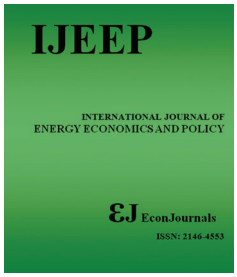

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Sustainability Versus Financial Fundamentals: What Investors should Watch in ASEAN Firms

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ABSTRACT

This study aims to analyze the influence of sustainability performance, creditworthiness, and capital structure on companies' market value in the ASEAN-6 and to provide practical insights for investors and companies. Balanced panel data from 438 public companies from 2020 to 2024 were obtained from Refinitiv and analyzed using a robust fixed-effects panel data regression approach. This study finds that strong sustainability performance is not adequately rewarded in emerging markets and may even reduce a company's value if it does not deliver economic value. A poor capital structure negatively affects valuation, whereas stronger interest coverage signals financial stability and positively affects Tobin's Q. These findings imply that investors should not rely solely on sustainability scores without examining concrete financial performance evidence. Instead, they are required to monitor a company's ability to service its interest obligations and its debt profile to assess its risk and financial health. Companies are also encouraged to maintain debt at optimal levels, ensure that sustainability efforts create economic value, and maximize operating efficiency to improve market value.

Keywords: Environmental, Social, and Governance Score, Tobin's Q, Capital Structure, Fixed Effect Model, ASEAN-6
JEL Classifications: Q56, G32, C23, F65, O16

1. INTRODUCTION

In recent years, there has been a growing global interest in business social responsibility and Environmental, Social, and Governance (ESG) practices that affect business growth direction. The changes rise from a stronger determination and the increasing flows of investment for sustainability, indicating the rapid growth of ESG investment globally (Kim and Yang, 2025). ESG has become a key driver of corporate sustainability and long-term value creation. Therefore, consumers, investors, and regulators have shown increased interest in companies that engage in ethical and sustainable practices. This led public companies to report more information on the environmental, social, and governance (ESG) practices they adopted (Meng et al., 2023).

ESG criteria evaluate a company's sustainability performance and social responsibility. These criteria provide insight into how companies manage natural resources, contribute to society, and govern internally (Kim and Yang, 2025). ESG offers insights into a company's long-term potential and dedication to responsible practices. The importance of adopting ESG principles in companies is also increasing as sustainability gains more attention. According to Sharma et al. (2022), over 75% of firms worldwide practice sustainability, compared with about half in 2013. According to Andrey (2023), ESG has the potential to create long-term value for shareholders and to mitigate risks related to governance problems, environmental damage, and inequality, thereby positively affecting a company's financial performance. This highlights the increasing importance of ESG in both investment decisions and corporate strategy, although the extent of implementation remains variable across regions.

ESG implementation is also increasing in Southeast Asia, as more companies are integrating ESG into their practices. A study by Le (2024) shows that ESG performance positively affects corporate value in Southeast Asia. However, evidence indicates that ESG

implementation remains poor and varies widely across companies. This validates the role of ESG in investment decisions, although its inconsistent implementation across Southeast Asia. In some cases, countries are left behind due to poor governance practices, underdeveloped institutions, and weak regulatory enforcement. This limits the optimal adoption of ESG, and companies attempting to adopt global sustainability standards often face challenges. Despite these challenges, there is still a growing momentum for global ESG adoptions. It has brought up a variety of international reporting standards like GRI and IFRS S1-S2. Most research continues to focus on developed countries with strong regulatory systems and more established ESG implementation (Jucá et al., 2024). In emerging economies, its adoption and implementation remain inconsistent. The limited research on ESG disclosure in these countries presents an opportunity to examine the impact of companies' ESG scores on their market performance. Except for Singapore, most ASEAN countries remain emerging economies. Recent studies have shown that ESG disclosure strengthens corporate governance by reducing agency problems, a finding that is particularly relevant in emerging economies (Lavin and Montecinos-Pearce, 2021).

Therefore, research on ESG performance as a driver of increased firm market value in ASEAN is of interest. Given the limited data and relatively limited attention to ESG practices, it is important to examine ESG scores in ASEAN. This makes it an ideal case study for examining how a company's market value can be influenced by sustainability performance in a context where ESG practices are still developing and not a primary focus. ESG practices could serve as a strategic tool to enhance a company's market value in such cases and yield benefits such as increased stakeholder trust and corporate reputation. These two are important to achieve long-term financial success (Gao et al., 2023). Companies with higher ESG scores that prioritize sustainability are often considered more future-oriented and lower-risk. However, some critics argue that ESG initiatives are likely to impose short-term financial burdens, particularly on firms with limited resources. These additional financial burdens can reduce a firm's financial flexibility, potentially harming shareholder interests and increasing financial risk (Gao et al., 2023). The ASEAN-6 region, comprising Indonesia, Malaysia, Thailand, Singapore, the Philippines, and Vietnam, provides an ideal setting for such an investigation, particularly as ESG considerations are becoming increasingly relevant in ASEAN. Moody's has classified these nations as investment-grade economies (Trading Economics, n.d.). Moreover, these nations represent the six largest economies in Southeast Asia. Among the six nations, Vietnam remains an investment-grade economy but has the highest risk level. The relatively similar levels of macroeconomic risk and investor confidence in economic stability are reflected in these countries' credit ratings, which also indicate their investment-grade status (Moody's, n.d.).

