000		0.0000		

Note: ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Processed Data (2026)

market performance of non-financial firms across the ASEAN-5 whether measured by the Tobin's Q or the Market-to-Book Equity (MBE) proxy. These empirical findings support the propositions of Stakeholder Theory, which states that the sustainability of a business entity depends on the trust of external parties, ranging from consumers and local communities to regulatory authorities (Freeman, 1984). When a firm becomes involved in ESG controversies, for example by harming the physical environment or violating workers' social rights, it incurs reputational exposure, strains its contractual ties, and raises the risk premium investors require (Rau & Yu, 2024).

In the ASEAN-5 region, exposure to ESG risks remains a governance challenge, particularly given the institutional characteristics of emerging markets. Global institutional investors view ESG controversies as indicators of management failure to mitigate risks. This is evident in cases in the ASEAN region, such as the global withdrawal of funding from

companies due to indications of deforestation (Greenpeace International, 2023), demonstrating companies' vulnerability to market sanctions.

The findings here align with earlier work. Studies by Jucá et al. (2024), Passos & Campos-Rasera (2024), and Menicacci & Simoni (2024) demonstrate that instances of controversy exert a direct detrimental impact on corporate performance and equity market valuation. The empirical study by Ma & Ma (2025) also found that the intensity of controversies depresses a company's stock market valuation. The magnitude estimated here places a scale on that agreement. A one standard deviation movement along the inverted controversy scale, equal to 9.84 points, corresponds to a reduction of about 0.22 in Tobin's Q, which is close to 15% of the sample mean of 1.4269. Controversy exposure is accordingly consequential in economic terms and not merely detectable in statistical ones. These findings have important practical implications, company management needs

Table 9. Robustness Test Results

Variables	Model 1		Model 2		Model 3		Decision
	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	
C	-2.0434 (40.5251)	-0.0504	-47.2349 (40.6237)	-1.1627	-30.7441 (39.5738)	-0.7769	H1 Supported
ESGC	0.1922*** (0.0317)	-6.0613	-0.7025*** (0.0866)	-8.1159	-0.5671*** (0.0537)	-10.5598	
BIND			0.8588*** (0.1370)	6.2671			
ESGC*BIND			0.0086*** (0.0014)	6.3181			H2 Supported
BGD					1.6229*** (0.1835)	8.8458	H3 Supported
ESGC*BGD					0.0158*** (0.0018)	8.5950	
PROF	4.6812 (4.3886)	1.0667	6.2082 (4.4369)	1.4315	4.7551 (4.2709)	1.1134	
LIQ	-0.3284 (0.2277)	-1.4418	-0.3313 (0.2246)	-1.4748	-0.4233* (0.2219)	-1.9074	
LEV	26.3853* ** (3.6835)	-7.1632	25.7360*** (3.6346)	-7.0807	-25.0192*** (3.5894)	-6.9704	
INV	0.0522 (9.7202)	0.0054	0.8625 (9.5917)	0.0899	0.3731 (9.4612)	0.0394	
FSIZE	0.0652 (1.9216)	0.0339	-0.1931 (1.8999)	-0.1017	-0.3523 (1.8709)	-0.1883	
BSIZE	-0.3755 (0.3389)	-1.1081	-0.4714 (0.3356)	-1.4046	-0.5886 (0.3308)	-1.7795	
GDP	0.0684 (0.1536)	0.4453	0.1150 (0.1517)	0.7581	0.0764 (0.1495)	0.5115	
INF	0.0220 (0.1477)	0.1491	0.0059 (0.1459)	0.0403	0.0347 (0.1439)	0.2414	
Observations	1970		1970		1970		
Firm fixed effects	Yes		Yes		Yes		
Year fixed effects	Yes		Yes		Yes		
R-Squared	0.4199		0.4365		0.4514		
Adjusted R-Squared	0.1665		0.1891		0.2106		
F-Statistic	1.6572		1.7647		1.8747		
Prob (F-statistic)	0.0000		0.0000		0.0000		

Note: ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Processed Data (2026)

to integrate ESG risk mitigation procedures into their operational priorities, as ESG controversies negatively affect market valuation. Thus, integrating ESG risk management serves as a tool to protect a company's equity value from negative investor sentiment.

