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## ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) PERFORMANCE, BIG FOUR AUDITORS AND CORPORATE FINANCIAL PERFORMANCE: EVIDENCE FROM MALAYSIA

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### Abstract:

Environmental, Social and Governance (ESG) practices have become increasingly important in promoting corporate sustainability and responsible business conduct as investors, regulators, and other stakeholders place greater emphasis on non-financial performance. Although ESG initiatives are expected to enhance corporate reputation, stakeholder confidence, and long-term competitiveness, empirical

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evidence regarding their influence on corporate financial performance remains inconclusive, particularly in emerging markets. This study examines the association between ESG performance and corporate financial performance and whether auditor type moderates this relationship among Malaysian listed companies. A balanced panel of 34 non-financial firms from 2015 to 2024 (340 firm-year observations) was analysed. The Hausman test supported the Fixed Effects specification, and the primary inference uses firm-clustered robust standard errors. Return on Assets (ROA) is used as the financial performance measure, while auditor type (Big Four versus non-Big Four) is used as a proxy for auditor quality. In the cluster-robust Fixed Effects model, ESG is positively but not significantly associated with ROA ( $\beta = 0.00134$ ,  $t = 1.52$ ,  $p = 0.138$ ), and the  $ESG \times Auditor$  interaction is also statistically insignificant ( $\beta = -0.00028$ ,  $t = -0.62$ ,  $p = 0.537$ ). Leverage is significantly and negatively associated with ROA ( $\beta = -0.131$ ,  $t = -2.18$ ,  $p = 0.037$ ). These results indicate that the positive ESG-ROA association observed in the conventional Fixed Effects estimation is not robust to firm-clustered inference and that Big Four status does not strengthen the ESG-ROA relationship. The study contributes recent Malaysian evidence by showing that short-run accounting profitability is more closely associated with capital structure than with ESG scores, while cautioning against interpreting ESG performance as a direct driver of immediate profitability.

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**Keyword:**

Environmental, Social and Governance (ESG); Corporate Financial Performance; Return on Assets; Auditor Quality; Fixed Effects; Malaysia.



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**Introduction**

Environmental, Social and Governance (ESG) reporting has matured over the last decade from being a nice to have sustainability exercise to a core part of good corporate governance and investment [www.bmwbank.de/esg](http://www.bmwbank.de/esg). The growing awareness of climate change, environmental degradation, social equity, and corporate responsibility has gutted how organisations communicate and how they are running their businesses (Blowfield et al., 2014). In addition to the formal financial status companies are now required to show how they manage their environment responsibly, have social commitment and exercise good governance. With that, ESG has become a significant measurement for evaluating company sustainability, value creation and organisation resilience (Frag, 2026).

The emergence of ESG has also affected the investment behaviour of the world. ESG information is growing in relevance for institutional investors, asset managers, regulators, and financial institutions as they look to invest with companies that view sustainable business practices as a way to minimise risk exposure, positively influence their corporate reputation and strengthen long-term financial performance. Corporations that are better on the various fronts of ESG are, therefore, generally considered to be more able to drive sustainable value and manage environmental and social risks. The developments of international reporting framework, such as the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD) or the International Sustainability Standards Board (ISSB) have also helped to foster the uptake of ESG reporting in global capital markets (Dathe, 2024).

Besides, much has happened in ESG reporting in Malaysia in recent years. Bursa Malaysia has been enhancing its sustainability reporting developments, which aim to enhance non-financial disclosures within the listed companies under its care, thereby boosting their quality, transparency and comparability. The regulatory initiatives promote incorporation of ESG principles in firms' corporate strategies and annual reports. Even with such improvements, the extent of ESG disclosure of Malaysian public listed companies remains relatively inconsistent. It is found that there are differences across companies in relation to which firms have implemented ESG disclosure and how that practice is done, which was reported by Hussin et al. (2025) based on corporate governance practices, board characteristics, the level of internal governance mechanisms, and data governance practices. These inconsistencies trigger questions about the trustworthiness of ESG reporting and its relevance to corporate decision making and improving firm performance.

While the prominence of ESG has grown as a corporate agenda, a conclusion on how ESG corresponds to corporate financial performance is yet to be drawn. According to Stakeholder Theory, companies that invest in ESG initiatives can build better relationships with their customer, employee, supplier, investor, and regulators, thus enhancing their organisational performance and long-term competitiveness (Freeman, 1984). Likewise, the theory of Legitimacy posits that the disclosure of ESG increases company legitimacy, providing accountability and responsiveness of the organization in relation to the social expectations (Suchman, 1995). In terms of signalling, companies that achieve better ESG scores can send positive signals to investors about management quality, sustainability, and future growth potential, thereby decreasing informational asymmetries and fostering investor confidence (Spence, 1973).