The focus of this study is shifted from country-level risk to firm-level credit risk within investable economies, as defined by their macroeconomic classification. A study by Kanno (2023) states that the ESG score is indicative not only of a company's dedication to sustainability but also of its increasing inclusion in credit risk analysis. Companies with strong ESG performance tend to have lower credit risk and improved creditworthiness, which can help them obtain financing at lower costs, increase investor and creditor confidence, and strengthen their market position. In modern business landscapes, financial success is determined not only by profits and growth but also by a commitment to stakeholders through environmental and social responsibility. A review by Zumente and Bistrova (2021) found that nearly 90% of more than 2,000 studies reported a positive correlation between strong ESG practices and financial performance. This suggests that firms with strong sustainability performance can secure better financial conditions and stronger future growth prospects and maintain a positive stakeholder reputation. Additionally, socially responsible actions address a firm's moral obligations to mitigate environmental costs and strengthen its brand image, while also reducing capital costs, lowering risk exposure, and yielding improved financial performance (Ting et al., 2020). These findings support the idea that ESG is a value-creating factor, not just a cost factor, particularly in the long term.

Shifting perspectives on long-term corporate value has become essential. Traditional measures of firm performance no longer fully capture a company's potential, especially in an increasingly complex market environment. ESG performance reflects not only how firms interact with their environment and stakeholders but also plays a crucial role in determining their overall market value. Although ESG performance emphasizes the importance of non-financial factors in creating long-term value, capital structure decisions remain a fundamental financial factor that affects a company's resilience. ESG and capital structure are two important factors frequently linked to initiatives aimed at optimizing corporate value. Financial risk increases with high leverage, and ESG can offset this risk by signaling strong governance and sustainability. In firms with higher debt levels, strong ESG performance improves market trust and can lead to better financing terms (Meilanda et al., 2024). According to Nguyen (2024), a company's capital structure reflects the relative proportions of debt and equity used to finance its assets. The amount of debt and equity used by a company can affect managers' financial decisions, which in turn impact the firm's performance. Capital structure can be reflected through long-term debt (LTD) and short-term debt (STD). Businesses that efficiently utilize their capital can leverage tax shields to their advantage, which maximizes corporate performance. However, inefficient capital structure management, particularly when debt is overused, can lead to adverse effects associated with financial leverage. Consequently, companies implement varying capital structure strategies to suit their specific conditions (Bui et al., 2023). That's why it's also important to look at a company's creditworthiness, or its ability to meet financial obligations reliably. One way to assess this is through the interest coverage ratio (ICR), which measures a company's ability to cover its interest expenses. A higher ICR indicates that the company can comfortably meet its interest payments, thereby giving investors and creditors greater confidence in its financial reliability (Puente De La Vega Caceres, 2024).

Internal factors such as creditworthiness, capital structure, and ESG factors are closely related to how the market evaluates a

company's value, as reflected by Tobin's Q. Tobin's Q has become one of the most widely accepted indicators of market-based corporate performance. It reflects key aspects, including investor sentiment, financial performance, and expectations regarding a company's long-term prospects (Vuong, 2022). In the context of ASEAN, Tobin's Q is more sensitive to changes in a company's capital structure due to greater volatility in financial stability (Bui et al., 2023). While investors are pessimistic about future opportunities and returns, firms will adjust their leverage levels, thereby increasing their debt capacity and external financial costs. This is especially true for financially constrained firms, which are more sensitive to changes in investor sentiment (Li et al., 2023). Tobin's Q also reflects the market's perception of a firm's solvency. A high ICR indicates that the firm can easily meet its interest obligations, build investor confidence, and enhance firm value (Akpınar and Topak, 2024). Moreover, Tobin's Q also captures the influence of ESG performance by reflecting it through market valuation. It reflects investors' perception of a company's value, and strong ESG performance can enhance investor confidence, leading to higher market valuations. Investors today incorporate ESG factors into their decision-making and prioritize companies that effectively manage their sustainability (Kim and Yang, 2025).

Although ESG performance is a major factor in investors' decisions, there is a lack of studies examining how ESG performance, together with capital structure and creditworthiness, affects corporate performance, particularly in the ASEAN-6, which are classified as developing countries. Most current studies were conducted in developed economies with stable, transparent financial systems. Therefore, ASEAN-6 is an interesting region for examining the effects of ESG, creditworthiness, and capital structure on firm performance. Furthermore, control variables such as firm size and board size may also influence this relationship, thereby complicating the picture. This is why research in the ASEAN-6 nations is important for improving the quality of investors' decisions. This research uses the ASEAN-6 market as its backdrop to examine opportunities and challenges in it. In today's volatile market, effective ESG practices can enhance corporate performance and become part of a business strategy to meet investor and stakeholder needs (Ting et al., 2020). Beyond ESG, other fundamental financial factors, such as creditworthiness and capital structure, are also important drivers of company performance. This study provides a more detailed picture of ESG performance and other financial variables that influence company prospects, particularly in the ASEAN-6 region.

The aim of this study is to examine how ESG scores, alongside creditworthiness and capital structure, affect Tobin's Q and to provide recommendations for investors, particularly those considering investments in the ASEAN-6. Furthermore, this study highlights the importance of ESG performance, creditworthiness, and capital structure for company performance, which are often overlooked in decision-making. Through its analysis, this study provides relevant information for investors and firms on how company performance is influenced by sustainability, capital structure, and creditworthiness.

