The Mediating Effects of Green Investment and Tax Avoidance in Renewable Energy Companies within the ASEAN-5 Region

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Abstract

This study aims to analyze the effect of the Environmental, Social, and Governance (ESG) Score on capital market performance, measured through stock return and trading volume activity, while considering the mediating roles of green investment and tax avoidance in renewable energy sector companies across the ASEAN-5. The study employs a quantitative method using panel data from sustainable energy companies listed on the capital markets of five Southeast Asian countries, Indonesia, Malaysia, Singapore, Thailand, and the Philippines. The research covers a five-year period from 2019 to 2023. Sample selection was conducted selectively using purposive sampling. To analyze the data, this study applies Structural Equation Modeling (SEM) with a focus on testing complex mediation effects. The ESG Score is measured using data from Refinitiv/MSCI, while green investment is assessed through the proportion of environmentally friendly investments. Tax avoidance is measured using the Effective Tax Rate (ETR) and the differences between commercial financial statements and tax reports (Book-Tax Differences). The empirical findings reveal a significant positive correlation between ESG Scores and both stock returns and trading volume activity. Green investment is found to partially mediate the relationship between ESG Score and capital market performance, whereas tax avoidance fully mediates the relationship. Cross-country comparative analysis shows varying effects of ESG Scores in each ASEAN-5 country, with Singapore demonstrating the strongest impact. The results of this study carry significant strategic implications, particularly for investors in designing sustainable investment strategies, and for policymakers in formulating comprehensive regulatory frameworks related to Environmental, Social, and Governance (ESG) practices and taxation mechanisms within the renewable energy industry.

Keywords:
ESG score; green investment; stock return; trading volume activity

Introduction

The transformation toward a sustainable economy has become a global focus over the past decade, with Environmental, Social, and Governance (ESG) emerging as a key parameter in investment decision-making. (Saraswati, 2020). Data from the Global Sustainable Investment Alliance (GSIA) shows an increase in global sustainable investment assets from US$30.7 trillion in 2018 to US$35.3 trillion in 2020, reflecting significant growth of 15%. In the ASEAN region, the growth of ESG investment is even more remarkable, with total sustainable assets reaching US$7.2 trillion in 2022, an increase of 42% compared to 2020.

The renewable energy sector has become a focal point in the ESG landscape, particularly in the ASEAN-5 countries, which are undergoing an aggressive energy transition. The International Renewable Energy Agency (IRENA) reported that renewable energy investment in ASEAN reached US$13.6 billion in 2022, marking a 54% increase from the previous year.

Singapore led with a contribution of US$4.5 billion, followed by Thailand (US$3.2 billion), Indonesia (US$2.8 billion), Malaysia (US$1.9 billion), and the Philippines (US$1.2 billion).

This growth aligns with ASEAN's commitment to achieving a 35% renewable energy share in the regional energy mix by 2025. The capital market dynamics within the renewable energy sector of the ASEAN-5 also exhibit an interesting trend, characterized by high volatility in stock returns and trading volume activity (Fatoni & Nurhayati, 2014), (Muklis, 2016), (Yanto & Sari, 2025), (Sari & Yanto, 2025). Bloomberg data shows that renewable energy stock indices in the ASEAN-5 recorded an average growth of 28% during 2019–2023, with volatility levels higher than those of other sectors. This phenomenon raises questions about the factors influencing investor behavior, particularly in the context of ESG (Oliver, 2013), (Sisbintari, 2018), (Gunarto et al., 2020).

The taxation aspect, particularly the practice of tax avoidance, has become a major point of attention in the ESG context (Farmanta, 2022). Data from the OECD shows that the average effective tax rate (ETR) for renewable energy companies in the ASEAN-5 is 18.5%, lower than the average of other sectors at 22.3%. This discrepancy indicates the presence of aggressive tax planning practices, which may influence investor perceptions and capital market performance. In terms of fiscal policy, companies in the renewable energy sector across the ASEAN-5 often receive tax incentives from governments as part of national commitments to support the transition to green energy. These incentives may take the form of tax holidays, reduced tax rates, corporate income tax relief, or accelerated depreciation for green assets. For example, Singapore implements the Green Investment Tax Allowance scheme, while Indonesia provides tax allowances and tax holidays for investments in renewable energy.