Theory notwithstanding, the findings from the empirical data have so far been inconclusive. There are several studies on the positive link between ESG and financial performance, where they suggest that sustainability efforts reduce expenses, enhance brand and reputation, and increase stakeholder trust which in turn improves profitability. For instance, Sahabuddin & Che-Yahya (2026) discovered that sustainability principles through ESG practices contribute to the financial recovery of financially distressed Malaysian companies, specifically in governance practices. Likewise, prior global research indicates that companies with higher ESG ratings tend to have better access to capital, higher investor trust, and better market value (Chang et al., 2022).

Other studies, however, show conflicting results. Han & Ha (2024) discovered that in emerging markets of Asian countries, firms with lower ESG performance adversely affected ROA and positively impacted sales revenues. Similarly, Helmi et al., (2025) found that while there was

a positive relationship between the ESG score and abnormal returns, audit quality was not a significant factor. These inconsistent findings indicate that the financial implications of ESG implementation vary with firm size and type, industry, institutional setup, measurement strategy, and performance metrics captured. The mixed evidence also suggests that the advantages of an ESG investment can only be expected after a longer period and thus may not be directly visible in indicators based on the accounting, e.g. ROA.

In addition to the actual sustainability performance, auditor quality has become a key focus in sustainability research. It is believed that high-quality auditors, especially Big Four audit firms, will be able to present a more reliable financial reporting, making them more independent and possessing a greater professional expertise in auditing the systems and processes applied. Auditor quality, in-turn, should make sustainability disclosure more credible and lessen the information asymmetry between companies and stakeholders. Han & Ha (2024) revealed that Big Four auditor strengthened the linkages between ESGs performance and CPCs performance whereas Handayati et al. (2025) showed that Big Four auditor improved corporate governance mechanism effectiveness on ESGs performance. Nevertheless, Seow (2025) discovered that auditor quality exerted only a limited effect on ESG disclosure of Malaysian listed enterprises. On the other hand, Helmi et al. (2025) did not find evidence in the case of Malaysia in which the auditor quality affected the corporate performance. Such varied results suggest that the role of auditor quality has not yet been shown to be a moderating influence especially in the context of emerging markets.

However, there are still some key research deficits in the rapidly growing field of ESG. There is first inconsistent evidence between ESG performance and company financial performance with some positive, others negative, and others no effect in this relationship in various institutional contexts. Second, the evidence on the listed companies in Malaysia is, to some extent, limited, with recent data which take into account the changing environment for ESG reporting. Third, although earlier studies have highlighted the relevance of audit quality, few empirical studies have examined the moderating effect of Big Four auditors in the interdependence of ESG performance with the corporate financial performance. Lastly, many of the empirical analyses of the past have used standard statistical methods without sufficiently parameterizing for firm heterogeneity, heteroskedasticity and serial correlation, likely resulting in wrong statistical conclusions.

This study aims to help alleviate these limitations by analysing ESG performance and corporate financial performance across Malaysian listed companies and shifts the discussion on auditor quality as a moderating variable. With a balanced panel dataset of 34 listed Malaysian firms from 2015 to 2024, the study uses pooled Ordinary Least Squares (OLS), Random Effects (RE), Fixed Effects (FE), and cluster-robust Fixed Effects estimations for more authentic statistical proof. Cluster-robust standard errors are used to address heteroskedasticity and serial correlation and the Hausman specification test is performed to identify the best panel estimator.

Hence, this study is to analyze the correlation between ESG performance and financial performance of the companies listed in Malaysia. Further, this study tests if the auditor type, proxied as Big four/non-Big four, moderates the relationship between ESG performance and corporate financial performance. The findings will be added to the body of ESG literature, and will have practical implications for corporate managers, investors, and regulators.

This study adds four aspects to the current literature. First, it offers recent evidence from Malaysia through panel data from 2015 to 2024, which covers a Period of Intensifying ESG Reporting Requirements. Second, it marks a difference between the positive association between ESG and ROA that occurs with standard ("conventional") Fixed Effects estimation and a more conservative inference from the firm-clustered robust standard errors, which renders the ESG coefficient now statistically insignificant. Third, it demonstrates that no significant differences can be found in the ESG-ROA relationship after including interactions between the proxy for auditor quality (Big Four) and other risk factors, adding evidence from the emerging markets that is lacking in existing research. Fourth, the general leverage negatively, means that the capital structure is more inclined with ROA as compared to ESG scores in this sample. All of these collectively add to, and nuance, rather than just support the notion that better ESG performance becomes manifest in the company's bottom line in Malaysia.

## Literature Review

### *Environmental, Social and Governance (ESG) Performance*

In today's era, one of the key metrics for assessing corporate sustainability and long-term business resiliency is ESG. It is comprised within three key areas: environment, social and corporate governance focusing on sustainable business practices. As more regulations, investors and stakeholders take an interest, companies around the world have been adopting ESG in corporate strategies and reporting. As a result, the disclosure of ESG has become a progressively strong mechanism of corporate governance and strategic decision-making (Krasodomska & Eisenschmidt, 2025).