2. LITERATURE REVIEW

2.1. ESG

The environmental, social, and governance (ESG) framework is widely used to assess a corporation's sustainability and social responsibility (Kim and Yang, 2025; D'Amato et al., 2024; Ting et al., 2020). Companies initially improve their public image by reporting on social activities through corporate social responsibility (Cho et al., 2019). This has also led to increasing demand for socially responsible investing in assessing a company's sustainability performance. With its transparent and systematic framework, ESG allows investors to analyze key non-financial data through standardized reports and grades (Ting et al., 2020). Research by D'Amato et al., (2024) stated that the ESG investment landscape has evolved from simple screening to more sophisticated approaches. Therefore, investors increasingly seek to integrate ESG considerations into their investment frameworks to create long-term value. Company ESG ratings are calculated from a variety of internal and external factors, and their application varies across regions such as Europe, the United States, and Asia (Aldieri et al., 2023).

Stakeholder theory gives a theoretical basis for how ESG performance can improve corporate performance and profitability. ESG performance indicates that corporate activities are shaped by stakeholders' values and interests, which, in turn, can affect financial performance (Aydoğmuş et al., 2022). Research by Ting et al. (2020) found that stakeholder engagement had a positive impact on corporate value. Following this framework, board diversity is a reliable means of representing diverse stakeholder interests and can positively influence corporate performance. Since the early 2000s, global attention to the importance of board diversity in ensuring unbiased and effective corporate governance has gained momentum amid rapid globalization and social transformation (Kim and Yang, 2025).

There is growing research interest in the relationship between environmental, social, and governance (ESG) factors and company performance. Several studies have established this relationship using Tobin's Q. Ting et al. (2020) examined the characteristics of ESG activities in emerging and developed markets, using a sample of 4,886 companies. Aydoğmuş et al. (2022) examined the 1720 largest public companies that include ESG data between 2013 and 2021. Wu et al. (2022) examined the relationship between ESG scores and company performance using a sample of 1,379 publicly listed companies in China during 2011-2020. Furthermore, Li et al. (2024) used a large panel dataset of 6,575 observations from China-listed public companies from 2011 to 2021. Similarly, Gao et al. (2023) analyzed annual panel data of Chinese publicly listed companies with A-shares covering the period 2010-2020. These studies generally reported that the ESG score has a positive and significant impact on corporate performance, as measured by Tobin's Q, indicating that sustainability initiatives may enhance valuation.

ESG performance, based on Stakeholder theory, is often assumed to enhance corporate performance. Previous studies (Ting et al., 2020; Aydoğmuş et al., 2022; Wu et al., 2022; Li et al., 2024; Gao

et al., 2023) tend to report a positive link regarding the influence of ESG components on corporate value, particularly as measured by Tobin's Q. However, empirical findings may vary across regions, market maturity, and ESG awareness. Most existing research focuses on very large datasets or on single countries, with limited evidence from ASEAN. This study aims to examine whether such a relationship holds across six ASEAN countries, given their varying levels of ESG development and relatively similar economic conditions. Based on these findings, this study formulates the following hypothesis:

H_1: The ESG score has a positive impact on firm performance (Tobin's Q).

2.2. Capital Structure

Capital structure is one of the most important components of a company's financial decisions. It shows how a company obtains the funds necessary to operate its business. Typically, this capital comes from two primary sources: Debt and equity. In simple terms, capital structure refers to the extent to which a company relies on debt and the proportion of its capital financed with equity (Nguyen, 2024). One of the most common measures of capital structure is the debt-to-total assets ratio. For a more comprehensive understanding, this ratio is usually defined as the proportion of short-term and long-term debt compared to total assets. The short-term debt ratio indicates the proportion of a company's assets financed by short-term debt that must be repaid within the next year. This affects cash flow and short-term financial stability. The long-term debt ratio indicates the relative amount of long-term debt used to finance long-term investments. When effectively managed, this type of debt is regarded as low risk (Bui et al., 2023; Tesema, 2024).

Capital structure theories, such as the trade-off theory and the pecking order theory, are essential for understanding how financing decisions affect a company's performance. The trade-off theory posits that companies seek to achieve an optimal capital structure by balancing the tax benefits of debt, such as interest tax shields, with the costs of financial distress (Dao and Ta, 2020; Li et al., 2023). However, excessive debt can increase the risk of bankruptcy and reduce firm value. Firms generally accumulate debt until the tax benefits equal the potential bankruptcy costs. Firms then adjust their debt load based on their personal risk preferences and performance (Bui et al., 2023; Nguyen, 2024).

However, this theory doesn't fully explain why some companies with low debt levels continue to deliver strong results. According to the pecking order theory, companies avoid external financing due to information asymmetries and prefer internal financing (Dao and Ta, 2020). This theory posits a hierarchy in which companies first use retained earnings, then debt, and issue new shares only as a last resort, typically prioritizing bond issuance over stock issuance. Unlike the trade-off theory, which emphasizes balancing debt and equity proportions, the pecking order theory sets funding priorities based on available funds and company performance (Tesema, 2024). Companies with strong performance tend to rely on internal funds and maintain lower debt levels, whereas less profitable companies, due to limited internal funds, typically increase their debt to finance operations (Bui et al., 2023; Nguyen, 2024).

Research on the relationship between capital structure and firm performance continues, even in emerging economies. Bui et al. (2023) investigated the impact of capital structure on corporate performance using a sample of 769 companies listed on the Ho Chi Minh City and Hanoi Stock Exchanges from 2012 to 2022. Their analysis indicated that the long-term debt-to-assets ratio had no significant effect on Tobin's Q. Nguyen (2024) found that the short-term debt-to-assets ratio had a positive effect on Tobin's Q among 350 companies listed on the Vietnam stock market. However, the long-term debt-to-assets ratio showed no significant relationship with Tobin's Q. Said (2025), using data from 40 companies listed in Egypt, found that short-term debt ratio (STD) has a significant positive effect on Tobin's Q, while long-term debt ratio (LTD) has a significant negative effect on Tobin's Q. Gagandeep and Kumar (2022), based on a study of Indian firms where data taken between 2017 and 2022 was analyzed, found a negative relationship between long-term debt ratio and Tobin's Q.