Three qualifications bound the causal reading of this relationship. The first is reverse causality. Firms whose market valuation is already deteriorating may attract closer attention from media and rating agencies, which would raise recorded controversy scores without the controversy having caused the decline. The lagged specification in Table 10 places the measurement of controversy one year ahead of the outcome and returns a coefficient of -0.0322, larger in magnitude than the contemporaneous estimate, a pattern inconsistent with a purely reverse channel though not sufficient to exclude it. The second is omitted governance variables. Audit committee composition, the presence of a sustainability committee, ownership concentration, and chief executive duality each shape how a board responds to a controversy, and none enters the specification; firm fixed effects absorb whatever part of these characteristics stays constant across the

window, yet any within-firm change in them remains in the error term. The third concerns the exogeneity of the controversy measure. ESG controversies originate in operational conduct that management chooses, so they are not exogenous shocks in the sense that causal identification requires. What the estimates recover is the association between recorded controversy exposure and market valuation within firms over time, conditional on the controls and the fixed effects, and the findings are read in those terms throughout this section.

The Moderating Role of Board Independence

A higher proportion of independent directors is associated with a smaller reduction in firm performance when ESG controversies arise. This finding aligns with the assumptions of Agency Theory, which explains that internal management (agents) has opportunistic incentives to conceal violations or manipulate sustainability reporting for personal gain (Jensen & Meckling, 1976). An independent board, with no financial ties to executives, serves as a neutral oversight body. When controversies arise, this oversight function is expected to limit

Table 10. Robustness Test Results: One-Year Lagged Specification

Variables	Model 1		Model 2		Model 3		Decision
	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	Coeff. (Std. Error)	t-Statistics	
C	20.0475** (8.9430)	2.2417	12.2557 (8.9586)	1.3680	16.3839* (8.7893)	1.8641	
ESGC	-0.0322*** (0.0062)	-5.1855	-0.1137*** (0.0169)	-6.7504	-0.0848*** (0.0104)	-8.1742	H1 Supported
BIND			0.1375*** (0.0276)	4.9792			
ESGC*BIND			0.00142*** (0.00027)	5.1999			H2 Supported
BGD					0.2331*** (0.0361)	6.4530	
ESGC*BGD					0.00229*** (0.00036)	6.3110	H3 Supported
PROF	1.3688 (0.9046)	1.5131	1.4726 (0.8950)	1.6453	1.1766 (0.8876)	1.3256	
LIQ	0.0035 (0.0611)	0.0579	0.0035 (0.0605)	0.0573	-0.0039 (0.0600)	-0.0654	
LEV	-3.5996*** (0.7287)	-4.9396	-3.4901*** (0.7203)	-4.8465	-3.4021*** (0.7154)	-4.7558	
INV	1.2749 (2.0820)	0.6123	1.3023 (2.0573)	0.6330	1.0360 (2.0421)	0.5073	
FSIZE	-0.9775** (0.4211)	-2.3216	-0.9784** (0.4163)	-2.3501	-1.0486** (0.4131)	-2.5383	
BSIZE	0.0426 (0.0733)	0.5819	0.0238 (0.0727)	0.3272	0.0124 (0.0722)	0.1719	
GDP	0.0435 (0.0278)	1.5629	0.0516* (0.0275)	1.8737	0.0436 (0.0273)	1.5969	
INF	-0.0244 (0.0273)	-0.8941	-0.0275 (0.0271)	-1.0167	-0.0227 (0.0269)	-0.8460	
Observations	1555		1555		1555		
Firm fixed effects	Yes		Yes		Yes		
Year fixed effects	Yes		Yes		Yes		
R-Squared	0.7271		0.7344		0.7382		
Adjusted R-Squared	0.5726		0.5831		0.5890		
F-Statistic	4.7039		4.8538		4.9484		
Prob (F-statistic)	0.0000		0.0000		0.0000		

Note: ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Processed Data (2026)

concealment and to direct resources toward operational corrective actions (Treepongkaruna et al., 2024a). Given that investor protection in the ASEAN-5 remains at an early stage, the existence of an independent board conveys a reassuring signal to the market that internal governance remains active during a crisis, which is expected to reduce market skepticism and limits information asymmetry between management and investors (Elamer & Boulhaga, 2024; Liu et al., 2020).