Post the strengthening requirements by Bursa Malaysia, ESG reporting has garnered more attention in Malaysia. However, ESG reporting quality and consistency is still relatively low compared to developed countries. Hussin et al. (2025) noted the lack of consistency in the ESG disclosure practices of Malaysian public-listed companies and that there are significant discrepancies among firms. Their study further revealed that firm characteristics, board composition, internal governance mechanisms and data governance have a significant impact on the disclosure of ESG results. These results indicate that the corporate governance frameworks still have an impact on enhancing the quality of sustainability reporting in Malaysian capital market.

There's also a rise in institutional and stakeholder expectations to look towards ESG reporting. Businesses that are more transparent, accountable, and have stronger ESG practices, are viewed as better able to manage business risks long-term. Therefore, investors put greater emphasis on ESG performance as an additional factor in assessment whether they are sustainable or not and whether their long-term value creation is harmed by their efforts (Zumente & Bistrova, 2021).

### *ESG Performance and Corporate Financial Performance*

One of the most hotly contested questions in sustainability research is the connection between corporate financial performance and ESG performance. The Stakeholder Theory states that companies with a commitment to ESG goals do better in the long run and build stronger relationships with customers, employees, suppliers, regulators, and investors. Similarly, according to the Legitimacy Theory, companies can boost organisational legitimacy by self-

disclosure of sustainability information, which enhances stakeholder trust and improves corporate reputation.

Even though these theoretical expectations are there, results from the empirical research are limited. There are several studies that span the positive impact that ESG practices have on financial performance, including through enhancing business risk, operational efficiency, and stakeholder relationships. In their research, Sahabuddin and Che-Yahya (2026) used a sample of financially distressed Malaysian companies that fall under PN17 and GN3 to see that ESG practices have a positive impact on the financial recovery of the companies, especially in regard to financial governance practices, or how the companies are governed. Their results show that companies with more robust environmental, social and governance (ESG) practices have a greater chance of achieving better returns on assets (ROA) and returns on investment (ROI).

However, other studies report mixed or insignificant relationships. Han & Ha (2024), based on emerging Asian markets data, reported that ESG performance negatively affected ROA, and positively influenced sales revenue, indicating that ESG investments can have commercial benefits without the accompanying accounting benefits. These inconclusive results suggest that the financial returns of ESG might vary by industry, institutional context, firm age and time horizon.

The current study then revisits the link between ESG performance and corporate financial performance in the Malaysian context with the benefit of a more powerful panel data analysis.

### *Auditor Quality and ESG Performance*

In the context of this ESG research, audit quality has become a growing concern because sustainability disclosures are deemed to become credible and reliable as a result of high-quality auditors (Hammami & Hendijani, 2020). The professionals at the Big Four audit firms have more industry knowledge, professional expertise, international experience and reputational capital than non-Big Four auditors. As a result, companies that are audited by the Big 4 auditors are likely to have better financial and sustainability reporting.

But these results have been inconclusive. Han & Ha (2024) found that audit quality by the Big Four firms has a significant moderating effect on the link between ESG performance and corporate financial performance in the emerging Asian markets. According to their research, higher audit quality leads to a rise in investor trust in the quality of ESG disclosures and improves the financial returns from sustainability initiatives.

In the same way, Handayati et al. (2025) found that the Big Four auditors enhance the relationship between board gender diversity and ESG performance in the Indonesian listed companies. They investigated the link between external assurance from trusted auditors and the effectiveness of corporate governance mechanisms to drive sustainability performance and found that external assurance from reputable auditors enhances the effectiveness of corporate governance mechanisms to drive sustainability performance.

Helmi et al. (2025) however, did not find that there was any significant relationship between the audit quality and the market performance, while performance of the ESG criteria had a positive effect on the abnormal stock returns. Similarly, Seow (2025) had reported that the audit committee independence and gender diversity had a significant positive impact on ESG

disclosure by Malaysian listed companies, while the auditor quality has a limited impact. The results suggest that governance mechanisms might be more effective than external auditors in improving the quality of ESG reporting.

### ***ESG Disclosure and Auditor Choice***

There has also been growing interest in the research literature regarding the relationship between ESG disclosure and auditing. As firms provide more extensive ESG disclosures, audit complexity and audit risk may increase because auditors are required to perform additional procedures to assess and verify sustainability-related information. Consequently, the growing scope of ESG disclosure may increase audit effort and place greater demands on audit firms. Furthermore, Yip (2025) discovered that the audit fee of listed companies with higher ESG disclosure is higher as auditors will need to conduct extra audit procedures to manage sustainability information. This discovery is helpful because it indicates that the reporting of ESG information drives up audit workload and is driving greater attention to non-financial information in company reporting.

Likewise, Diab & Eissa (2024) found that companies with better ESG scores are more apt to hire a Big Four audit firm, and less likely to receive a qualified audit report. Their insights suggest that companies with better ESG performance are more likely to seek higher quality audit services to improve the credibility of ESG reporting and decrease the information gap. In total, these studies indicate that there is a strong relationship between ESG performance and auditor quality. However, empirical findings on the impact of auditor quality on the bond between ESG performance and corporate financial performance are yet to be clear, especially in Malaysia and other emerging economies.