The trade-off theory is particularly relevant to long-term debt, which often entails greater obligations, longer repayment periods, and higher financial risk. A high long-term debt ratio can adversely affect firm performance if it exceeds the optimal level. In contrast, according to the pecking order theory, firms prefer internal funds over external debt. Short-term debt is preferred over long-term debt because it has lower costs and greater flexibility (Said, 2025). While the theory doesn't claim that short-term debt improves performance, firms with limited funds may rely on short-term debt as a practical financing option.

Previous studies (Nguyen, 2024; Said, 2025) have reported a significantly positive effect of the short-term debt-to-total asset ratio on Tobin's Q. In contrast, research on long-term debt-to-assets ratio shows mixed results, with some showing no significant effects on Tobin's Q (Bui et al., 2023; Nguyen, 2024), while others show negative effects on Tobin's Q (Said, 2025; Gagandeep and Kumar, 2022). Although findings on long-term debt are mixed, the potential negative effect may align with the trade-off theory. Prior studies have explored this relationship in specific countries such as Vietnam or India; most are limited to single-country contexts. This study investigates the impact of capital structure on corporate performance across six ASEAN countries. Based on these findings, this study formulates the following hypothesis:

H_2: The short-term debt ratio has a positive impact on firm performance (Tobin's Q). H_3: The long-term debt ratio has a negative impact on firm performance (Tobin's Q).

2.3. Interest Coverage Ratio (ICR)

The interest coverage ratio (ICR) is one of the important parameters to measure the creditworthiness of a company because it demonstrates the firm's ability to meet its repayment obligations, while also handling unexpected challenges and adapting to changes in the market (Puente De La Vega Caceres, 2024; Arhinful and Radmehr, 2023a, 2023b). A high ICR suggests strong financial stability and a lower probability of default. Conversely, an ICR <1 reflect a lack of profitability to pay interest, indicating a challenge in maintaining operational activities and meeting debt obligations The interest coverage ratio (ICR) plays an important role in assessing how the market views financial risk, sustainability, and a company's ability to continue to meet its financial obligations

or maintain solvency (Arhinful and Radmehr, 2023a, 2023b; Ji, 2019; Oliveira and Basso, 2023). As a result, the ICR reflects a company's financial health and serves as an important signal for investors in determining the company's market value (Puente).

According to signaling theory, a company's financial condition is communicated to reduce information asymmetry between management and external stakeholders, such as investors and creditors (Suranta et al., 2023). Companies in good financial condition typically disclose more information, whereas those in financial distress tend to limit disclosure. One way to identify financial distress is to examine financial ratios in a company's financial statements. This is closely tied to default risk theory, which highlights the risk that a borrower may fail to meet their debt obligations. The increased default risk is associated with a lower credit rating, reflecting greater financial instability (Oliveira and Basso, 2023). Conversely, a low default risk increases perceptions of corporate stability and ultimately increases corporate performance. The ICR plays a crucial role here, particularly for firms in emerging economies without formal credit ratings, as it can predict default risk and financial distress up to 1 year in advance (Vo, 2023).

In recent years, there has been a growing interest in understanding how financial ratios, such as the interest coverage ratio (ICR), influence corporate performance, with various methodologies and datasets applied across different markets. Akpınar and Topak (2024) examined 16 manufacturing companies listed on the Borsa Istanbul (BIST) Industrial Index covering the period of 2018-2022 with Tobin's Q as the dependent variable and ICR as one of the independent variables. The study found that ICR has a positive and significant impact on Tobin's Q. Similarly, a study by Arhinful and Radmehr (2023a) used data of 263 companies and 5,523 observations in the automobile and industrial producer sectors listed on the Tokyo stock exchange from 2001 to 2021, also examining the impact of ICR on the firm performance (Tobin's Q). The study found that ICR positively affects Tobin's Q. Another study by Arhinful and Radmehr (2023b) examined 257 non-financial firms listed on the Tokyo Stock Exchange across various sectors from 2000 to 2022, yielding 5,654 observations. Only companies with complete data in Thomson Reuters Eikon were included in the purposive sampling. The study found that ICR positively impacts Tobin's Q.

Previous studies (Akpınar and Topak, 2024; Arhinful and Radmehr, 2023a, 2023b) tend to provide evidence supporting the positive relationship between Interest Coverage Ratio (ICR) and Tobin's Q. Aligning with signaling theory, a higher ICR sends a positive message to investors, potentially leading to stronger market valuation, such as higher Tobin's Q (Suranta et al., 2023). Despite these findings, most existing research focuses on developed countries outside the ASEAN region, with limited evidence in ASEAN markets. This study examines whether the positive effect of ICR on corporate performance is consistent across six ASEAN countries with comparable financial environments. Based on these findings, this study formulates the following hypothesis:

H_4: Interest Coverage Ratio (ICR) has a positive impact on firm performance (Tobin's Q).