These moderating findings challenge certain prior literature concerning the efficacy of corporate governance in emerging markets. Research by Treepongkaruna et al. (2024a), Wasiuzzaman & Wan Mohammad (2020), and Pernamasari & Chariri (2024) found that independent boards in emerging markets are often symbolic or limited to fulfilling regulatory formalities, lacking the executive power to mitigate the impact of controversies. Diverging from those conclusions, the empirical evidence in this study shows that independent boards do wield quantifiable risk-mitigation ability. Four features of the present design plausibly account for the divergence. The first concerns what is being tested. Studies reporting ceremonial boards largely estimate a direct effect of independence on performance, whereas the estimate here is a moderation on an event, and a board may add nothing to valuation in ordinary periods while still mattering once a controversy calls for verification and remediation, which makes the two sets of results only partly comparable. The second is the observation window. This study covers 2020 to 2024, a period that follows the Malaysian Code on Corporate Governance 2021 and the wider tightening of sustainability reporting requirements across the region, whereas Wasiuzzaman & Wan Mohammad (2020) and Treepongkaruna et al. (2024a) draw on earlier years when independence requirements were newer and enforcement thinner (OECD, 2023). The third is cross-country aggregation. Pernamasari & Chariri (2024) examine Indonesia alone, a two-tier system with concentrated ownership, while the pooled ASEAN-5 coefficient averages across jurisdictions that include Singapore and Malaysia, where enforcement is stronger, so the pooled result need not hold with equal force in every market. The fourth is the sampling frame, which is confined to firms publishing sustainability reports and in which board oversight of ESG matters already operates as a working function rather than a formality. For firms in the ASEAN-5, these findings imply the need to empower independent boards with proportional oversight authority over audits. This empowerment must go beyond merely fulfilling stock exchange regulatory mandates, thereby creating an effective governance defense mechanism against market sentiment fluctuations caused by sustainability issues.

The Moderating Role of Board Gender Diversity

Female presence on the board is associated with a smaller effect of sustainability controversies on a firm's market value. These findings integrate Stakeholder Theory and Agency Theory into governance mechanisms. The literature associates greater female representation at board level with more thorough monitoring and with a stronger orientation toward non-shareholder constituencies, and it reports these associations as properties of board composition rather than as dispositions of individual directors (Lin et al., 2022; Wasiuzzaman & Wan Mohammad, 2020). In crises arising from ESG controversies, boards constituted in this way have been associated with resolutions that address the relationships the incident damaged (Gull et al., 2025), and responses of that kind restore the social legitimacy the controversy eroded (Suchman, 1995).

The link between board composition and cultural setting lies outside what these data can establish. Power distance varies considerably within the ASEAN-5, with Singapore and Indonesia occupying markedly different positions on that

dimension, yet the specification carries no cultural moderator, and firm fixed effects absorb country-level cultural conditions that hold constant across the observation window. Any proposition that female representation operates differently under high power distance is an interpretation this study cannot test, and it is placed among the directions for further research rather than presented as a result.

A comparison with previous literature reveals empirical consistency. This study aligns with the research findings of Gull et al. (2025), Issa & Hanaysha (2023), and Zahid et al. (2025), who found that female leadership eases problem-solving and steadies capital-market reactions once firms are drawn into ESG controversies. The two moderators nonetheless operate with unequal intensity per unit. Each additional percentage point of female representation offsets 0.00190 of the controversy effect against 0.00120 for each additional percentage point of board independence, which makes gender diversity the more potent margin. Aggregate buffering runs the other way, since independent directors occupy 51.81% of the average board against 28.90% for female directors, producing a total offset of 0.0622 for independence and 0.0549 for gender diversity. The gap between per-unit potency and aggregate effect suggests that what limits gender diversity in the ASEAN-5 is the level of representation rather than the influence attached to it. The practical implications of these findings guide companies in the ASEAN-5 region to restructure their managerial recruitment policies to be more gender-inclusive. Gender-diverse boards have been shown to function as a strategic buffer in managing risk exposure and mitigating the effects of market sanctions resulting from sustainability crises on equity valuations.

Whether that representation carries substantive influence or formal compliance cannot be settled with a continuous proportion measure. Half the sample sits at or below 25% female representation, which places it beneath the level commonly associated in this literature with a shift in board deliberation (Gull et al., 2025; Issa & Hanaysha, 2023), and the linear specification constrains the marginal effect to be identical above and below that point. A threshold specification splitting the sample at a critical mass, or one modeling the effect of a discrete count of female directors, would separate substantive influence from tokenism. That test falls outside the present design and is set out among the directions for further work.