### **Hypotheses Development**

Although previous studies have extensively examined ESG performance, several important research gaps remain. First, empirical findings regarding the relationship between ESG performance and corporate financial performance remain inconsistent, with studies reporting positive, negative, and insignificant effects. Second, limited evidence is available from Malaysian listed companies using recent data that capture the evolving ESG reporting environment. Third, despite increasing attention on audit quality, few studies have investigated whether Big Four auditors moderate the relationship between ESG performance and corporate financial performance using robust panel estimation techniques.

Furthermore, many previous studies relied on pooled regression or conventional panel estimation without correcting for heteroskedasticity and serial correlation (Karabiyik et al., 2019). Consequently, statistical inference may be biased. To address these limitations, the present study employs pooled OLS, Random-Effects, Fixed-Effects, Hausman specification testing, and cluster-robust Fixed-Effects estimation to provide more reliable evidence on the relationship between ESG performance, auditor quality, and corporate financial performance among Malaysian listed firms.

Based on the theoretical arguments and empirical evidence discussed above, the following hypotheses are proposed:

**H1:** ESG performance has a significant relationship with corporate financial performance among Malaysian listed firms.

**H2:** Leverage has a significant negative relationship with corporate financial performance.

**H3:** Auditor type, used as a proxy for auditor quality, significantly moderates the relationship between ESG performance and corporate financial performance.

### **Research Methodology**

#### ***Research Design***

This study employs a quantitative research design to examine the relationship between ESG performance and corporate financial performance among Malaysian listed companies. A panel data approach is adopted because it combines both cross-sectional and time-series observations, enabling the analysis to capture firm-specific heterogeneity while improving estimation efficiency. Compared with cross-sectional analysis, panel data provides more robust estimates by controlling for unobservable firm characteristics that remain constant over time.

The study further investigates whether auditor quality moderates the relationship between ESG performance and corporate financial performance. Since panel datasets are susceptible to unobserved heterogeneity, serial correlation, and heteroskedasticity, several estimation techniques are employed to ensure robust statistical inference.

#### ***Sample Selection and Data Collection***

The sample consists of 34 Malaysian listed companies observed over a ten-year period from 2015 to 2024, resulting in a balanced panel of 340 firm-year observations. The sample was selected using purposive sampling based on the availability of complete ESG scores and financial information throughout the study period. Financial institutions were excluded because they operate under different regulatory requirements and capital structures that may influence financial performance differently from non-financial firms. The requirement for complete ESG and financial data across all ten years substantially constrained the number of eligible firms; however, this criterion was retained to preserve a balanced panel and consistent within-firm comparisons over time. Accordingly, the 34 firm sample should be interpreted as a focused panel of firms with continuous data coverage rather than as representative of all Malaysian listed companies, and this limitation is considered when generalising the findings.

Secondary data were collected from publicly available corporate annual reports, audited financial statements, and the London Stock Exchange Group (LSEG) ESG database. Financial variables were extracted from companies' annual reports, while ESG performance scores were obtained from the LSEG Workspace (formerly Refinitiv Eikon/Datastream), which provides standardised ESG scores based on publicly disclosed corporate information. The use of a balanced panel dataset ensures consistency in the estimation process and facilitates meaningful comparisons across firms and over time.

#### ***Variable Measurement***

The dependent variable is corporate financial performance, measured using ROA. ROA is calculated as net income divided by total assets and reflects management's efficiency in utilising corporate assets to generate earnings. Although Return on Equity (ROE) was also

examined as an alternative profitability measure, the primary analysis focuses on ROA because it better captures firms' operational performance and asset utilisation.

The independent variable is the ESG score, which represents the overall sustainability performance of each firm. Higher ESG scores indicate stronger environmental responsibility, social engagement, and corporate governance practices.

Auditor type is used as a proxy for auditor quality rather than as a direct measure of audit quality. Firms audited by Big Four audit firms are assigned a value of one (1), whereas firms audited by non-Big Four audit firms are assigned a value of zero (0). This proxy captures broad differences in audit-firm reputation and resources, but it does not directly measure engagement-level audit quality. The moderating effect is examined through an interaction term between ESG performance and auditor type ( $EA = ESG \times Auditor$ ).

To minimise omitted variable bias, several firm-specific characteristics are included as control variables. These comprise leverage, weighted average cost of capital (WACC), firm age, firm size, and market risk (beta). Leverage is measured as total liabilities divided by total assets, firm size is measured as the natural logarithm of total assets, firm age represents the number of years since incorporation, WACC reflects firms' overall cost of financing, and beta measures systematic market risk.