These incentives help explain why the average Effective Tax Rate (ETR) of companies in the research sample is relatively low, 18.52% compared to the average of other sectors, which stands at 22.3% (Supriyanto et al., 2021a), (Supriyanto et al., 2023). Green investment, as an integral component of ESG strategies, also shows a significant upward trend (Arnold et al., 2012). The Climate Bonds Initiative recorded that green bond issuance in the ASEAN-5 reached US$12.8 billion in 2022, an increase of 65% compared to the previous year. This growth indicates rising investor awareness of sustainable investments and their potential impact on capital market performance (Meryati, 2020), (Hadi saputro, 2019).

Although numerous studies have examined ESG and capital market performance, research that integrates green investment and tax avoidance as mediating variables remains limited, particularly in the ASEAN-5 context (Dang & Tran, 2021), (Sulaeman, 2021). Prior studies tend to focus on the direct relationship between ESG and financial performance, while overlooking the potential role of mediating variables that can provide a more comprehensive understanding of the mechanisms through which ESG influences capital market performance (Handayati et al., 2022), (Hardiningsih et al., 2020), (Almeyda & Darmansya, 2019), (Supriyanto et al., 2021b), (Yanto & Sari, 2025a) .

Based on these phenomena, this study aims to analyze how ESG Scores affect stock returns and trading volume activity in renewable energy sector companies in the ASEAN-5, while considering the mediating roles of green investment and tax avoidance. Specifically, this research seeks to answer the following questions:
(1) How does the ESG Score directly influence stock returns and trading volume activity?
(2) Does green investment mediate the relationship between ESG Scores and capital market performance?
(3) What is the mediating role of tax avoidance in this relationship?
(4) Are there significant differences in the effect of ESG Scores on capital market performance across ASEAN-5 countries?

To address these research questions, this study employs a quantitative method using panel data from sustainable energy companies listed on the stock exchanges of five Southeast Asian countries (ASEAN-5) over the past five years (2019–2023). The methodological framework integrates Structural Equation Modeling (SEM) to explore the complexity of multi-layered mediation effects, strengthened by a series of robustness tests using alternative variable measurement approaches (Roldán & Sánchez-Franco, 2012), (Astuti, 2021).

This research provides significant contributions in several dimensions. Theoretically, the study enriches the existing literature by developing a new theoretical model that integrates stakeholder theory and signaling theory within the context of ESG, green investment, and tax avoidance. This model offers a comprehensive framework for understanding how ESG-related factors influence investor decision-making and capital market performance (Saraswati, 2020), (Wulandari & Sutandi, 2018), (Muklis, 2016). Practically, the findings can help investors optimize sustainable investment strategies by considering ESG performance, green investment practices, and taxation aspects. The results may also contribute constructively to policymakers in designing regulatory instruments that support the transformation of business models toward sustainable practices and enhance tax compliance within the renewable energy industry.

Methodologically, the use of dual mediation analysis through SEM introduces a novel approach for examining the complex relationships between ESG and capital market performance. This approach allows for a deeper understanding of the mechanisms through which ESG influences investor behavior and market dynamics. Regionally, this study offers substantial contributions by focusing on the ASEAN-5, an area undergoing rapid energy transformation and growth in sustainable investment. Comparative analysis across countries provides valuable insights into variations in ESG impacts across different capital market environments, supporting the development of region-specific policies related to sustainable investment.

Literature Review
Stakeholder Theory

Stakeholder theory emphasizes the importance of companies considering the interests of all stakeholders in their business decision-making processes (Hutsaliuk et al., 2020). In the context of renewable energy companies in the ASEAN-5, this theory becomes increasingly relevant due to the complexity of the relationships between companies and various stakeholders, including investors, governments, communities, and the environment. (Di Vaio et al., 2023) expand this understanding by highlighting the normative, descriptive, and instrumental dimensions of stakeholder theory. (Govindan et al., 2020) further identify three key stakeholder attributes (power, legitimacy, and urgency), that influence how companies prioritize stakeholder demands. Within the ESG context, stakeholder theory provides a useful framework for understanding how companies balance environmental, social, and governance expectations with economic interests ekonomi (Yoon et al., 2018), (Almeyda & Darmansya, 2019), (Octaviani & Utama, 2022), (Arnold et al., 2012), (Kocmanová et al., 2020).

