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CORPORATE GOVERNANCE, OWNERSHIP STRUCTURE AND ESG PERFORMANCE AMONG MALAYSIAN LISTED FIRMS: THE MODERATING ROLE OF FAMILY OWNERSHIP

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Abstract:

The study investigates the relationship between corporate governance, ownership structure, and Environmental, Social, and Governance (ESG) performance in Malaysia's capital market, a market that is mainly dominated by family-owned firms. In this setting, concentrated ownership creates agency dynamics that differ from the dispersed-ownership archetype that forms the basis of classical Agency Theory. Prior Malaysian ESG research has paid limited attention to the moderating role of family ownership in board–ESG relationships and to the patterns of governance–ESG associations across environmentally sensitive (ESI) and non-environmentally sensitive (Non-ESI) industries. Based on both Agency and Institutional Theory, the study examines a balanced panel of 377 Main Market-listed firms (1,131 firm-year observations) from 2022 to 2024, with ESG performance assessed using Refinitiv ratings. Board independence and gender diversity are positively associated with ESG performance. Governmental ownership is positively associated with ESG performance in the full sample. The ESI/Non-ESI analysis shows different patterns in the estimated associations, but coefficient differences were not formally tested. Family ownership does not significantly moderate the four board–ESG relationships. Board size, legal expertise, institutional ownership, and foreign ownership are not significantly associated with ESG performance in the full sample. The results offer context-specific evidence that is relevant to both Agency Theory and Institutional

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Theory, and they indicate that industry context may be important when it comes to the relationship between ownership structure and ESG performance. The findings confirm the importance of board independence and gender diversity. They also suggest that sector-specific ESG guidance warrants consideration alongside broader governance requirements if corporate sustainability is to be strengthened in emerging markets.

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Keyword:

Agency Theory, Corporate Governance, ESG Performance, Family Ownership, Institutional Theory.

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Introduction

Environmental, Social, and Governance (ESG) performance has become an increasingly important dimension of corporate governance, investment decision-making, and long-term corporate sustainability (Xu et al., 2025). As firms face growing expectations from regulators, investors, and other stakeholders to address environmental and social risks, ESG performance is increasingly regarded as an organisational outcome associated with governance quality rather than merely a reporting activity (Fathoni et al., 2025). This development directs attention to the internal governance mechanisms associated with stronger ESG performance and to whether these relationships are conditional on the ownership and institutional environments in which firms operate. Prior Malaysian ESG research has paid limited attention to the moderating role of family ownership in board–ESG relationships and to the patterns of governance–ESG associations across environmentally sensitive (ESI) and non-environmentally sensitive (non-ESI) industries.

Malaysia is a particularly useful case in which to consider this question. Unlike the dispersed-ownership structures that form the basis of much of the conventional corporate governance literature, the Malaysian capital market is marked by concentrated ownership, significant family control, the presence of government-linked companies, involvement of institutional investors, and foreign participation. Moreover, the Malaysian Code on Corporate Governance (MCCG) 2021 and Bursa Malaysia's Sustainability Reporting Guide have raised expectations regarding board independence, diversity, sustainability oversight, and the transparency of reporting (Securities Commission Malaysia, 2021; Bursa Malaysia, 2022). Because of these features, the institutional environment involves different ownership incentives coexisting with more formalised governance and sustainability requirements. Malaysia thus provides an opportunity to investigate whether the governance mechanisms usually linked to ESG performance also function in a situation of concentrated ownership and whether the pressures from institutions affect the differences in governance outcomes that arise from ownership type.

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Corporate boards are a key element of internal governance and keep management under review, provide strategic advice, supervise risk, and address stakeholder expectations. Aspects of board capacity such as board independence, gender diversity, the number of directors, and legal expertise are separate dimensions that may affect ESG performance differently. Boards with independent directors can improve monitoring and reduce managerial opportunism; gender-diverse boards may lead to a wider range of perspectives, greater sensitivity to stakeholders, and an enhanced ability to deliberate; larger boards might offer more expertise and resources, though this could be counterbalanced by problems relating to coordination and decision-making; and board members with legal expertise can improve compliance, risk management, and internal controls, thus reducing managerial opportunism and raising the quality of governance (Huang et al., 2024; Liu et al., 2023). In the ASEAN region, including among companies listed in Malaysia, specific board skills and professional expertise have also been linked to better sustainability reporting and greater stakeholder transparency (Bella & Pratama, 2025).

Despite these theoretical expectations, it remains unclear whether board characteristics consistently lead to better ESG performance. Although board independence and gender diversity are generally believed to enhance governance, empirical findings vary by institutional context. For example, Kamaludin et al. (2022) find that board gender diversity is positively related to ESG disclosure for companies listed in Malaysia, while Ding et al. (2024) report no significant association between gender diversity and ESG performance in their Chinese sample. Evidence on board size and legal expertise is also inconclusive or relatively limited (Huang et al., 2024; Nashri et al., 2023). These inconsistencies suggest that the importance of board governance for ESG performance may not be universal and may instead depend on ownership incentives and institutional pressures within the firm.

The way the ownership structure is organised adds another dimension to this question of governance. There are differences between institutional, governmental, foreign, and family owners in the extent to which they can monitor company affairs, in their investment time horizons, in their strategic objectives, and in their expectations concerning sustainability. Institutional investors are able to provide professional monitoring, government ownership may take into account considerations relating to public policy, and foreign investors may introduce international governance and ESG requirements (Hikal et al., 2025; Eissa et al., 2024; Zhang & Wu, 2024). Family ownership is particularly important in Malaysia since it results in conflicting theoretical expectations. On the one hand, concentrated family control can promote long-term stewardship and reputational protection and may therefore increase commitment to sustainability; on the other hand, it could be used to consolidate power and allow the controlling shareholders to concentrate on their own private interests (Waldau, 2025). Given these competing incentives, family ownership not only directly affects ESG performance but also influences the effectiveness of board governance mechanisms.

Earlier research has linked board features and ownership structures to ESG and sustainability outcomes (Kamaludin et al., 2022; Chebbi & Ammer, 2022; Ng & Marsidi, 2022; Nashri et al., 2023; Hikal et al., 2025; Zhang & Wu, 2024), but some issues have still not been resolved. One problem is that the evidence from Malaysia and other emerging markets is relatively limited, the main part of the existing governance literature being grounded in developed countries which have more dispersed ownership (Nashri et al., 2023; Bigelli et al., 2023; Fayad et al., 2024). Another issue is that board and ownership characteristics are usually examined

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separately rather than in an integrated manner, which makes it difficult to understand how ownership could influence board performance (Li et al., 2024; Yavuz et al., 2024). Thirdly, although the legal expertise of the board may be relevant to compliance, risk management, and ESG oversight, this has not been widely investigated (Huang et al., 2024). Fourth, there is no systematic evidence on whether family ownership has a moderating effect on the relationship between the board and ESG (Waldau, 2025). Finally, governance mechanisms may operate in different ways in different industries since the degree of environmental exposure, the level of regulatory supervision, and the extent of stakeholder pressures all vary considerably (Martínez et al., 2024). Taken together, these gaps point to a broader unresolved question: whether the effectiveness of ESG-related governance is primarily due to internal ownership incentives or whether it depends on the institutional environment in which those incentives function. The central research question is therefore whether board characteristics and ownership structures are associated with ESG performance in Malaysia, whether family ownership conditions the relationships between board characteristics and ESG performance, and whether the observed associations vary across industry contexts. Agency Theory provides the basis for examining monitoring, ownership incentives, and potential conflicts between controlling and minority shareholders, while Institutional Theory provides a framework for considering how external governance and sustainability expectations may be relevant to observed relationships.