**Table 1: Variable Measurement**

| Variable                                    | Measurement                      | Description                                                               |
|---------------------------------------------|----------------------------------|---------------------------------------------------------------------------|
| <b>Dependent Variable</b>                   |                                  |                                                                           |
| <b>ROA</b>                                  | Net Income ÷ Total Assets        | Corporate financial performance                                           |
| <b>Independent Variable</b>                 |                                  |                                                                           |
| <b>ESG</b>                                  | ESG Score                        | Environmental, Social and Governance performance                          |
| <b>Moderating Variable</b>                  |                                  |                                                                           |
| <b>Auditor</b>                              | Dummy Variable                   | Proxy for auditor quality: 1 = Big Four Auditor; 0 = Non-Big Four Auditor |
| <b><math>EA = ESG \times Auditor</math></b> | Interaction Term                 | Moderating effect of auditor quality                                      |
| <b>Control Variables</b>                    |                                  |                                                                           |
| <b>Leverage</b>                             | Total Liabilities ÷ Total Assets | Financial leverage                                                        |
| <b>Firm Size</b>                            | $\ln(\text{Total Assets})$       | Company size                                                              |
| <b>Firm Age</b>                             | Years since incorporation        | Firm maturity                                                             |
| <b>WACC</b>                                 | Percentage                       | Weighted Average Cost of Capital                                          |
| <b>Beta</b>                                 | Market Beta                      | Systematic market risk                                                    |

### Model Specification

The baseline regression model used to examine the relationship between ESG performance and corporate financial performance is specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 LEV_{it} + \beta_3 AGE_{it} + \beta_4 WACC_{it} + \beta_5 BETA_{it} + \beta_6 SIZE_{it} + \varepsilon_{it}$$

To examine the moderating role of auditor quality, the interaction term between ESG performance and auditor type is incorporated into the regression model:

$$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 AUDITOR_{it} + \beta_3 (ESG_{it} \times AUDITOR_{it}) + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \beta_6 WACC_{it} + \beta_7 BETA_{it} + \beta_8 SIZE_{it} + \varepsilon_{it}$$

Under the fixed-effects estimator, the main effect of Auditor is omitted because auditor type is time-invariant within firms. Consequently, the moderating effect is assessed based on the coefficient of the interaction term (EA = ESG × Auditor).

### Estimation Techniques

The empirical analysis was conducted using Stata 18. Four estimation procedures were employed. First, the pooled Ordinary Least Squares (OLS) model provides a baseline estimation by assuming homogeneous firms and ignoring firm-specific effects. Second, the Random Effects model assumes that individual firm effects are randomly distributed and uncorrelated with the explanatory variables. Third, the Fixed Effects model controls for time-invariant firm characteristics that may influence profitability.

The Hausman specification test was subsequently performed to determine the most appropriate panel estimator. The test strongly rejected the null hypothesis, indicating that firm-specific effects are correlated with the explanatory variables; therefore, the Fixed Effects model was preferred over the Random Effects model.

Finally, to address potential heteroskedasticity and serial correlation within firms, the preferred Fixed Effects model was re-estimated using cluster-robust standard errors at the firm level. The cluster-robust estimator provides more reliable statistical inference by correcting the estimated standard errors without altering the regression coefficients. Consequently, the cluster-robust Fixed Effects model serves as the primary basis for interpreting the empirical findings presented in the subsequent section.

### Results and Discussion

#### *Baseline Panel Regression Results*

Table 2 presents the baseline panel regression results examining the relationship between ESG performance and ROA using pooled OLS, Fixed-Effects, and Random-Effects estimators. These estimations provide an initial assessment of the ESG-profitability relationship before applying the cluster-robust fixed-effects model.

**Table 2: Baseline Panel Regression Results: Pooled OLS, Fixed Effects and Random Effects**

| Variables     | Pooled OLS          | Fixed Effects      | Random Effects     |
|---------------|---------------------|--------------------|--------------------|
| ESG           | 0.00026 (1.01)      | 0.00111*** (2.80)  | -0.00027 (-1.01)   |
| Firm Age      | 0.00088*** (4.25)   | -0.00401** (-2.62) | 0.00068 (1.60)     |
| WACC          | 1.0006** (2.44)     | 15.339** (2.29)    | 1.0540 (1.15)      |
| Beta          | -0.0510*** (-3.84)  | 0.3978 (1.40)      | -0.0464 (-1.60)    |
| Leverage      | -0.0138*** (-8.83)  | -0.1331*** (-3.94) | -0.0624** (-2.37)  |
| ln(Firm Size) | -0.0291*** (-10.35) | -0.0510*** (-3.66) | -0.0291*** (-5.00) |
| Constant      | 0.7152*** (9.96)    | 0.0205 (0.04)      | 0.7576*** (5.14)   |

**Table 3: Model Statistics**

| Statistic      | Pooled OLS          | Fixed Effects          | Random Effects              |
|----------------|---------------------|------------------------|-----------------------------|
| Model Fit      | F(6,333) = 30.34*** | F(6,300) = 11.35***    | Wald $\chi^2(6)$ = 51.78*** |
| R <sup>2</sup> | 0.354               | 0.185 (within)         | 0.319 (overall)             |
| Hausman Test   |                     | $\chi^2(5)$ = 46.84*** | FE Preferred                |

Notes: t-statistics (OLS and FE) and z-statistics (RE) are reported in parentheses. \*\*\*, \*\* and \* indicate significance at the 1%, 5% and 10% levels, respectively.