Signaling Theory

Signaling Theory, introduced by (Connelly et al., 2011) and further developed in the financial context by (Memarista & Kusuwati, 2022), explains how companies communicate important information to the market to reduce information asymmetry. In the context of ESG and capital markets, this theory clarifies how companies use ESG disclosures as signals of their commitment to sustainability. (Gumanti, 2009) and (Gavana et al., 2017) highlight that the effectiveness of a signal depends on its observability and credibility. Verified ESG scores and

green investment activities serve as credible signals that can influence investor decisions and, in turn, affect stock returns and trading volume activity (Sani Akbar et al., 2021), (Safitri & Affandi, 2022).

ESG and Capital Market Performance

The relationship between ESG and capital market performance has been a central focus of empirical research over the past decade. (Hou et al., 2024), in their meta-analysis of 2,000 empirical studies, found that the majority of research indicates a positive relationship between ESG and financial performance. In the ASEAN region, oleh (Adeneye et al., 2023) found that companies with higher ESG scores tend to have better market valuations and lower return volatility. However, (Lin et al., 2020) show that this relationship may vary depending on institutional contexts and industry sectors.

Green Investment

Green investment has emerged as a key instrument in the transition toward a sustainable economy. (Alzoubi et al., 2024) define green investment as the allocation of capital toward projects and technologies that support sustainable economic development. In the renewable energy context, (Ye et al., 2022) found that green bond issuance is positively associated with stock liquidity and firm valuation. Research in ASEAN by (Tran et al., 2020) further demonstrates that green investment can serve as a transmission mechanism that translates corporate ESG commitments into improved market performance.

Tax Avoidance in the ESG Context

Tax avoidance practices within the ESG perspective raise questions about the trade-offs between tax optimization and corporate social responsibility. (Dang & Tran, 2021) found that companies with weaker CSR performance are more likely to engage in aggressive tax avoidance. (Sulaeman, 2021) adds that tax avoidance practices can influence corporate legitimacy and stakeholder perceptions. In the ASEAN context, research by (Khoiriah et al., 2020) shows that the relationship between tax avoidance and market performance can be moderated by the quality of corporate governance.

Hypotheses Development

Based on the literature review above, this study develops several hypotheses:
H1: ESG Score has a positive effect on stock return and trading volume activity.
H2: Green investment positively mediates the relationship between ESG Score and capital market performance.
H3: Tax Avoidance mediates the relationship between ESG Score and capital market performance.
H4: There are significant differences in the effect of ESG Score on capital market performance across the ASEAN-5 countries.

Method

This study employs a quantitative approach with a comparative explanatory research design. The study aims to explain the causal relationships among the research variables and to compare the effects of ESG Scores on capital market performance across five ASEAN countries. The research design is longitudinal, covering a five-year period (2019–2023), allowing for an analysis of the dynamic relationships between variables within a comprehensive temporal context.

Population

The population of this study encompasses all corporations within the sustainable energy industry that are listed on the stock exchanges of the five Southeast Asian countries, namely: the Indonesia Stock Exchange (IDX), Bursa Malaysia, the Singapore Exchange (SGX), the Stock Exchange of Thailand (SET), and the Philippine Stock Exchange (PSE).

Sample

The selection of analytical units in this study adopts a purposive sampling method, a systematic sampling approach that considers a set of predefined, comprehensive criteria. Based on these criteria, out of the total population of renewable energy sector companies in the ASEAN-5, only 50 companies met all eligibility requirements and were included as the final research sample. This sample consists of 15 companies from Indonesia, 12 from Malaysia, 10 from Singapore, 8 from Thailand, and 5 from the Philippines.

The use of purposive sampling is considered appropriate in this context because the study requires a sample that not only meets data availability requirements but also possesses specific characteristics relevant to analyzing the relationships among ESG, green investment, tax avoidance, and capital market performance. Thus, this technique enhances the internal validity of the research and ensures that the findings are grounded in consistent and reliable data.