3. RESEARCH METHOD

This study uses a balanced panel dataset covering the period 2020 to 2024. The selected firms span multiple sectors, and all financial and ESG-related data were sourced directly from Refinitiv and analyzed using Stata. Our sample comprises 2,190 firm-year observations from 438 publicly listed firms across six key ASEAN markets: Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. These six countries are collectively known as the ASEAN-6, which represent the region's largest and most active economies by market size and economic output. As reported by Moody's sovereign credit ratings (Trading Economics, n.d.), most of these countries are classified as investment-grade, reflecting a generally favorable investment climate in the region.

The dependent variable is Tobin's Q, a measure of market-based company performance. Prior research has demonstrated a relationship between company performance and market value (Ghardallou and Alessa, 2022). Further, Tobin's Q is an appropriate measure of the relationship between the company and its stakeholders (Ting et al., 2020). Tobin's Q is determined as the market capitalization divided by total assets (Kim and Yang, 2025). This indicator may be used to evaluate the impact of the company's capital structure and level of solvency on market valuation (Nguyen, 2024). Tobin's Q may also be used as a variable in assessing a company's creditworthiness, particularly when the interest coverage ratio (ICR) is employed as an indicator of the company's ability to meet its debt obligations (Vo, 2023; Arhinful and Radmehr, 2023a, 2023b). If this ratio exceeds 1, it indicates a stronger potential for future development and encourages investment in the company (Kim and Yang, 2025).

The independent variables used in this study include the ESG score, short-term debt ratio (STD), long-term debt ratio (LTD), and interest coverage ratio (ICR) (Table 1). The ESG Score reflects the

Table 1: Description of variable

Variable and notation	Description	Details	Expected sign
Dependent variable			
TQ	Tobin's Q	Market capitalization/total asset	
Independent variable			
ESG score	Environmental, social and governance scores	Composite ESG performance score	+
STD	Short-term debt ratio	Short-term debt/total asset	+
LTD	Long-term debt ratio	Long-term debt/total asset	−
ICR	Interest coverage ratio	EBIT/interest expense	+
Control variable			
Firm size	Size of firm	Natural logarithm of total assets	
Board size	Board structure	Total number of board of directors	

firm's performance across environmental, social, and governance dimensions (Ting et al., 2020) and is obtained from the Refinitiv database, averaged over 5 years. The STD and LTD variables, respectively, represent a firm's short-term debt and long-term debt (Nguyen et al., 2023), calculated by the ratio of debt to total assets, while ICR is used to assess a firm's ability to meet its interest obligations (Arhinful and Radmehr, 2023a, 2023b), calculated by EBIT divided by the interest expense.

Following prior research, the control variables in our study are firm characteristics, such as firm size and board size (Nguyen, 2024; Gao et al., 2023; Bui et al., 2023). Firm size is often used as a control variable, as large firms, in many cases, outperform small firms in terms of access to finance and stability, but may also be inefficient (Nguyen, 2024). While Kim and Yang (2025) examined board size as a moderator, this study includes it as a control variable, acknowledging its potential direct effect on firm performance.

In this study, a quantitative approach is employed with a panel data regression method to test the impact of interest coverage ratio (ICR), capital structure (short-term debt ratio and long-term debt ratio), and ESG score on corporate performance (Tobin's Q). Firm size and board size are included as control variables to account for other factors that may influence corporate performance. The empirical model is designed to identify relationships between independent and dependent variables over time and across companies simultaneously.

The empirical model is formulated as follows:

$$TQ_{it} = \beta_0 + \beta_1\ ESG\ Score_{it} + \beta_2 STD_{it} + \beta_3 LTD_{it} + \beta_4 ICR_{it} + \beta_5 Board\ Size_{it} + \beta_6 Firm\ Size_{it} + \mu_{it}$$

In this model, *TQ* Tobin's Q is the dependent variable representing corporate market-based performance. ESG score, STD (short-term debt ratio), LTD (long-term debt ratio), and ICR (interest coverage ratio) serve as independent variables, while firm size and board size are included as control variables to capture other influences that may affect corporate performance.

The intercept β_0 is the value of Tobin's Q when all the independent and control variables are zero. The coefficients β_1 to β_6 show the influence of each variable on corporate performance. The symbol (μ_{it}) represents the error term that captures influences from factors outside the model. The subscript (*it*) indicates that the data are panel data, combining observations across companies and time.

Before conducting further analysis, the data were preprocessed to ensure optimal quality and to meet the basic assumptions of the statistical analysis. The first step was to handle missing values using the mean imputation method. This technique replaces missing values with the mean of the corresponding variable. This approach was selected because it is simple and allows the full sample size to be maintained. Furthermore, according to Hasan et al. (2021), this was the most commonly used method for addressing missing values in studies from 2010 to August 2021.

To overcome the problem of extreme values (outliers) and non-normal distribution, as seen from skewness and kurtosis values, winsorizing was performed on all variables in this study by trimming the values at certain percentiles (5% and 95%) and replacing them with values at the percentile boundaries. Although some variables still exhibit non-normal distributions, this issue is less problematic in panel analysis with a sufficiently large sample size (>100). According to Kwak and Kim (2017) review of the central limit theorem (CLT), the mean of a sufficiently large random sample follows a normal distribution even if the original population distribution is not normal. This allows normality-based statistical tests, such as the t-test, to be used even when the original data are not normally distributed, provided the sample size is adequate. Furthermore, centering was performed to reduce multicollinearity and improve model performance. Centering is a data transformation process that involves subtracting the mean of each value in a variable. This yields a new variable with an average of zero.