Table 2 presents the baseline panel regression results examining the relationship between ESG performance and corporate financial performance, measured by ROA, using pooled OLS, Fixed Effects, and Random Effects estimators. Employing multiple estimation techniques enables a preliminary assessment of the robustness of the ESG-financial performance relationship before selecting the most appropriate panel model.

Overall, the three models are statistically significant, indicating that the explanatory variables jointly explain variations in ROA. As reported in Table 3, the pooled OLS model records an F-statistic of 30.34 ( $p < 0.01$ ), the fixed-effects model reports an F-statistic of 11.35 ( $p < 0.01$ ), while the random-effects model produces a Wald  $\chi^2$  value of 51.78 ( $p < 0.01$ ). These findings confirm that the regression models are jointly significant and suitable for explaining firm profitability. Furthermore, the pooled OLS model explains approximately 35.4% of the variation in ROA ( $R^2 = 0.354$ ), whereas the fixed-effects model explains 18.5% of the within-firm variation and the random-effects model explains 31.9% of the overall variation.

Regarding the main independent variable, ESG performance exhibits inconsistent results across the three estimators. Under the pooled OLS model, ESG is positively associated with ROA ( $\beta = 0.00026$ ) but the relationship is statistically insignificant ( $t = 1.01$ ). Similarly, the random-effects estimator reports an insignificant negative coefficient ( $\beta = -0.00027$ ;  $z = -1.01$ ). However, after controlling for unobserved firm-specific heterogeneity using the fixed-effects estimator, ESG becomes positively significant ( $\beta = 0.00111$ ,  $t = 2.80$ ,  $p < 0.01$ ). This finding suggests that the positive influence of ESG performance on profitability becomes evident only after controlling for firm-specific characteristics that remain constant over time.

Among the control variables, leverage consistently demonstrates a negative and statistically significant relationship with ROA across all estimation techniques. The coefficient remains negative under pooled OLS ( $\beta = -0.0138$ ,  $p < 0.01$ ), fixed effects ( $\beta = -0.1331$ ,  $p < 0.01$ ), and

random effects ( $\beta = -0.0624$ ,  $p < 0.05$ ), indicating that firms with higher debt levels generally experience lower accounting profitability. Likewise, firm size consistently exhibits a negative and significant relationship with ROA under all three estimators, suggesting that larger firms tend to generate lower returns on assets, possibly due to diminishing operational efficiency associated with larger asset bases.

The results for firm age, WACC, and beta vary depending on the estimation technique. Firm age is positively associated with ROA under pooled OLS but becomes significantly negative under the Fixed-Effects model and insignificant under the Random-Effects estimator. Similarly, WACC is positively significant under pooled OLS and Fixed Effects but becomes insignificant under random effects. In contrast, beta is negatively significant only under pooled OLS and loses statistical significance after firm-specific effects are controlled for. These inconsistencies indicate that the estimated effects of these variables are sensitive to the treatment of unobserved firm heterogeneity.

To determine the most appropriate panel estimator, the Hausman specification test was conducted. As shown in Table 3, the Hausman test reports a chi-square value of 46.84 ( $p < 0.01$ ), leading to the rejection of the null hypothesis that the Random-Effects estimator is consistent. Consequently, the Fixed-Effects model is preferred because firm-specific effects are significantly correlated with the explanatory variables. This finding implies that ignoring unobserved firm heterogeneity may result in biased parameter estimates. Therefore, subsequent analyses rely primarily on the Fixed-Effects estimator, which provides more reliable estimates of the relationship between ESG performance and corporate financial performance.

Although the conventional Fixed-Effects model indicates a positive and statistically significant relationship between ESG performance and ROA, this result may still be affected by heteroskedasticity and serial correlation. Accordingly, a cluster-robust Fixed-Effects estimation is performed in the subsequent analysis to obtain more reliable statistical inference and ensure the robustness of the empirical findings.

### **Fixed-Effects Regression with Cluster-Robust Standard Errors**

Table 4 presents the results of the Fixed-Effects regression model estimated using cluster-robust standard errors at the firm level. Compared with the baseline estimations, this model provides more reliable statistical inference by correcting for heteroskedasticity and serial correlation while controlling for unobserved firm-specific heterogeneity. Consequently, the cluster-robust Fixed-Effects model is regarded as the primary model for interpreting the empirical findings of this study.