To deal with this question, the study brings together Agency Theory and Institutional Theory. Agency Theory explains the ways in which boards and owners influence managerial behaviour through monitoring, incentives, and control and thus provides the foundation for understanding the conflicting monitoring and entrenchment effects associated with concentrated family ownership (Jensen & Meckling, 1976; Waldau, 2025). On this basis, differences in ownership should result in different levels of effectiveness of governance mechanisms since owners have different incentives and capacities when it comes to monitoring management. However, Agency Theory on its own may not fully explain why similar governance and ownership structures lead to different sustainability outcomes in various institutional and industrial settings. Institutional Theory contributes to this by pointing out the regulatory, professional, investor, and societal pressures that affect organisational behaviour and cause firms to follow existing governance and sustainability norms (DiMaggio & Powell, 1983). In Malaysia, such pressures include the MCCG, Bursa Malaysia's sustainability framework, and the increasing expectations of stakeholders with regard to corporate sustainability (Securities Commission Malaysia, 2021; Bursa Malaysia, 2022; MICPA & PwC, 2022). The combination of the two theories therefore forms the main theoretical basis of the study: governance mechanisms do not operate in isolation but are instead functioning within an institutional environment that can either limit or enhance the incentives resulting from ownership. Even if concentrated family ownership could in theory either improve or reduce board effectiveness, strong institutional pressures might eliminate the systematic differences between family and non-family firms by encouraging more standardised governance and sustainability practices. Similarly, the importance of governance mechanisms may differ from industry to industry since firms face different levels of environmental exposure, regulatory supervision, and stakeholder pressure.

The significance of this study extends to a number of the groups that are involved in Malaysia's governance and sustainability framework. For regulators and policymakers, the findings provide empirical evidence that could be employed when updating the MCCG and possibly in setting targets for board diversity, for example 50 per cent independent directors and 30 per cent female board representation (Securities Commission Malaysia, 2021). The sector-specific

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findings also show that regulatory measures would be more effective if they were tailored to the environmental sensitivity of individual industries rather than being applied in a general manner. For corporate leaders and boards, the study highlights that board independence and gender diversity are characteristics associated with better ESG integration, thereby offering practical guidance on how boards should be structured and on the appointment of directors (Nashri et al., 2023; Buchetti et al., 2025). For institutional investors, the evidence supports carrying out more thorough due diligence, improving risk management, and making more effective capital allocations to companies that have credible sustainability governance, in accordance with the Malaysian Code for Institutional Investors (2022) and global frameworks (Institutional Investors Council Malaysia, 2022). For family-owned companies and government-linked companies (GLCs), the results point to particular actions—such as providing director training, building up ESG capacity, and introducing performance-linked incentives—as means of enhancing board accountability and of ensuring that corporate decisions are consistent with sustainability goals, thus helping to support Malaysia's national sustainability agenda as outlined in SDG 12 and SDG 13 (KPMG Malaysia, 2025; Buniamin et al., 2022).

The study looks at these relationships by taking into account four aspects of the board—board size, board independence, board gender diversity, and board legal expertise—and three types of ownership—institutional, governmental, and foreign ownership—with regard to ESG performance. It also looks at family ownership as a factor which moderates the relationship between the board and ESG performance. The study further compares companies in Environmentally Sensitive Industries (ESI) with those in non-ESI industries in order to determine whether the governance relationships differ depending on the industry context. ESG performance is assessed through the independent third-party Refinitiv ESG ratings (Jámbor & Zanócz, 2023; Fang & Guo, 2025), thus reducing the dependence on the firms' own reported sustainability disclosures. The empirical analysis is based on a balanced panel of 377 Malaysian Main Market-listed firms, including 1,131 firm-year observations from 2022 to 2024.

The results show that there is a selective not a uniform link between corporate governance mechanisms and ESG performance; board independence and gender diversity are positively associated with ESG performance. Governmental ownership is positively associated with ESG performance when looking at the entire sample. The analysis based on whether or not a company is in the ESI category shows different patterns in the estimated associations, although the differences between the coefficients were not formally tested. Family ownership has no significant effect on the four relationships between the board and ESG performance. In the full sample, board size, legal expertise, institutional ownership, and foreign ownership are not significantly connected to ESG performance.

The study makes three key contributions. Firstly, it brings together research on corporate governance and ESG and applies it to a situation characterised by concentrated ownership in an emerging market by examining board and ownership arrangements within a single integrated framework. More importantly, rather than treating family ownership merely as another factor that influences ESG performance, the study looks into whether family control has an effect on the effectiveness of board governance. The finding that there is no significant moderation provides little support for the view that family ownership systematically alters the relationship between the board and ESG and therefore implies that ownership-based incentives on their own are not sufficient to explain the variations in governance effectiveness. Secondly,

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the study helps to link Agency Theory and Institutional Theory by demonstrating that it is necessary to take ownership incentives into account together with the institutional contexts in which these incentives operate. The different patterns observed in the ESI and Non-ESI subsamples provide evidence that is specific to the context and relevant to Institutional Theory, even though formal tests of the equality of coefficients were not performed. These results cast doubt on a purely agency-based approach to ESG governance by showing that differences in ownership incentives do not always lead to corresponding differences in sustainability outcomes. Thirdly, the study extends the empirical literature by incorporating board legal expertise, the moderating effect of family ownership, and the industry's environmental sensitivity within one governance–ESG framework, and by using independent Refinitiv ESG ratings rather than relying solely on self-reported sustainability disclosures. The study indicates that in order to understand ESG performance in a market with concentrated ownership, one must consider not only who owns the firm and how its board is structured, but also the institutional environment in which these governance mechanisms operate.

Literature Review

Theoretical Framework

This study draws on Agency Theory and Institutional Theory as complementary frameworks to examine the relationships among corporate governance, ownership structure, and ESG performance. Agency Theory provides a basis for understanding how boards and owners influence managerial behaviour through monitoring, incentives, and control, whereas Institutional Theory explains how external regulatory, professional, investor, and stakeholder pressures shape organisational practices. Integrating these perspectives recognises that governance mechanisms operate not only through internal monitoring and ownership incentives but also within an institutional environment that may constrain or reinforce those incentives.

Agency Theory

Agency Theory views the firm as a relationship between principals (that is, shareholders) and agents (managers), where their interests might conflict, especially in the case where the managers have more information about the company than the shareholders (Jensen & Meckling, 1976). Information asymmetry and the discretion of managers can lead to agency costs, which is why it is important for monitoring and accountability to function as governance mechanisms (Fama & Jensen, 1983). However, the character of these agency relationships can vary depending on the ownership structure. This is especially significant in cases of concentrated ownership such as in Malaysia, where controlling shareholders can exert a great deal of influence over managerial decisions and the company's priorities.

Agency Theory is applicable to ESG since sustainability decisions can involve short-term costs even if the benefits are realised over longer periods (Jo & Harjoto, 2012). Managers might therefore differ from shareholders in their readiness to make ESG investments which entail immediate costs but yield uncertain benefits or benefits that are realised over a longer period. Boards that function effectively and shareholders can affect such decisions by means of oversight, accountability, and aligning incentives. In firms with concentrated ownership, agency conflicts can go beyond the usual manager–shareholder relationship. Controlling

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shareholders may exert their influence at the expense of minority shareholders, thus giving rise to Type II agency problems (Villalonga & Amit, 2006; Waldau, 2024).

Various board characteristics can deal with these governance problems by means that differ from one another. Independent directors are able to enhance monitoring and curb managerial opportunism (Fama & Jensen, 1983); gender diversity can lead to more thorough deliberation and help to reduce groupthink (Adams & Ferreira, 2009); bigger boards can offer extra expertise and resources (Ahrens et al., 2025); and directors who have legal expertise can improve compliance, risk management, and regulatory oversight (Huang et al., 2024; Liu et al., 2023). Yet the effects of these mechanisms do not have to be the same when it comes to ESG performance. Their effectiveness might depend on the organisation's and the institutional environment's conditions (Endrikat et al., 2021), such as the extent to which controlling shareholders support, replace, or limit board monitoring.