Conclusion

This research investigates how ESG controversies affect market-based firm performance, measured through Tobin's Q and market-to-book equity, in the ASEAN-5, paying particular attention to the moderating function of independent boards and board gender diversity. The results reveal that ESG controversies significantly undermine market-based performance, evidenced a decline in both valuation proxies tested in this study. This phenomenon is consistent with empirical evidence from cases involving large companies in the ASEAN region, such as FGV Holdings, Top Glove Corporation, and Asia Pulp & Paper, which suffered substantial financial losses, regulatory fines, and the loss of business contracts due to ESG controversies. The study's results reinforce the argument that a company's sustainability reputation is a significant asset in shaping investor and stakeholder perceptions of its long-term value.

Board independence and board gender diversity are associated with the size of the negative effect that ESG controversies exert on market-based firm performance. A larger share of independent members and a larger share of female members each accompany a smaller valuation loss at a given level of controversy involvement, and both interaction terms remain positive and significant when the dependent variable is

replaced with market-to-book equity and when ESG controversies enter at a one-year lag. These estimates rest on board composition recorded at the firm-year level, and they carry no observation of monitoring intensity, of the point at which an ESG risk was identified internally, or of board deliberation, so the attenuation belongs to board structure rather than to any board process that might generate it.

This study offers practical implications for decision-makers in companies, regulators, and investors across the ASEAN-5 region. Firms should proactively make ESG risk management a priority and bolster governance by adding independent board members and broadening board diversity, especially with respect to gender. Regulatory authorities are recommended to establish clear minimum standards regarding the composition of independent boards and gender diversity on boards, as well as to enhance transparency in reporting on ESG controversies. Institutional investors need to integrate analysis of ESG controversies and corporate governance quality into their due diligence and capital allocation decision-making processes to reduce sustainability risk exposure in their investment portfolios.

While this study delivers a valuable empirical contribution, a number of limitations warrant acknowledgment. First, the methodology relies on the Fixed Effects Model (FEM) applied to unbalanced panel data, which may not entirely address dynamic endogeneity, a recurring concern in corporate governance studies. Second, the sample is restricted to non-financial firms in the ASEAN-5, which constrains how far the findings extend to the financial sector, whose regulatory frameworks, risk profiles, and governance practices differ markedly. Third, the measurement of ESG controversies relies solely on proxy scores from a single database, so the results may not fully capture all existing ESG cases or issues.

Three further limitations are methodological. ESG assessments diverge substantially across rating agencies, and the divergence originates in differences of scope, indicator selection, and weighting rather than in random error (Berg et al., 2022), so estimates built on Refinitiv data inherit that provider's definition of a controversy and its severity scale, and the reported coefficients may shift in magnitude under another

agency. Comparability across the five jurisdictions is a second constraint, since they differ in board architecture, disclosure requirements, and the intensity with which local media report misconduct, so an identical controversy score need not represent the same underlying conduct in Indonesia as in Singapore; firm fixed effects remove only the component of that difference which holds constant over time. A third constraint concerns governance itself, board composition is not randomly assigned, and firms with stronger valuation may attract experienced directors more readily, which leaves the direction of influence partly open even after firm fixed effects and a one-year lag.

Several designs would address these constraints. A system GMM estimator with internal instruments, together with lagged governance variables, would handle the dynamic endogeneity that fixed effects leave unresolved. An event-study design built around controversy disclosure dates would isolate the market reaction within a narrow window. Replication on an alternative controversy database would test measurement sensitivity directly. Country-specific estimation or explicit country interactions would establish whether the buffering role of the two board attributes holds with equal force across the five markets, while a threshold specification for board gender diversity would separate substantive influence from formal compliance, and cultural measures would allow the claims about power distance to be tested rather than assumed.

Author contributions

The first author contributed to the conceptualization of the study, development of the theoretical framework, research design, data analysis, interpretation of the findings, preparation of the original manuscript, and manuscript revision. The second author contributed to the conceptualization of the study, development of the theoretical framework, research design, data collection, refinement of the research methodology, validation of the analysis, critical review, and manuscript revision. Both authors reviewed and approved the final version of the manuscript.

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