As reported in Table 5, the model is jointly significant ( $F(7,33) = 3.79$ ,  $p < 0.05$ ), indicating that the explanatory variables collectively influence corporate financial performance. The within  $R^2$  of 0.186 suggests that approximately 18.6% of the variation in ROA within firms over time is explained by the independent, moderating, and control variables included in the model. Furthermore, the estimated intra-class correlation coefficient ( $\rho = 0.974$ ) indicates that approximately 97.4% of the total variation in ROA is attributable to firm-specific effects rather than within-firm variation. This substantial proportion of firm-level heterogeneity further justifies the use of the fixed-effects estimator in analysing the ESG-financial performance relationship.

With respect to the main independent variable, ESG performance exhibits a positive coefficient ( $\beta = 0.00134$ ); however, the relationship is statistically insignificant ( $t = 1.52$ ,  $p = 0.138$ ). This finding indicates that, after controlling for firm-specific characteristics and correcting for heteroskedasticity and serial correlation, ESG performance does not significantly influence corporate financial performance measured by ROA. Although firms with higher ESG scores tend to report slightly higher profitability, the magnitude of the relationship is insufficient to conclude that ESG initiatives generate immediate improvements in accounting performance. Therefore, Hypothesis 1 is not supported.

The moderating role of auditor type, used as a proxy for auditor quality, was examined through the interaction term between ESG performance and auditor type ( $EA = ESG \times Auditor$ ). The interaction coefficient is negative but statistically insignificant ( $\beta = -0.00028$ ,  $t = -0.62$ ,  $p = 0.537$ ), indicating that the ESG-ROA relationship does not differ significantly between firms audited by Big Four and non-Big Four audit firms. Consequently, Hypothesis 3 is not supported.

The main effect of the auditor variable is omitted from the estimation because auditor type is time-invariant for most firms during the observation period. Under the fixed-effects estimator, variables that do not vary over time are perfectly collinear with the firm-specific effects and are therefore automatically excluded from the regression. This omission is an expected characteristic of the fixed-effects methodology rather than a statistical limitation.

Among the control variables, leverage is the only variable that remains statistically significant after applying cluster-robust standard errors. The coefficient is negative and significant ( $\beta = -0.131$ ,  $t = -2.18$ ,  $p = 0.037$ ), indicating that firms with higher leverage tend to experience lower accounting profitability. This finding suggests that greater dependence on debt financing increases financial obligations and reduces firms' ability to generate returns from their assets. Because ROA reflects net income relative to total assets, heavier debt obligations can reduce profitability through financing costs without a proportionate improvement in asset productivity; therefore, disciplined leverage management is important for sustaining ROA. The consistency of the leverage coefficient across the pooled OLS, conventional fixed-effects, and cluster-robust fixed-effects estimations demonstrates that capital structure is the most robust determinant of profitability in the sampled Malaysian listed firms.

Conversely, firm age ( $\beta = -0.00397$ ,  $p = 0.160$ ), weighted average cost of capital ( $\beta = 15.369$ ,  $p = 0.186$ ), market risk represented by beta ( $\beta = 0.401$ ,  $p = 0.138$ ), and firm size ( $\beta = 0.0515$ ,  $p = 0.171$ ) are all statistically insignificant. These findings imply that, after accounting for firm-specific heterogeneity and correcting the standard errors, changes in these firm characteristics do not significantly influence variations in ROA during the study period. The loss of significance compared with the conventional Fixed-Effects model further suggests that earlier significant results may have been influenced by underestimated standard errors arising from heteroskedasticity or serial correlation.

Overall, the cluster-robust Fixed-Effects estimation demonstrates that the positive association between ESG performance and profitability observed under the conventional Fixed-Effects model is not robust after correcting for potential econometric problems. Instead, leverage emerges as the only significant determinant of corporate financial performance. These findings suggest that capital structure plays a more important role than ESG performance in explaining

short-term accounting profitability among Malaysian listed companies. Accordingly, the cluster-robust Fixed-Effects estimator provides the most reliable basis for interpreting the empirical findings and drawing the study's conclusions.

**Table 4: Fixed-Effects Regression Results with Cluster-Robust Standard Errors**

| Variables                 | Coefficient | t-statistic | p-value | Interpretation                |
|---------------------------|-------------|-------------|---------|-------------------------------|
| <b>ESG</b>                | 0.00134     | 1.52        | 0.138   | Not significant               |
| <b>Auditor</b>            | Omitted     | –           | –       | Time-invariant (collinearity) |
| <b>EA = ESG x Auditor</b> | –0.00028    | –0.62       | 0.537   | Not significant               |
| <b>Firm Age</b>           | –0.00397    | –1.44       | 0.160   | Not significant               |
| <b>WACC</b>               | 15.369      | 1.35        | 0.186   | Not significant               |
| <b>Beta</b>               | 0.401       | 1.52        | 0.138   | Not significant               |
| <b>Leverage</b>           | –0.131**    | –2.18       | 0.037   | Significant negative effect   |
| <b>ln(Firm Size)</b>      | 0.0515      | 1.40        | 0.171   | Not significant               |
| <b>Constant</b>           | 0.0269      | 0.02        | 0.984   | Not significant               |