The way in which ownership is structured also affects agency relationships since owners vary in the resources they have for monitoring, the length of their investment horizons, their strategic goals, and their expectations regarding sustainability. As a result, institutional, government, and foreign investors can affect managers' behaviour via different monitoring and incentive mechanisms (Dyck et al., 2019; Hikal et al., 2025; Zhang & Wu, 2024). Family ownership is particularly important since concentrated family control can reduce Type I agency problems by enabling closer monitoring even as it at the same time gives rise to Type II conflicts between controlling and minority shareholders (Villalonga & Amit, 2006; Waldau, 2024). Moreover, since family owners may wish to preserve long-term wealth, maintain their reputation, and ensure intergenerational continuity, they might be more likely to back sustainability-oriented decisions. These conflicting incentives from ownership provide the theoretical foundation for investigating whether family ownership affects the relationship between board governance and ESG performance.

Institutional Theory

Institutional Theory enhances the agency perspective by looking at the external pressures that influence organisational behaviour (DiMaggio & Powell, 1983). Companies function within institutional environments which are marked by coercive pressures resulting from regulation, normative pressures linked to the expectations of professionals and stakeholders, and mimetic pressures that come about due to existing or widely accepted organisational practices. According to this view, corporate governance and ESG practices do not merely result from internal monitoring and ownership incentives but also represent firms' responses to the expectations present in their institutional environments.

Institutional Theory is very relevant to the area of ESG since sustainability practices are more and more shaped by regulation, the expectations of investors, professional standards, and the scrutiny of stakeholders (García-Sánchez et al., 2020). In Malaysia, the MCCG 2021 and Bursa Malaysia's Sustainability Reporting Guide (2022) are significant institutional influences which lead companies to improve their governance, sustainability oversight and reporting practices (Securities Commission Malaysia, 2021; Bursa Malaysia, 2022). These pressures can operate through coercive mechanisms linked to regulatory requirements, normative mechanisms arising from the expectations of professionals and stakeholders, and mimetic mechanisms through which firms respond to existing corporate practices.

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The degree to which these pressures apply can differ from one industry to another. Companies operating in industries sensitive to the environment may face more stringent environmental regulation, greater stakeholder scrutiny, and higher sustainability expectations than companies in less environmentally sensitive industries (Donkor et al., 2023; Almaqtari et al., 2023). Because institutional pressures are stronger in such cases, governance mechanisms may become more important as demands for effective ESG oversight increase. On the other hand, it might promote greater standardisation of sustainability practices among firms, thus decreasing the additional value of specific internal governance mechanisms. The industry context may therefore influence the relationship between governance mechanisms and ESG performance.

Institutional pressures may also explain ownership-based differences. Even though owners have different incentives and monitoring capacities, shared regulatory and stakeholder requirements could lead companies with different ownership forms to adopt increasingly similar governance and sustainability practices. As a result, ownership incentives and institutional pressures do not have to act separately; how they influence ESG performance may depend on the institutional environment in which firms operate.

Complementarity of Agency and Institutional Theory

Agency Theory and Institutional Theory together offer complementary explanations of the relationship between governance and ESG issues. While Agency Theory focuses on internal monitoring, incentives, and ownership-related conflicts, Institutional Theory stresses the role of external pressures in shaping an organisation's practices. By integrating the two theories, governance mechanisms can be seen as resulting from both the internal governance structures in place and the institutional environments in which firms operate.

This applies especially to the case of family ownership. According to agency-based theories, family ownership may affect governance by altering monitoring incentives and introducing potential conflicts of interest between controlling and minority shareholders. Whether family ownership strengthens or weakens the links between board features and ESG performance will depend on the balance between monitoring incentives and the risks of entrenchment. Moreover, because of their long-term orientation, concern for reputation, and intergenerational goals, some family owners may be in favour of sustainability initiatives. Institutional Theory contributes a contextual element in that, where regulatory, professional, and stakeholder expectations are strong enough, the differences resulting from ownership incentives are reduced since companies then come under common pressure to follow acceptable governance and sustainability practices.

The central theoretical assumption of this study is that the effectiveness of governance results from the interaction between internal governance, the incentives associated with ownership, and the institutional environment in which they function. On this basis it is possible to investigate both whether family ownership affects the relationship between the board and ESG issues and whether the links between governance and ESG vary between ESI and Non-ESI firms.

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Board Characteristics and ESG Performance

Board Size

Big boards could improve ESG performance since they offer more expertise, knowledge, networks, and views from a variety of stakeholders (Ahrens et al., 2025). Having a wider range of directors might increase the resources available for monitoring complicated environmental and social issues. On the other hand, larger boards might also lead to problems with coordination and communication which in turn lower the efficiency of decision-making. Empirical evidence on this issue is therefore mixed, with some studies finding positive relationships and others finding no relationship (Buniamin et al., 2022). Because of these opposing mechanisms, a non-directional hypothesis is suggested:
H1: Board size is associated with ESG performance.

Board Independence

Independent directors are able to offer objective oversight, curb managerial opportunism, and enhance accountability (Fama & Jensen, 1983). Because they are more separated from management, they might also pay greater attention to longer-term environmental and social risks rather than concentrating solely on short-term financial concerns. Previous studies have generally found a positive relationship between board independence and ESG outcomes (Kamaludin et al., 2022; Anyigbah et al., 2023; Nashri et al., 2023). Accordingly:
H2: Board independence is associated with ESG performance.

Board Gender Diversity

Gender-diverse boards may contribute a broader range of perspectives and experiences, reduce groupthink, and increase sensitivity to stakeholder and social concerns (Adams & Ferreira, 2009). These characteristics may strengthen the board's capacity to address the multidimensional nature of ESG issues. Prior studies generally report positive associations between board gender diversity and ESG performance (Chebbi & Ammer, 2022; Popov & Makeeva, 2022; Nashri et al., 2023). Accordingly:
H3: Board gender diversity is associated with ESG performance.

Board Legal Expertise

Directors with legal expertise may strengthen regulatory awareness, compliance, risk management, and oversight of sustainability-related requirements (Huang et al., 2024; Liu et al., 2023). Legal expertise may therefore enhance a board's capacity to identify regulatory risks and oversee ESG-related obligations. However, such expertise may be more directly relevant to governance and compliance than to the environmental and social dimensions captured within a composite ESG measure. Given the limited empirical evidence and theoretically ambiguous overall effect:
H4: Board legal expertise is associated with ESG performance.

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Ownership Structure and ESG Performance

Institutional Ownership

Institutional investors generally possess substantial resources and expertise for monitoring management and may encourage practices that protect long-term investment value (Dyck et al., 2019). However, institutional investors differ in their investment horizons, ESG preferences, and engagement intensity, which may result in heterogeneous sustainability incentives. Malaysian evidence also remains inconclusive (Hikal et al., 2025). Accordingly:
H5: Institutional ownership is associated with ESG performance.

Governmental Ownership

Governmental ownership could be linked to better ESG performance since companies associated with the government may have to answer to the public and might include social, environmental, and national development goals in their corporate decision-making (Eissa et al., 2024). On the other hand, political and bureaucratic factors could undermine these incentives or cause the organisation to focus on other objectives (Laili et al., 2024). Since these opposing mechanisms exist:
H6: Governmental ownership is associated with ESG performance.

Foreign Ownership

Foreign investors could subject Malaysian companies to international governance standards, sustainability expectations, and monitoring practices (Zhang & Wu, 2024; Yu, 2023). Moreover, foreign involvement might lead to increased transparency since companies would then be more visible to international investors and stakeholders. The current evidence usually shows a positive association between foreign ownership and ESG-related results, even though these effects might differ depending on the type of investor and the industry (Ng & Marsidi, 2022; Zhang & Wu, 2024). Consequently:
H7: Foreign ownership is associated with ESG performance.

Family Ownership as a Moderator

Family ownership might affect the effectiveness of board governance since strong family control leads to conflicting incentives. While on the one hand a desire to preserve long-term wealth, maintain reputation, and ensure intergenerational continuity could lead family owners to back sustainability initiatives and thus strengthen effective board governance, on the other hand such concentration of control can result in entrenchment and Type II agency problems by diminishing the influence of independent directors and minority shareholders or by allowing the dominant families to focus on their own private interests (Anderson & Reeb, 2003; Villalonga & Amit, 2006; Waldau, 2024).