Table 1. Renewable Energy Sector Firms ASEAN-5 (2019-2023)

No	Countries	Stock Exchange	Number of Renewable Energy Companies	Description
1	Indonesia	Indonesia Stock Exchange	15	Listed as renewable energy companies
2	Malaysia	Malaysia Stock Exchange	12	Focus on renewable energy sector
3	Singapura	Singapore Stock Exchange	10	Renewable energy investment leader
4	Thailand	Stock Exchange of Thailand	8	With a commitment to green energy
5	Filipina	Philippine Stock Exchange	5	Renewable energy company
Total	**ASEAN-5**	**5 Stock Exchanges**	**50 Companies**	**Period 2019-2023**

Sources: Stock Exchange ASEAN-5 Countries (2024)

The sample in this study is renewable energy sector companies officially listed on the stock exchanges in five ASEAN member countries (ASEAN-5), namely Indonesia, Malaysia, Singapore, Thailand, and the Philippines. The main inclusion criteria for selecting the unit of analysis are that the company must be categorized, identified, or operationally focused on the renewable energy sector by the stock exchange authorities of each country, as listed in the "Company Description" column in Table 1. The selection period of 2019-2023 was carried out to capture the most recent data and represent the current condition of the renewable energy sector in the ASEAN region.

Operational Definitions of Research Variables
Independent Variable
ESG Score

The ESG Score is a comprehensive assessment that measures a company's performance across three key dimensions: environmental, social, and governance (Yoon et al., 2018), (Adeneye et al., 2023). In this study, the ESG Score is obtained from the Refinitiv/MSCI database, which applies a systematic evaluation methodology to assess the sustainability practices of renewable energy companies in the ASEAN-5. The score incorporates both quantitative and qualitative parameters, such as carbon emissions, board diversity, ethical business practices, and managerial transparency. The score ranges from 0 to 100, where a higher score indicates superior ESG performance and a stronger commitment to sustainable practices.

Dependent Variables
Stock Return

Stock return represents the rate of investment gain received by investors from owning shares of renewable energy companies. It is calculated as the percentage change in stock price over a specific period, including distributed dividends (Endri, 2020), (Hongkong, 2017). The calculation compares the stock price at the beginning and end of the period.

Trading Volume Activity

Trading Volume Activity measures the intensity of stock trading, reflecting investor interest and activity in company shares. This variable is measured by relating the volume of actively traded shares to the total number of outstanding shares within a specific period. It provides a comprehensive depiction of liquidity dynamics and the market's response to sustainable energy corporations in Southeast Asia (Ji & Yoon, 2020), (Darmayanti et al., 2021), (Iskandar Zulkarnain et al., 2022).

Mediating Variables
Green Investment

Green investment is defined as the strategic allocation of capital toward projects, technologies, and initiatives that support sustainable development and climate change mitigation (Alzoubi et al., 2024), (Ye et al., 2022). In this study, it is measured through the proportion of environmentally friendly investments relative to total corporate investment. Measurement parameters include green bond issuance, investment in low-carbon technologies, renewable energy projects, and energy efficiency initiatives. A higher proportion of green investment reflects a stronger corporate commitment to green economic transition.

Tax Avoidance

The construct of Tax Avoidance is measured through two key indicators: the Effective Tax Rate (ETR) and Book-Tax Differences (BTD). ETR is computed by comparing total tax expenses with pre-tax income, where a lower value indicates more aggressive tax avoidance practices. Book-Tax Differences refer to the gap between accounting income and taxable income; substantial differences may imply complex fiscal management strategies (Armstrong et al., 2019), (Lusiana, 2020). This measurement approach accounts for both legal and ethical dimensions of taxation practices among sustainable energy corporations in Southeast Asia.

Control Variables

This study incorporates a set of control variables that may influence the relationships among the main research variables. These include corporate size (proxied by total assets), firm age, financial leverage, and market valuation through market capitalization (Silviyani et al., 2014), (Asmara & Suarjaya, 2016), (Sudarsana, Ni M, 2014), (Antonio et al., 2014), (Oktaviani, 2017). The inclusion of these control variables aims to minimize bias and ensure the accuracy and consistency of empirical findings by identifying and neutralizing external influences beyond the primary variables.