**Table 5: Model Statistics**

| Statistic                               | Value                   |
|-----------------------------------------|-------------------------|
| <b>Observations</b>                     | 340                     |
| <b>Number of Firms</b>                  | 34                      |
| <b>Within R<sup>2</sup></b>             | 0.186                   |
| <b>F(7,33)</b>                          | 3.79**                  |
| <b>p (Variance due to firm effects)</b> | 0.974                   |
| <b>Standard Errors</b>                  | Clustered at Firm Level |

*Notes:* Dependent variable: Return on Assets (ROA). Auditor is omitted because it is time-invariant under the fixed-effects estimator. Robust standard errors are clustered at the firm level. \*\* and \*\*\* denote statistical significance at the 5% and 1% levels, respectively.

### Moderating Effect of Auditor Quality

The moderating role of auditor quality was examined by incorporating an interaction term (EA = ESG × Auditor) into the Fixed-Effects regression model. Since auditor type remains largely unchanged over time for individual firms, its main effect was omitted from the estimation because of perfect collinearity with the firm Fixed Effects. Consequently, the moderating effect was assessed using the coefficient of the interaction term.

Table 4 indicates that the estimated interaction coefficient ( $\beta = -0.00028$ ,  $p = 0.537$ ) is negative but statistically insignificant, indicating that auditor quality does not significantly moderate the relationship between ESG performance and ROA. In other words, the effect of ESG performance on accounting profitability does not differ significantly between firms audited by Big Four and non-Big Four audit firms.

This result should be interpreted as evidence about auditor type rather than audit quality in all its dimensions. Because Big Four status is used only as a proxy for auditor quality, the insignificant interaction indicates that the ESG-ROA association does not differ significantly between Big Four and non-Big Four audited firms in this sample; it does not rule out possible

effects of other audit-quality dimensions that are not captured by the proxy. One possible explanation is that the implementation and reporting of ESG practices are primarily driven by firms' internal sustainability strategies and regulatory requirements rather than by external auditor reputation. Another possible explanation is that the Malaysian ESG reporting environment is still developing, whereby improvements in disclosure credibility have yet to translate into measurable differences in accounting performance (Yusof & Widyasamratri, 2025).

## Conclusion

This paper examines whether ESG performance is associated with profitability and whether auditor type moderates the ESG-ROA link, using a balanced panel of 34 Malaysian listed firms over 2015-2024 (340 firm-years). After estimating pooled OLS, Random Effects, and firm Fixed Effects models with controls for leverage, WACC, firm age, firm size, and beta, the Hausman test supports the Fixed Effects specification, and primary inference is based on standard errors clustered by firm. Under this preferred specification, ESG is positive but statistically insignificant ( $\beta = 0.00134$ ,  $t = 1.52$ ,  $p = 0.138$ ), indicating no robust short-run effect on ROA. Thus, the significant positive coefficient obtained under conventional Fixed Effects should not be interpreted as robust evidence that ESG improves profitability.

Across specifications, capital structure remains important: leverage exhibits a consistently negative relationship with ROA, while the effects of firm size, firm age, WACC, and market risk are not robust within firms. The moderating effect was examined using the  $\text{ESG} \times \text{Auditor}$  interaction, where auditor type is used as a proxy for auditor quality. The interaction coefficient is negative but statistically insignificant ( $\beta = -0.00028$ ,  $t = -0.62$ ,  $p = 0.537$ ), indicating that Big Four status does not significantly moderate the relationship between ESG performance and ROA.

Taken together, the evidence indicates that, for Malaysian listed firms during the study period, profitability is more closely associated with financing choices than with ESG scores, and auditor type does not materially alter this relationship. Managerially, the results highlight the importance of disciplined leverage management for sustaining returns on assets; ESG initiatives may still be justified on strategic, reputational, or risk-management grounds, but their immediate accounting returns appear limited (Bani-Khaled et al., 2025). For policymakers and the exchange, the findings point to the value of improving the quality, comparability, and materiality of ESG disclosures (including separate E, S, and G metrics) so that markets can more effectively price sustainability performance.

This study is subject to several limitations. First, the sample is modest because the balanced-panel design required complete ESG and financial data for the full 2015-2024 period; the findings therefore should not be generalised to all Malaysian listed firms without caution. Second, potential endogeneity remains (e.g., profitable firms may self-select into greater ESG). Third, reliance on an aggregate ESG index may mask heterogeneous effects of its sub-components. Future research could employ dynamic or instrumental-variable designs, consider alternative performance outcomes (e.g., operating margins, Tobin's Q, cost of capital), explore heterogeneous effects across industries and firm life cycles, and test additional governance moderators (e.g., ownership structure, board composition). In short, while ESG may contribute to longer-horizon value, the evidence in this study does not establish ESG as a first-order driver of short-run profitability in Malaysia, and auditor type does not materially moderate that link.

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