The fact that there are competing mechanisms means that the direction of moderation is theoretically unclear. On the one hand, strong family monitoring can take the place of formal board monitoring and thus reduce the additional benefit of the board's mechanisms; on the other hand, family owners whose long-term interests coincide with sustainability objectives can enhance the impact of effective boards (Hashim et al., 2021; Ghuslan et al., 2022). It is therefore

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possible for family ownership to strengthen, weaken, or have no effect on the relationship between the individual characteristics of the board and ESG performance.

Institutional Theory also offers an explanation as to why family moderation might not be the same. The institutional pressures resulting from MCCG 2021, Bursa Malaysia's sustainability framework, professional expectations, and the scrutiny of stakeholders could lead to a growing number of standard governance and sustainability practices across different ownership structures. If there were strong evidence of moderation, this would show that the level of family control has a particular effect on the relationship between the board and ESG issues. On the other hand, a lack of significant moderation would suggest only that there are few systematic differences in board effectiveness between family and non-family firms and would be in line with the idea that common institutional pressures reduce ownership-related differences. It would not, though, on its own, prove that these institutional pressures cause the standardisation observed.

Given these competing theoretical mechanisms, the following non-directional moderation hypotheses are proposed:

- **H8a:** Family ownership moderates the relationship between board size and ESG performance.
- **H8b:** Family ownership moderates the relationship between board independence and ESG performance.
- **H8c:** Family ownership moderates the relationship between board gender diversity and ESG performance.
- **H8d:** Family ownership moderates the relationship between board legal expertise and ESG performance.

Literature Summary and Research Gaps

The literature shows that the features of the board and the way ownership is structured may have an effect on ESG performance via monitoring, resource, incentive, and institutional channels (Endrikat et al., 2021). Yet the nature of these relationships is probably not the same across different governance mechanisms, ownership structures, and industrial contexts. Four gaps are especially relevant.

First, only a limited amount of evidence from Malaysia has looked at a number of board and ownership features by using a comprehensive ESG performance measure. The current studies in Malaysia tend to concentrate on individual governance features or depend on self-reported disclosure indices rather than on independent third-party ESG ratings (Kamaludin et al., 2022; Nashri et al., 2023). By using Refinitiv ESG ratings to examine a number of governance mechanisms, a wider evaluation of the relationship between governance and ESG can be obtained in the Malaysian context, since it reduces dependence on companies' self-reported sustainability disclosures, which could be affected by selective reporting and social desirability bias.

Secondly, even though family ownership is important in Malaysia's corporate environment, it has attracted only limited attention as a factor that moderates the relationship between the board and ESG issues (Hashim et al., 2021; Ghuslan et al., 2022; Waldau, 2024). Earlier studies have

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mainly looked at the direct link between family ownership and ESG outcomes rather than investigating whether family control affects the effectiveness of specific board mechanisms. By looking at this moderating role, it is possible to find out if board governance functions in a different way in family-owned companies as compared to those that are not family-owned.

Thirdly, the environmental sensitivity of the industry may affect the relationship between governance and ESG, although relatively little attention has been paid to the differences between firms in Environmentally Sensitive Industries (ESI) and those that are not (Donkor et al., 2023; Almaqtari et al., 2023). Since companies in environmentally sensitive sectors are likely to experience greater regulatory and stakeholder pressure, comparing these groups offers a way of looking at whether the importance of governance mechanisms varies depending on the institutional context.

Fourth, even though Agency Theory and Institutional Theory provide complementary explanations of corporate governance and ESG behaviour, relatively little attention has been given to combining the incentives associated with internal ownership with the pressures from external institutions when it comes to explaining the relationship between governance and ESG. Agency Theory focuses on monitoring, incentives, and conflicts related to ownership, while Institutional Theory stresses the external environment in which these governance mechanism's function. By integrating these two perspectives we obtain a more context-sensitive approach for assessing the effectiveness of governance in a concentrated-ownership emerging market.

This study addresses these gaps by integrating board characteristics, institutional, government and foreign ownership, family ownership moderation, and industry environmental sensitivity within a single empirical framework. It employs independent Refinitiv ESG ratings and panel data with industry and year fixed effects. Rather than treating Agency Theory and Institutional Theory as competing explanations, the study uses them as complementary perspectives to examine how internal monitoring and ownership incentives operate within broader institutional and industry contexts. In doing so, the study contributes to a more context-sensitive understanding of governance effectiveness in a concentrated-ownership emerging market.

Methodology

Research Design and Sample

This study adopts a quantitative longitudinal research design to examine the associations between corporate governance, ownership structure, family ownership, and ESG performance among firms listed on Bursa Malaysia's Main Market. The study covers the period 2022–2024, following the introduction of the Malaysian Code on Corporate Governance (MCCG) 2021 and during the strengthening of sustainability reporting expectations in Malaysia (Securities Commission Malaysia, 2021; Bursa Malaysia, 2022). The three-year period provides sufficient observations for panel estimation while maintaining contemporary relevance and data availability.

The starting group consisted of 813 companies listed on the Main Market, spread among 13 sectors. Companies were omitted from the sample when Refinitiv ESG ratings or the information relating to governance, ownership, and financial matters needed for the analysis

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were not available for the entire study period, and those which had been delisted, suspended, or did not remain continuously listed over the three-year period were also excluded. As a result of applying these screening criteria, the final sample included 377 firms, which amounts to about 46.4% of the original population—a retention rate similar to that found in previous Malaysian ESG studies (for example, Kamaludin et al., 2022; Nashri et al., 2023)—and produced 1,131 firm-year observations. The dataset thus obtained is a balanced panel with each of the selected firms providing data for all three years.

The board characteristics and details on ownership were mainly gathered from the companies' annual reports, ESG performance data came from Refinitiv ESG Datastream (LSEG, 2024) and financial information was acquired from the annual reports and from various financial databases. Since only companies with complete Refinitiv ESG and governance data were included in the sample, it may be the case that the sample disproportionately includes firms which have greater data availability and market visibility. Hence, care should be taken when interpreting the generalisability of the findings for the wider Main Market population.

The panel design ensures that each firm included in the sample provides data for the entire study period, which allows for consistent comparisons between firms and over the years. The analysis includes industry fixed effects in order to take into account the ongoing differences in ESG exposure, regulatory requirements, stakeholder pressures, and operating characteristics among industries, and year fixed effects are included to deal with the common temporal factors that affected the period from 2022 to 2024.

Variable Measurement

Dependent Variable: ESG Performance

The ESG performance (ESGR) is based on the Refinitiv ESG rating which is obtained from the Refinitiv ESG Datastream. This rating gives an overall evaluation covering the environmental, social, and governance areas. It is made up of about 630 metrics at the company level, the weights of the categories differing by industry to take into account the varying degree of materiality (Refinitiv, 2023). The original score goes from 0 to 100 and is converted to the 0–1 range by dividing it by 100. A higher value shows better ESG performance. This linear transformation does not affect the relative ranking of the companies (Qachach et al., 2025; Refinitiv, 2023).

Independent Variable: Board Characteristics

Board size (BSIZE) is measured as the total number of directors serving on the board (Chebbi & Ammer, 2022). Board independence (BIND) is measured as the proportion of independent directors relative to total board membership (Buchetti et al., 2025). Board gender diversity (BDIV) is measured as the proportion of female directors on the board (Nashri et al., 2023; Kamaludin et al., 2022). Board legal expertise (BLEXPERT) is measured as the proportion of directors possessing legal qualifications or professional legal backgrounds (Huang et al., 2024).

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Independent Variable: Ownership Structure

Institutional ownership (INSTOWN) is calculated as the fraction of the outstanding shares owned by institutional investors (Hikal et al., 2025). Governmental ownership (GOVOWN) is determined as the fraction of the outstanding shares held by the government or by government-linked shareholders, this information being obtained from the companies' ownership disclosures and their annual reports (Eissa et al., 2024). Foreign ownership (FOROWN) is measured as the fraction of the outstanding shares held by foreign investors (Zhang & Wu, 2024).