Then, the panel data regression model is tested to determine whether a fixed-effects (FE) or random-effects (RE) model is more appropriate using the Hausman test. If the results show a $P < 0.05$, the FE model is more appropriate because it indicates that the independent variables are correlated with individual effects, implying that the RE assumption is not met. The Hausman test results indicate that the FE model is preferable ($P = 0.0000$). This conclusion is further supported by the testparm results ($P = 0.0000$), suggesting that individual fixed effects are statistically significant.

To ensure the model's validity, classical assumption tests (CLRM) are performed, including tests for heteroscedasticity, autocorrelation, and multicollinearity. Then, adjustments are made if any assumptions are violated. The heteroscedasticity test using the modified Wald test yielded a $P = 0.0000$, indicating heteroscedasticity in the model. The Wooldridge autocorrelation test also yielded a $P = 0.0000$, indicating the presence of serial autocorrelation. The multicollinearity test using the variance inflation factor (VIF) indicates no multicollinearity among the independent variables, as all VIF values are below the commonly accepted threshold of 10. Because of heteroscedasticity and violations of the assumption of autocorrelation, the ordinary least squares (OLS) method is invalid. Therefore, the fixed-effects method with robust standard errors (FE robust) was utilized. This approach corrects the standard errors, making them valid and reliable even though the CLRM assumptions are not fully met. Thus, the resulting model can still provide accurate estimates and be interpreted statistically.

The results of the Hausman, testparm, Modified Wald, and Wooldridge tests are presented in Table 2. The results of the variance inflation factor (VIF) test, indicating the absence of multicollinearity, are presented in Table 3.

4. FINDINGS AND DISCUSSION

This study uses a panel dataset covering multiple companies in ASEAN over the period 2020-2024. These data represent

company characteristics across various dimensions, including market performance (measured by Tobin's Q), sustainability performance (measured by ESG scores), and financial conditions (measured by capital structure and the interest coverage ratio as a proxy for creditworthiness). Additionally, structural variables such as firm size and board size are included to reflect company complexity and governance. The descriptive statistics in Table 4 indicate substantial diversity among the companies in the sample.

Based on Table 4, the descriptive statistics indicate a wide range of data characteristics. The ESG_SCORE variable, which ranges from 1 to 100, has a minimum of 2.15 and a maximum of 92.00. This reflects the presence of companies with very low levels of ESG compliance, as well as companies that implement ESG practices optimally.

The capital structure variable shows that both short-term debt (STD) and long-term debt (LTD) have a minimum value of 0. This indicates that some companies have no debt. However, STD's maximum value is 1.11, meaning some companies have short-term debt exceeding their total assets. This suggests a high financial risk, as the company relies heavily on short-term financing. Meanwhile, LTD's maximum value of 0.86 indicates that most of its assets are financed with long-term debt. Tobin's Q (TQ) has a mean of 1.28, with a minimum of 0 and a maximum of 274.80. Tobin's Q value below 1 generally reflects that the company's market value is lower than its book value, which may imply that the company is less efficient in utilizing its assets to create market value. Conversely, values above 1 indicate that the market assesses the company as having strong growth prospects or competitive advantages.

Meanwhile, in the interest coverage ratio (ICR), the minimum value of −304.95 indicates that some companies are unable to cover interest expenses with their operating income, indicating poor creditworthiness. On the other hand, the maximum value is 18,131.65, indicating companies with excellent financial performance and the ability to pay very high interest rates.

Before conducting regression analysis, a correlation matrix is used to provide an initial overview of the direction and strength of relationships among variables (Table 5). Based on the correlation matrix, the relationships among the variables are relatively weak, with both positive and negative correlations. None of the variables exhibits a strong correlation exceeding 0.8, indicating no multicollinearity. This suggests that each variable makes a distinct contribution to explaining TQ variation. TQ has a weak negative correlation with LTD (−0.0474), STD (−0.0221), ESG_SCORE (−0.0020) indicating that a higher proportion of the value of the variable may be associated with a lower Tobin's Q. Conversely, ICR has a weak positive correlation with TQ (0.0248), suggesting that the ability to meet interest obligations is in line with an increase in firm value. Meanwhile, the relationships between TQ and each independent variable remain weak; therefore, their direction and strength are unclear at the initial stage. Therefore, regression analysis is needed to explore the effects in more depth by considering control variables and their statistical significance in the model.

Additionally, the correlation between the independent variables is relatively weak. For instance, STD and LTD have a low positive correlation (0.0671), while ICR is negatively correlated with both. This is logical because the ability to pay interest decreases as debt increases. These low correlations indicate the absence of serious multicollinearity, so it is appropriate to include all variables in the regression model.

Table 6 presents the regression results from four estimation methods: Ordinary least squares (OLS), random effects (RE), fixed

Table 2: Panel data diagnostic test results

Test	Statistic result	P-value
Hausman test	Chi-square (6)=40.55	0.0000
Testparm	Chi-square (6)=107.57	0.0000
Modified Wald test	Chi-square (438)=9.6e+07	0.0000
Wooldridge test	F (1, 437)=42.783	0.0000

Table 3: VIF test

Variable	VIF	1/VIF
Firm_size	1.34	0.744450
ESG_score	1.28	0.782904
Board_size	1.12	0.893959
LTD	1.10	0.906779
ICR	1.10	0.907560
STD	1.09	0.914536
Mean_VIF	1.17	