Moderating Variable: Family Ownership

Family ownership (FOWN) is calculated as the fraction of the outstanding shares held by the founding family, their immediate family members, and by family-controlled entities or trusts. In order to reflect the variations in the level of family ownership among firms, a continuous measure is used (Waldau, 2025; Ghuslan et al., 2025).

Control Variables

The analysis takes into account firm size, firm age, and financial leverage since these characteristics of the firm could be linked to ESG performance. Firm size (LOG_FSIZE) is defined as the natural logarithm of total assets; larger firms might have more resources at their disposal to carry out ESG initiatives and may also be subject to greater scrutiny from a variety of stakeholders and regulators (Kamaludin et al., 2022). Firm age (FAGE) is measured by the number of years since the firm was incorporated; older firms may have developed more established governance practices and relationships with their stakeholders (Laili et al., 2024). Financial leverage (LEV) is calculated as total debt divided by total assets; firms that have higher levels of leverage might experience different financial constraints and risk situations which in turn affect their ability or incentive to invest in ESG activities (Kamaludin et al., 2022). The industry classification is based on Bursa Malaysia's sector classification (Martínez et al., 2024).

Model Specification

The empirical analysis uses industry and year fixed effects in order to take into account the persistent differences at the industry level and the common year-specific effects. The industry fixed effects include 12 sector indicators, one of which is taken as the reference category, and the year fixed effects include indicators for 2023 and 2024, with 2022 acting as the base year.

Firm fixed effects are not included because the three-year panel provides limited within-firm variation in several board and ownership characteristics. A firm fixed-effects specification would therefore identify coefficients primarily from relatively small short-term changes in these variables and could result in imprecise estimates. Instead, the main focus of this study makes use of the between-firm variation in governance and ownership characteristics over the relatively short period of observation. It is appropriate to keep this kind of variation in view of the aim of the study, which is to investigate whether firms with different governance and ownership features have different ESG outcomes. For this reason, the selection of a fixed-

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effects model is in agreement with the type of variation that is relevant to the research question, as suggested by Breuer and deHaan (2024).

Direct-Effect Model

The baseline model examines the associations between board characteristics, ownership structures, family ownership, and ESG performance:

$$ESGR_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BDIV_{it} + \beta_4 BLEXPERT_{it} + \beta_5 INSTOWN_{it} + \beta_6 GOVOWN_{it} + \beta_7 FOROWN_{it} + \beta_8 FOWN_{it} + \beta_9 LOG_FSIZE_{it} + \beta_{10} FAGE_{it} + \beta_{11} LEV_{it} + \Sigma IND + \Sigma YEAR + \varepsilon_{it} \quad (1)$$

ESGR stands for the ESG Rating; BSIZE refers to board size; BIND stands for board independence; BDIV stands for board gender diversity; BLEXPERT refers to the board's legal expertise; INSTOWN is institutional ownership; GOVOWN is governmental ownership; FOROWN is foreign ownership; FOWN is family ownership; LOG_FSIZE is the natural logarithm of total assets; FAGE is the firm's age; LEV is financial leverage; IND are industry fixed effects; YEAR are year fixed effects; and ε is the error term.

Moderation-Effect Model

To examine whether family ownership conditions the relationships between board characteristics and ESG performance, the moderation model introduces interaction terms between family ownership and each board characteristic:

$$ESGR_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BDIV_{it} + \beta_4 BLEXPERT_{it} + \beta_5 INSTOWN_{it} + \beta_6 GOVOWN_{it} + \beta_7 FOROWN_{it} + \beta_8 FOWN_{it} + \beta_9 LOG_FSIZE_{it} + \beta_{10} FAGE_{it} + \beta_{11} LEV_{it} + \beta_{12}(BSIZE \times FOWN)_{it} + \beta_{13}(BIND \times FOWN)_{it} + \beta_{14}(BDIV \times FOWN)_{it} + \beta_{15}(BLEXPERT \times FOWN)_{it} + \Sigma IND + \Sigma YEAR + \varepsilon_{it} \quad (2)$$

The coefficients of the interaction terms show whether the relationship between each board feature and ESG performance changes depending on the level of family ownership.

Estimation and Inference

Before carrying out the regression estimation, descriptive statistics and correlation analyses were carried out. To check for possible multicollinearity, variance inflation factors (VIFs) were calculated, any values above 10 being regarded as indicating a possible problem (Hair et al., 2010). The direct-effect and moderation models were then estimated using industry and year fixed effects.

Since repeated observations for the same firm may show heteroskedasticity and within-firm serial correlation, the standard errors are clustered at the firm level (Arellano, 1987). The estimator of the clustered covariance takes account of both the heteroskedasticity and the correlation among the observations that belong to the same firm.

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Potential endogeneity concerns include omitted firm-specific factors, reverse causality between ESG performance and governance or ownership characteristics, and measurement error. Industry and year fixed effects account for common industry-level and temporal influences, while the lagged specification described below provides a supplementary temporal robustness check. These procedures do not eliminate omitted-variable bias, reverse causality, or other sources of endogeneity. Given these limitations and the relatively short 2022–2024 observation period, the estimated coefficients are interpreted as conditional associations rather than causal effects.

Robustness Analysis

Two supplementary analyses are conducted to assess the robustness and contextual sensitivity of the baseline results. First, the baseline model is re-estimated using one-year-lagged explanatory variables. This specification examines whether the main governance–ESG associations remain when governance and ownership characteristics temporally precede the observed ESG outcome. The lagged specification is treated as a robustness assessment rather than a causal identification strategy.

Second, the sample is split into Environmentally Sensitive Industries (ESI) and those which are not ESI. This classification is based on previous studies that identified industries which are characterised by relatively greater environmental exposure, regulatory scrutiny, and pressure from stakeholders (Donkor et al., 2023; Almaqtari et al., 2023). The ESI includes Construction, Energy, Industrial Products & Services, Plantation, Property, Real Estate Investment Trusts (REITs), Transportation & Logistics, and Utilities. The non-ESI consists of Consumer Products & Services, Financial Services, Health Care, Technology, and Telecommunications & Media. The ESI subsample includes 219 firms and 657 firm-year observations (58.09% of the sample), whereas the non-ESI subsample consists of 158 firms and 474 firm-year observations (41.91%).

Separate regressions are estimated for the ESI and Non-ESI subsamples to examine heterogeneity in the observed governance–ESG associations across industry contexts. These results are interpreted as descriptive evidence of contextual heterogeneity rather than as formal tests of differences in coefficients between the two groups. In particular, statistical significance in one subsample and insignificance in another does not, by itself, establish that the corresponding coefficients differ significantly across ESI and Non-ESI firms.

Results

Descriptive Statistics

The descriptive statistics are given in Table 1. The mean ESG score is 0.4416, or 44.16 when the original 0–100 scale is used, and the standard deviation is 0.1814; the scores range from 0.1012 to 0.9420. This mean is generally in line with the findings of previous Malaysian studies that employed Refinitiv ESG data, although care should be taken when making direct comparisons because of the differences in sample composition and the periods covered (Kamaludin et al., 2022; Nashri et al., 2023).

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The typical board has 7.85 members, with 51.19% of them being independent directors and 26.49% being women. 10.71% of the board members have legal expertise. The average degree of board independence is only just above the 50% figure mentioned in the MCCG 2021, although the current level of female representation on the board is still below the 30% target, indicating that advancement in terms of board diversity is still uneven.

Institutional, government, and foreign ownership amount to 16.84%, 12.20%, and 9.84% respectively, whereas family ownership averages 34.81%. This relatively high average level of family ownership shows how important family shareholding is in the Malaysian Main Market. The average firm age is 40.74 years, and the average leverage is 0.4152. The degree of variation observed in the main variables is such that there is adequate cross-sectional variation for the regression analysis that follows.