Table 4: Descriptive statistics

Variable	Obs.	Mean	Standard deviation	Min	Max
Company	2,190	219.5	126.4683	1	438
Year	2,190	2022	1.414537	2020	2024
TQ	2,190	1.284276	6.855741	0	274.8029
ESG_ SCORE	2,190	51.73562	17.30012	2.152923	92.00085
LTD	2,190	0.1869892	0.1557068	0	0.8638495
STD	2,190	0.0892481	0.0947604	0	1.117081
ICR	2,190	99.61985	738.2116	-304.9504	18131.65
Firm_size	2,190	21.60955	1.762777	16.53008	27.13003
Board_size	2,190	9.202663	2.998531	2	22

Table 5: Correlation matrix

	TQ	ESG_SCORE	STD	LTD	ICR	Firm_size	Board_size
TQ	1.0000						
ESG_score	−0.0020	1.0000					
STD	−0.0221	−0.1408	1.0000				
LTD	−0.0474	0.0572	0.0671	1.0000			
ICR	0.0248	−0.0141	−0.1104	−0.1248	1.0000		
Firm_size	−0,0619	0.4226	−0.1456	0.1918	−0.0912	1.0000	
Board_size	−0.0089	0.2497	0.0402	0.1465	−0.0505	0.2393	1.0000

Table 6: Summary of regression results

Variables	Tobin's Q			
	FE Robust	FE	RE	OLS
ESG_score				
Coefficient	−0.0116755	−0.116755	−0.0049043	0.0121919
P-value	(0.006***)	(0.000***)	(0.029**)	(0.000***)
STD				
Coefficient	−1.625056	−1.625056	−1.314173	−0.1536115
P-value	(0.030**)	(0.002***)	(0.002***)	(0.697)
LTD				
Coefficient	−0.8938967	−0.8938967	−1.013485	−1.287051
P-value	(0.076*)	(0.028**)	(0.001***)	(0.000***)
ICR				
Coefficient	0.0005018	0.0005018	0.0005497	0.0006043
P-value	(0.035**)	(0.000***)	(0.000***)	(0.000***)
Firm_size				
Coefficient	−0.1464807	−0.1464807	−0.202997	−0.278544
P-value	(0.171)	(0.018**)	(0.000***)	(0.000***)
Board_size				
Coefficient	0.0121871	0.0121871	0.0185303	0.0235535
P-value	(0.706)	(0.479)	(0.188)	(0.043**)
R-squared (within)	0.0335	0.0335	0.0285	
R-squared (overall)	0.0632	0.0632	0.0924	0.1226
Prob>F	0.0004	0.0000		0.0000
Prob >Chi-square			0.0000	

***, **, and *indicate statistical significance levels at 1% (P<0.01), 5% (P<0.05), and 10% (P<0.1) respectively

effects (FE), and FE with robust standard errors (FE robust). These four models are presented to provide a clearer comparison of the consistency and robustness of the estimation results, with details of their selection explained in Chapter 3 (research method). The FE robust model was selected as the most appropriate for the data, particularly in addressing heteroscedasticity and autocorrelation. Therefore, the discussion focuses on the FE robust estimation.

Tobin's Q serves as the proxy for corporate market-based performance. The model includes four independents variable. These four variables are statistically significant at different significance levels, suggesting that both sustainability and financial indicators play a crucial role in shaping firm value across ASEAN-6 countries. Based on the R-squared within value, approximately 3.35% of the within-entity variation in Tobin's Q is explained by the independent variables within the company, which is relatively modest but not uncommon in firm-level panel regressions involving market-based valuation metrics. Overall, the R-squared value is 0.0632, which means that 6.32% of the variations in Tobin's Q are explained by the independent variables in the model, while the remaining 93.68% are explained by other variables that are not included in this analysis. The F-test result (Prob>F = 0.0004) indicates that the overall independent variable in the regression model has a statistically significant effect on Tobin's Q at the 1% level.

The regression results show that the ESG score has a negative impact on Tobin's Q and is statistically significant at the 1% level. This result indicates that the higher the company's ESG score, the more likely Tobin's Q is to decrease in ASEAN-6 countries. Although based on stakeholder theory and the prior studies (Ting et al., 2020; Aydoğmuş et al., 2022; Wu et al., 2022; Li et al., 2024; Gao et al., 2023) are expected to have a positive impact of ESG score on Tobin's Q, the regression results show the opposite results. These findings align with Prabawati and Rahmawati's (2022) study, which found that ESG has a significant negative impact on Tobin's Q in the ASEAN market. Similar results were reported by Al Azizah and Haron (2025) in the context of Islamic companies in Indonesia and Malaysia, where the ESG component actually has a negative impact on the Tobin's Q post-pandemic. This condition indicates that markets in emerging economies have not fully recognized the importance of sustainability initiatives. Additionally, Chininga et al. (2024) found that ESG does not directly affect Tobin's Q when measured in real time but shows a positive effect when using the lagged ESG score. This suggests a delay effect, whereby the impact of ESG on market performance is realized over time and, in the short term, may be perceived as a cost burden by the market. Therefore, stakeholder theory, the initial framework, is not suitable for explaining this relationship. As an alternative, agency theory can provide a more appropriate explanation. This theory posits that ESG can give rise to agency costs when undertaken solely for symbolic purposes, without creating real economic value. Yu and Xiao (2022) also used this approach in their study in China. Thus, agency theory helps explain why ESG is not always well-received by the market in emerging economies.