Pairwise correlations do not show the presence of a problematic multicollinearity situation; the greatest correlation observed is between LOG_FSIZE and FAGE (r = 0.42). All of the variance inflation factors are under 3.0, which is well below the conventional cutoff of 10 (Hair et al., 2010), thus indicating that multicollinearity is unlikely to have a material effect on the regression estimates.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ESGR	1,131	0.4416	0.1814	0.1012	0.9420
BSIZE	1,131	7.8541	1.8209	4.0000	15.0000
BIND	1,131	0.5119	0.1217	0.1667	0.9091
BDIV	1,131	0.2649	0.1272	0.0000	1.0000
BLEXPERT	1,131	0.1071	0.0989	0.0000	0.4444
INSTOWN	1,131	0.1684	0.1841	0.0000	0.9760
GOVOWN	1,131	0.1220	0.2032	0.0000	0.8759
FOROWN	1,131	0.0984	0.1724	0.0000	0.9110
FOWN	1,131	0.3481	0.2303	0.0000	0.8289
LOG_FSIZE	1,131	9.2238	0.7618	6.4194	12.0315
FAGE	1,131	40.7427	20.9038	4.0000	203.0000
LEV	1,131	0.4152	0.2310	0.0047	1.4775

Note: ESGR = ESG Rating; BSIZE = Board Size; BIND = Board Independence; BDIV = Board Gender Diversity; BLEXPERT = Board Legal Expertise; INSTOWN = Institutional Ownership; GOVOWN = Governmental Ownership; FOROWN = Foreign Ownership; FOWN = Family Ownership; LOG_FSIZE = Logarithm of Firm Size; FAGE = Firm Age; LEV = Financial Leverage.

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Industry and Year Fixed-Effects Regression: Direct Effects

The regression results with industry and year fixed effects are given in Table 2. The model is statistically significant ($F = 32.0910$, $p < 0.001$) and accounts for 42.06% of the variation in ESG performance ($R^2 = 0.4206$; adjusted $R^2 = 0.4075$).

There is a positive association between board independence and ESG performance ($\beta = 0.1523$, $p = 0.026$), which supports hypothesis H2. When all other variables are held constant, an increase of 0.10 in the proportion of independent directors is associated with an increase of about 0.0152 in the rescaled ESG score, equivalent to about 1.52 points on the original 0–100 scale.

Board gender diversity is also positively associated with ESG performance ($\beta = 0.1315$, $p = 0.048$), which supports hypothesis H3. If the proportion of female directors increases by 0.10, the ESG score rises by about 0.0132, which is equivalent to about 1.32 points on the original scale.

There is a positive association between governmental ownership and ESG performance ($\beta = 0.1238$, $p = 0.031$), which supports hypothesis H6. An increase of 0.10 in government ownership corresponds to an increase of about 0.0124 in the rescaled ESG score, or roughly 1.24 points on the original 0–100 scale.

Board size ($\beta = 0.0072$, $p = 0.121$), board legal expertise ($\beta = 0.0911$, $p = 0.307$), institutional ownership ($\beta = 0.0537$, $p = 0.356$), and foreign ownership ($\beta = 0.0855$, $p = 0.110$) are not significantly associated with ESG performance. Family ownership itself is not significantly associated with ESG performance ($\beta = -0.0195$, $p = 0.677$). Accordingly, H1, H4, H5, and H7 are not supported.

Firm size shows a positive association with ESG performance ($\beta = 0.0861$, $p < 0.001$). Although firm age is positive it is not statistically significant ($\beta = 0.0007$, $p = 0.131$), and nor is leverage ($\beta = 0.0012$, $p = 0.979$).

Table 2: Direct Effects Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BSIZE	0.0072	0.0046	1.553	0.121
BIND	0.1523	0.0680	2.239	0.026**
BDIV	0.1315	0.0664	1.980	0.048**
BLEXPERT	0.0911	0.0891	1.022	0.307
INSTOWN	0.0537	0.0581	0.924	0.356
GOVOWN	0.1238	0.0571	2.166	0.031**
FOROWN	0.0855	0.0534	1.600	0.110
FOWN	-0.0195	0.0467	-0.417	0.677

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LOG_FSIZE	0.0861	0.0163	5.290	0.0000***
FAGE	0.0007	0.0005	1.515	0.131
LEV	0.0012	0.0442	0.027	0.979

Fit statistics: R^2 = 0.4206; Adjusted R^2 = 0.4075; F-statistic = 32.0910***; Observations = 1,131.

Note: *** p < 0.01, ** p < 0.05, * p < 0.10. Industry and year fixed effects are included. White-period (cross-section cluster) robust standard errors are reported.

Moderating Effect of Family Ownership

The results for the family ownership moderation model are given in Table 3. The model is statistically significant (F = 27.9430, p < 0.001), the R^2 is 0.4240 and the adjusted R^2 is 0.4088. Compared with the direct-effects model, the addition of the four interaction terms leads to only a slight increase in R^2, the value rising from 0.4206 to 0.4240 (ΔR^2 = 0.0034).

All of the interaction terms are not statistically significant. The coefficient for BSIZE × FOWN is 0.0056 (p = 0.762), that for BIND × FOWN is 0.2490 (p = 0.372), that for BDIV × FOWN is 0.1297 (p = 0.601), and that for BLEXPERT × FOWN is −0.3679 (p = 0.385). Hence, H8a through H8d are not supported.

The results do not show that the level of family ownership has a systematic effect on the relationships between the four board characteristics and ESG performance in the current sample and under the present model specification. It is wrong to take this finding as proof that family ownership is not relevant to corporate governance as a whole; instead, the moderating role of family ownership is not statistically apparent in the estimated models.

Table 3: Moderation Effects

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BSIZE × FOWN	0.0056	0.0183	0.303	0.762
BIND × FOWN	0.2490	0.2784	0.894	0.372
BDIV × FOWN	0.1297	0.2478	0.523	0.601
BLEXPERT × FOWN	-0.3679	0.4232	-0.869	0.385

Fit statistics: R^2 = 0.4240; Adjusted R^2 = 0.4088; F-statistic = 27.9430***; Observations = 1,131

Note: *** p < 0.01. Model includes direct effects, ownership variables, control variables, industry fixed effects, and year fixed effects. White period (cross-section cluster) robust standard errors are reported.

Hypothesis Testing Summary

Table 4 summarises the hypothesis results. Three of the seven direct-effect hypotheses are supported at the conventional 5% level: H2, H3, and H6. However, H1, H4, H5, and H7 are not supported. None of the four family-ownership moderation hypotheses is supported.

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Table 4: Hypothesis Testing Summary

Hypothesis	Relationship	Result	Conclusion
H1	**BSIZE → ESGR**	Positive, p = 0.121	Not supported
H2	**BIND → ESGR**	Positive, p = 0.026**	Supported
H3	**BDIV → ESGR**	Positive, p = 0.048**	Supported
H4	**BLEXPERT → ESGR**	Positive, p = 0.307	Not supported
H5	**INSTOWN → ESGR**	Positive, p = 0.356	Not supported
H6	**GOVOWN → ESGR**	Positive, p = 0.031**	Supported
H7	**FOROWN → ESGR**	Positive, p = 0.110	Not supported
H8a	**BSIZE × FOWN → ESGR**	β = 0.0056, p = 0.762	Not supported
H8b	**BIND × FOWN → ESGR**	β = 0.2490, p = 0.372	Not supported
H8c	**BDIV × FOWN → ESGR**	β = 0.1297, p = 0.601	Not supported
H8d	**BLEXPERT × FOWN → ESGR**	β = -0.3679, p = 0.385	Not supported

Note: ***p < 0.01, **p < 0.05, **p < 0.10.*

Robustness Analysis

To evaluate the sensitivity and contextual robustness of the main findings, two additional analyses are carried out. In the first, the baseline model is re-estimated with one-year-lagged values of the explanatory variables in order to check if the associations identified remain when governance and ownership features occur before ESG performance. The second analysis involves splitting the sample into firms that belong to Environmentally Sensitive Industries (ESI) and those that do not (Non-ESI) in order to see if the governance–ESG associations differ depending on the industry context. The ESI group (219 firms; 657 firm-year observations) consists of the sectors Industrial Products & Services, Construction, Energy, Property, Plantation, REITs, Transportation & Logistics, and Utilities—sectors that are exposed to higher environmental risks. The Non-ESI group (158 firms; 474 firm-year observations) includes Consumer Products & Services, Financial Services, Health Care, Technology, and Telecommunications & Media, all of which have a lower level of environmental exposure.

Lagged Analysis

Table 5 shows a comparison between the contemporaneous model and the one-year-lagged version. In the lagged specification, board gender diversity (β = 0.1637, p = 0.050), government ownership (β = 0.1358, p = 0.050), and firm size (β = 0.0864, p < 0.001) still have positive and statistically significant relationships with ESG performance. The coefficient for firm size remains especially stable, varying only slightly from β = 0.0861 in the base model to β = 0.0864 in the lagged model.

Board independence remains positive but is no longer statistically significant when lagged (β = 0.1300, p = 0.127), indicating that its baseline association is not robust to the one-year-lagged specification. Board size, board legal expertise, institutional ownership, foreign ownership, family ownership, firm age, and leverage remain statistically insignificant and are broadly consistent with the contemporaneous results.

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The analysis using lagged values shows greater robustness in the relationships concerning board gender diversity, governmental ownership, and firm size than it does in the case of board independence. Even though the lagged specification does not remove the concern about endogeneity, the results are seen as a temporal robustness check and not as proof of causality.

Table 5: Comparison of Contemporaneous Industry Fixed-Effects Model with Lagged Model (t-1)

Variable	Industry Effects Model (t)	Lagged Model (t-1)	Consistency Check
BSIZE	0.0072 (p = 0.121)	0.0076 (p = 0.167)	Consistent
BIND	0.1523 (p = 0.026)**	0.1300 (p = 0.127)	Inconsistent
BDIV	0.1315 (p = 0.048)**	0.1637 (p = 0.050)**	Consistent
BLEXPERT	0.0911 (p = 0.307)	0.0551 (p = 0.578)	Consistent
INSTOWN	0.0537 (p = 0.356)	0.0320 (p = 0.656)	Consistent
GOVOWN	0.1238 (p = 0.031)**	0.1358 (p = 0.050)**	Consistent
FOROWN	0.0855 (p = 0.110)	0.0902 (p = 0.170)	Consistent
FOWN	-0.0195 (p = 0.677)	-0.0182 (p = 0.762)	Consistent
LOG_FSIZE	0.0861 (p < 0.001)***	0.0864 (p < 0.001)***	Consistent
FAGE	0.0007 (p = 0.131)	0.0007 (p = 0.194)	Consistent
LEV	0.0012 (p = 0.979)	0.0141 (p = 0.777)	Consistent

Note: ***p < 0.01, **p < 0.05, *p < 0.10. Consistency is assessed based on whether the coefficient retains the same sign and significance status (at p < 0.10) in the lagged model as in the contemporaneous model.

ESI/Non-ESI Subsample Analysis

The regression results for ESI and Non-ESI firms are given in Table 6. In both subsamples board independence is positive although it is not statistically significant for the ESI firms (β = 0.1313, p = 0.127) and is only weakly significant for the Non-ESI firms (β = 0.1809, p = 0.097). Board gender diversity is also positive in each of the two subsamples but is not statistically significant for the ESI (β = 0.1236, p = 0.158) and for the Non-ESI (β = 0.1310, p = 0.172) firms. The sizes of the coefficients are still broadly similar to those obtained from the full sample, the disappearance of statistical significance possibly being due to the smaller sizes of the subsamples.

Governmental ownership is only statistically significant in the case of ESI firms (β = 0.2063, p = 0.010), whereas board size is statistically significant only among Non-ESI firms (β = 0.0127, p = 0.050). Institutional ownership, foreign ownership, and family ownership remain statistically insignificant in both subsamples.

In both the ESI group (β = 0.1052, p < 0.001) and the Non-ESI group (β = 0.0949, p < 0.001), firm size continues to be positive and statistically significant. Financial leverage is not statistically significant in either group, nor is firm age.

The findings from the subsample show that the range of governance and ownership associations that can be observed statistically differs depending on the industry. Yet since the analysis does not carry out a formal test to check whether the coefficients are equal for the ESI and Non-ESI subsamples, the fact that a coefficient is significant in one group and not significant in the other

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should not be taken as proof of a statistically significant difference between the respective coefficients.

Table 6: Subsample Industry Fixed-Effects Results – Full Sample, ESI, and Non-ESI

Variable	Full Sample (N=1,131)	ESI Subsample (N=657)	Non-ESI Subsample (N=474)	Consistency
BSIZE	0.0072	0.0017	0.0127**	Inconsistent
BIND	0.1523**	0.1313	0.1809*	Inconsistent
BDIV	0.1315**	0.1236	0.1310	Inconsistent
BLEXPERT	0.0911	0.1372	-0.0483	Inconsistent
INSTOWN	0.0536	0.1115	0.0701	Consistent
GOVOWN	0.1238**	0.2063**	-0.0510	Inconsistent
FOROWN	0.0855	0.0612	0.0854	Consistent
FOWN	-0.0195	0.0307	-0.0657	Inconsistent
LOG_FSIZE	0.0861***	0.1052***	0.0949***	Consistent
FAGE	0.0007	0.0002	0.0013	Consistent
LEV	0.0012	-0.0894	0.0876	Inconsistent
Fit Statistics	**Full Sample**	**ESI Subsample**	**Non-ESI Subsample**	
R^2	0.4206	0.4015	0.4798	
Adj. R^2	0.4075	0.3827	0.4604	
F-statistic	32.0910***	21.336***	24.742***	
Observations	1,131	657	474	

Note: ***p < 0.01, **p < 0.05, *p < 0.10. Consistency is defined as the coefficient having the same sign and significance status (at p < 0.10) in both ESI and Non-ESI subsamples.

Discussion and Conclusion

Discussion of Findings

Not every governance mechanism matters equally for ESG. Among Malaysian Main Market firms, the results point to a selective pattern. Board independence, gender diversity, and government ownership all show positive and statistically significant associations with ESG performance. Board size offers only marginal and context-dependent evidence. Board legal expertise, institutional ownership, and foreign ownership fall short of significance. Most strikingly, family ownership does not significantly moderate any board–ESG relationship.

Board Characteristics

There is a positive relationship between board independence and ESG performance (β = 0.1523, p = 0.026), which supports hypothesis H2. This result is in line with Agency Theory since independent directors are able to enhance managerial monitoring and accountability. Yet, the relationship disappears in the lagged version (β = 0.1300, p = 0.127), indicating that the positive association may be sensitive to timing and therefore cannot be taken as proof of a persistent causal link. This finding is in agreement with the idea that independent directors

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might exert their influence mainly through ongoing oversight rather than by bringing about long-term changes in a company's ESG orientation (Jo & Harjoto, 2012).

There is a positive relationship between board gender diversity and ESG performance (β = 0.1315, p = 0.048), which supports hypothesis H3. Boards that are gender diverse may offer a wider range of perspectives and place more emphasis on stakeholder and social issues (Adams & Ferreira, 2009). This association is also seen in the lagged analysis (β = 0.1637, p = 0.050), indicating that it has greater temporal persistence than board independence. The coefficient is positive in both the ESI and Non-ESI subsamples, but it is not statistically significant in either case, possibly due to lower statistical power.

Board size is positive but insignificant in the full sample (β = 0.0072, p = 0.121), providing no support for H1. This finding is consistent with prior Malaysian evidence reporting mixed effects of board size (Kamaludin et al., 2022; Nashri et al., 2023). The analysis of the subsample confirms this context-dependence: board size is only significant among Non-ESI firms (β = 0.0127, p = 0.050) and is not significant among ESI firms (β = 0.0017, p = 0.788).

The impact of board legal expertise is positive but small (β = 0.0911, p = 0.307) and thus does not support hypothesis H4; it is possible that legal expertise contributes mainly to compliance and governance, while the composite ESG measure also includes environmental and social aspects.