The short-term debt (STD) has a negative and significant impact on Tobin's Q at the 5% significance level. This finding is against the initial hypothesis based on pecking order theory and several previous studies (Nguyen, 2024; Said, 2025). However, it supports trade-off theory, which emphasizes the importance of balancing the benefits and risks of using debt (Dao and Ta, 2020; Li et al., 2023). This could be due to exposure to financial and payment risks, as short-term debt has a short maturity that can strain cash flow (Nguyen, 2024). Investors may view reliance on STD as a negative indication of the company's financial stability. The context of the ASEAN region also further strengthens this interpretation, given that emerging economies tend to face higher levels of macroeconomic and financial risks (Nguyen, 2024). This is also reflected in the descriptive statistics in Table 4, which show that, with an average STD of 8.92%, the maximum value reaches 111.71%, indicating that some companies rely heavily on short-term financing. This condition shows that although an STD is considered a flexible source of funds, investors consider that this aggressive use can reduce the Tobin's Q.

The Long-term debt ratio has a negative impact on Tobin's Q and is statistically significant at the 10% level. This result indicates that the higher the long-term debt-to-total assets ratio, the lower the firm's market valuation as measured by Tobin's Q. Although the statistical evidence is significant at a relatively lower levels, it still aligns with the Trade-off theory that suggests while debt can enhance firm value up to an optimal point, excessive debt increases financial risk and can harm firm performance (Dao and Ta, 2020; Li et al., 2023). This result is consistent with the findings of Said (2025) and Gagandeep and Kumar (2022), who found that LTD has a negative impact on Tobin's. However, the result is contradicted by the findings of Bui et al. (2023) and Nguyen (2024), who found

that LTD has no impact on Tobin's Q. Using data from six ASEAN countries, this study provides further evidence that a high long-term debt ratio can negatively affect firm market performance in emerging markets. This negative relationship may arise because long-term debt imposes a persistent burden on the company's cash flow, thereby limiting its ability to invest in growth opportunities.

The interest coverage ratio has a positive impact on Tobin's Q and is statistically significant at the 5% level. This indicates that companies with a stronger ability to cover interest expenses from earnings tend to be valued at higher market prices. This condition serves as an indicator of financial strength, enhancing market confidence and contributing to a higher firm valuation, as reflected in Tobin's Q. This aligns with signaling theory, which explains that the firm's financial condition provides a credible signal to investors (Suranta et al., 2023). Moreover, this study also aligns with previous studies by Akpınar and Topak (2024) and Arhinful and Radmehr (2023a, 2023b), which also found that ICR has a significant positive impact on firm value. Therefore, ICR can be considered an important indicator of a firm's financial health and of market perceptions toward it.

The research findings have several important implications for investors and companies. For investors, the results suggest that the ESG Score in the ASEAN-6 markets is underappreciated. Therefore, short-term investment strategies should not rely too heavily on this indicator, considering the possibility of the lag effect. Additionally, both short-term and long-term debt profiles require attention. High short-term debt can increase liquidity risk, and excessive long-term debt can limit a company's growth. Meanwhile, a high interest coverage ratio can signal financial strength and investment attractiveness. These implications underscore the need for companies to manage ESG in a way that generates real economic value, optimizes short- and long-term debt structures within appropriate limits, and maintains a healthy interest coverage ratio (ICR) to enhance market confidence and strengthen valuations.

5. CONCLUSION

Using a robust fixed-effects panel-data regression approach, this study finds that not all independent variables have the expected effects or are consistent with the underlying hypothesis. The results of this study highlight that, in the context of emerging economies such as those in ASEAN, a high ESG score alone is insufficient. In the absence of concrete evidence and tangible economic benefits from sustainability practices, ESG lowers Tobin's Q, suggesting that investors in emerging economies may view ESG as a burden rather than an investment. These findings suggest that stakeholder theory is unable to adequately explain this relationship in ASEAN. Instead, agency theory is more relevant, as ESG practices implemented solely for image purposes can lead to agency costs and undermine shareholder value. In terms of capital structure, reliance on short-term debt has been shown to negatively affect firm value. This indicates that investors are increasingly sensitive to financing risks, particularly amid the uncertain macroeconomic conditions in ASEAN. Firms that rely heavily on short-term debt are more sensitive to external shocks, liquidity pressures, and declines in performance. Even long-term debt, although more stable, can still have negative effects if not managed optimally. Conversely, the interest coverage ratio (ICR) is the only financial signal that the market positively receives, as it reflects the company's fundamental strength. Among the four proposed hypotheses, only two were accepted. These were the third and fourth hypotheses, respectively, regarding long-term debt (LTD) and the interest coverage ratio (ICR). The first hypothesis, which examined the influence of environmental, social, and governance (ESG) scores, and the second hypothesis, which examined the influence of short-term debt (STD), were rejected. These results suggest that sustainability factors and capital structure do not consistently have the expected impact on firm performance (Tobin's Q), particularly in emerging markets such as the ASEAN region.

Several limitations of this study should be acknowledged, as they may influence the interpretation of the results. First, ESG score data coverage is limited to the past 5 years due to the scarcity of historical data in the ASEAN region. This limits the ability to analyze long-term dynamics, particularly to assess changes in sustainability strategies in greater detail. Second, the study uses the ESG score as a single composite value, rather than analyzing the environmental, social, and governance dimensions separately. Each component can impact company value differently. Given these limitations, future research should employ lagged ESG scores to better capture delayed effects and analyze ESG dimensions individually to more precisely evaluate their influence on market perceptions. Using data from a longer timeframe and expanding the scope to include more sectors or countries could strengthen the generalizability of the results, providing a more comprehensive understanding of how emerging markets respond to sustainability practices and corporate financial structures. A contextual, evidence-based approach enables firms to align ESG and finance with real value creation. Building a market-valued sustainability ecosystem demands more than scores. It requires long-term commitment, transparency, and strong financial performance.

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