Ownership Structure

There is a positive relationship between governmental ownership and ESG performance (β = 0.1238, p = 0.031), which supports hypothesis H6. This can be explained by the fact that government-linked shareholders are held to account by the public and have to adhere to wider policy goals (Eissa et al., 2024). The stronger association found in the ESI subsample (β = 0.2063, p < 0.01) is consistent with the possibility that governmental ownership is particularly relevant where environmental exposure and stakeholder scrutiny are greater. Yet this should be seen as a difference in the level of significance observed, not as evidence that the coefficients are statistically different.

Foreign ownership is not significantly associated with ESG performance (β = 0.0855, p = 0.110); therefore, H7 is not supported. Institutional ownership is also insignificant (β = 0.0537, p = 0.356), providing no support for H5. This could be due to the diversity among institutional investors with regard to their investment horizons, ESG preferences, and engagement practices (Dyck et al., 2019; Hikal et al., 2025). Hence, the ownership percentage by itself may not be enough to reflect the effectiveness of institutional monitoring.

Family Ownership and Moderation

The most striking result concerns family ownership. Its direct link to ESG performance is not significant (β = -0.0195, p = 0.677), and none of the four interaction terms reaches significance. The direct coefficient is negative but insignificant — a slight downward tendency, perhaps, but nothing systematic. Family ownership neither improves nor worsens ESG performance in any consistent way. That fits the idea that competing monitoring incentives and entrenchment risks cancel each other out (Villalonga & Amit, 2006; Waldau, 2025).

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The lack of moderation is of theoretical interest. Agency-based arguments suggest that family ownership may influence governance through its effects on monitoring incentives and potential conflicts between controlling and minority shareholders. Depending on the balance between monitoring incentives and entrenchment risks, family ownership may strengthen or weaken the relationships between board characteristics and ESG performance. The absence of statistically significant interaction terms provides no empirical support for the proposed moderation relationships in the estimated models. It does not establish that family ownership is generally irrelevant to governance or ESG performance.

Institutional Theory offers another angle. Malaysian listed firms operate under the MCCG 2021, Bursa Malaysia's sustainability framework, and rising stakeholder pressure. These coercive and normative forces may standardise governance practices across ownership types. If so, ownership-specific variation shrinks, and family control may not systematically shape board–ESG relationships. The study does not test these mechanisms directly. They are plausible theoretical explanations, not proven causes.

Theoretical Implications

Agency Theory receives qualified support. Board independence and gender diversity both links positively to ESG performance — consistent with the view that stronger monitoring and diverse perspectives improve accountability. But legal expertise and institutional ownership are insignificant. Formal governance arrangements, then, do not automatically deliver better ESG outcomes. Their effectiveness depends on institutional context (Endrikat et al., 2021).

Institutional Theory also gains ground. ESI and non-ESI firms show different patterns, meaning governance and ownership associations vary by industry environment. The non-ESI subgroup has a higher R^2 (0.4798 vs. 0.4015 for ESI). Governance features, in other words, explain more variation among firms in less environmentally sensitive sectors. ESI firms likely face additional industry-specific pressures that the governance variables do not fully capture.

The key theoretical point concerns how internal governance interacts with external institutional pressures. Family ownership does not significantly shape any board–ESG relationship. Rather than reading this as proof that family ownership does not matter, it may be that owners' interests operate within institutional constraints. As governance expectations become more formalised, family control may exert a smaller and more systematic influence on board–ESG links.

So the study qualifies a purely agency-based reading of ESG governance. Governance effectiveness may depend on the institutional environment. The findings do not claim to extend Institutional Theory. They are consistent with its emphasis on external pressures shaping organisational practices. The observed pattern — ownership-based differences in governance effectiveness varying across industry contexts — matches the expectation that ownership-specific influences on governance outcomes can be moderated by institutional pressures. These interpretations are theoretically plausible explanations consistent with the observed associations. They are not empirically established causal mechanisms.

On Agency Theory: the absence of significant interaction terms means the proposed moderation relationships are not supported in the estimated models. Agency arguments hold that family ownership could affect governance by changing monitoring incentives and creating

conflicts between controlling and minority shareholders. Depending on how monitoring incentives balance against entrenchment risks, family ownership might strengthen or weaken board–ESG links. The lack of significant moderation does not prove family ownership is generally irrelevant to governance or ESG performance. But it does cast doubt on an exclusively agency-based interpretation of ESG governance. Governance effectiveness may depend on institutional environment, not only on ownership structure.

On Institutional Theory: the ESI and non-ESI results provide context-specific evidence relevant to the theory's emphasis on external institutional conditions. Government ownership links positively to ESG performance in the ESI subsample, consistent with industry context mattering. But regulatory pressure was not measured directly. So the findings do not establish that regulatory scrutiny explains the association. The results support the possibility that institutional pressures may enhance the sustainability implications of certain ownership types (government ownership in ESI, for example) or diminish the added importance of other governance mechanisms (board size in Non-ESI, for example). These are theoretically reasonable explanations consistent with the observed associations. They are not proven causal mechanisms.

Practical Implications

For boards and managers, the message is straightforward. Board independence and gender diversity are positively associated with ESG performance. Formal compliance, then, is not enough — board effectiveness must be substantive. Independent directors need real monitoring authority. Female directors should be actively involved in strategy and sustainability decisions. Board size tells a weaker story. Adding more directors, by itself, may not improve ESG outcomes.

For investors, board independence and gender diversity can serve as useful governance signals. They are not guarantees of better ESG performance. Institutional ownership is insignificant. Investors should therefore look beyond ownership percentage alone. Investor type matters. So do engagement intensity and investment horizon.

For policymakers, the findings support MCCG 2021's emphasis on board independence and the 30% female board representation target. They also suggest that sector-specific ESG guidance deserves consideration alongside broader governance requirements. The stronger government-ownership association among ESI firms indicates that industry characteristics may be relevant when sustainability policies are designed. Caution is still warranted. The study examines statistical associations. It does not directly evaluate whether particular regulatory or investment interventions work.

Limitations and Future Research

There are several limitations that need to be taken into account. The first is that the three-year period in question (2022–2024) makes it impossible to evaluate longer-term relationships. The second is that the study's concentration on companies listed on the Malaysian Main Market means that the results cannot be generally applied to other types of institutional settings. Third, the Refinitiv ESG ratings have measurement features and weighting biases that are specific to the rating provider; future research might involve comparing ratings from other ESG providers

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(for example, MSCI, Sustainalytics) or look at the different pillars separately. The fourth point is that the present study looks only at certain board and ownership features; future research could consider audit committees, sustainability committees, and CEO characteristics. Fifth, the measure of continuous family ownership might mask threshold effects. Lastly, although the use of lagged values improves the temporal ordering, it does not remove endogeneity or prove causality; future research could use longer longitudinal studies, instrumental variables, or changes in regulation in order to strengthen the causal identification.

Conclusion

The study offers evidence that is specific to the context regarding the relationships between board features, ownership arrangements, and ESG performance in an emerging market with concentrated ownership. In that context, board independence, gender diversity, and government ownership all correlate positively with ESG performance. Family ownership, however, does not moderate any board–ESG relationship. The ESI and non-ESI analyses add further nuance to the estimated associations, though formal tests of coefficient equality were not carried out. The study contributes to corporate governance and ESG literature by bringing board characteristics, ownership structure, family ownership moderation, and industry environmental sensitivity into one framework. It also uses independent Refinitiv ESG ratings rather than relying only on self-reported sustainability disclosures. Both Agency Theory and Institutional Theory find some support here. What drives the observed relationships, though, remains open for further investigation. Practically, the results suggest that board composition and industry characteristics should be considered in ESG governance discussions. More research is needed to assess mechanisms and policy implications more directly.

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Declaration on the Use of Artificial Intelligence (AI) The author(s) declare that generative AI or AI-assisted technologies were used during the preparation of this manuscript. The following tool was used: Grammarly, solely for improving grammar and spelling. All AI-assisted content was reviewed and verified by the author(s), who take full responsibility for the accuracy, originality, integrity, and final content of the manuscript.

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