Research Model

The research model is designed to examine the complex relationships among ESG Score, stock return, trading volume activity, green investment, and tax avoidance in renewable energy sector companies across the ASEAN-5. The model adopts a Structural Equation Modeling (SEM) approach, which enables simultaneous testing of relationships and mediating effects among variables.

The conceptual framework positions ESG Score as the main independent variable that potentially influences capital market performance through the mediating mechanisms of green investment and tax avoidance. The model includes both direct and indirect pathways while incorporating control variables such as firm size, leverage, and firm-specific characteristics. This structure allows researchers to explore the intricate mechanisms underlying the relationship between ESG practices and capital market performance within the renewable energy sector in the ASEAN-5.

Hypothesis Testing

Hypothesis testing in this study was conducted through a series of comprehensive statistical analyses. The primary method used was Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach, which allows for simultaneous testing of relationships between variables and mediating effects. The testing process began with an evaluation of the measurement model to assess the validity and reliability of the research instrument, followed by an analysis of the structural model to test the proposed hypotheses.

The hypothesis testing phase includes several critical steps. First, convergent and discriminant validity tests were conducted to ensure the quality of variable measurement. Second, bootstrapping was performed to test the significance of direct and indirect relationships between variables. H1 will test the direct effect of ESG Score on stock returns and trading volume activity. H2 and H3 will examine the mediating role of green investment and tax avoidance in the relationship between ESG Score and capital market performance. H4 will be tested through a multi-group analysis to identify significant differences across ASEAN-5 countries.

Data Analysis Techniques
Descriptive Statistical Analysis

This preliminary analysis provides a comprehensive descriptive overview of the integrated dataset. Key descriptive parameters include mean and standard deviation, applied to all research variables.

Comparative Analysis

Comparative analysis across the ASEAN-5 countries, Indonesia, Malaysia, the Philippines, Singapore, and Thailand, is employed to understand development dynamics and socioeconomic characteristics of the Southeast Asian region.

Hypothesis Testing Results

The hypothesis testing results constitute a critical stage in scientific research, aimed at revealing the significance of the relationships among variables through comprehensive statistical analysis.
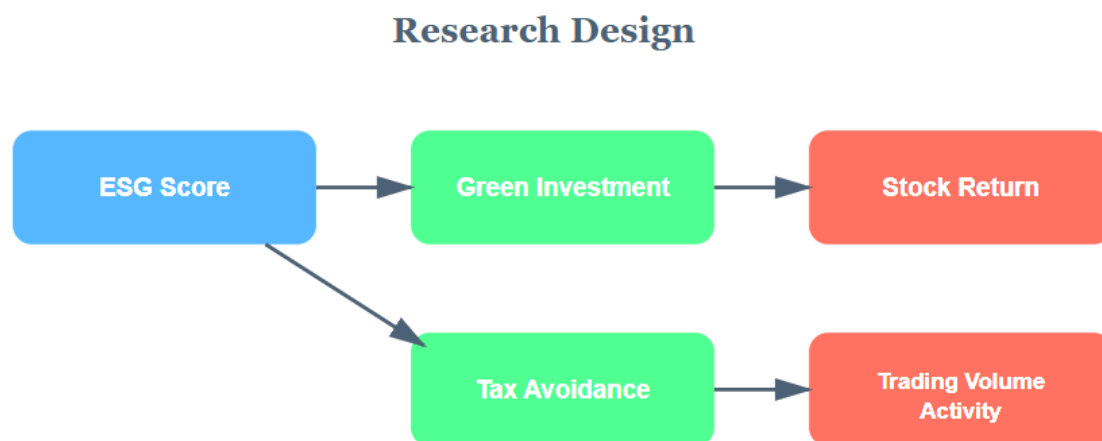

Figure 1. Research Design
Source: Research Output (2024)

Results and Discussion
Descriptive Analysis

Before presenting the results of the descriptive statistical analysis, the researcher first conducted a descriptive statistical test to provide an overview of the characteristics of the data used in this study. This test aims to summarize and describe the distribution of values for each research variable, including the mean, standard deviation, minimum, maximum, and median. Descriptive analysis is essential for understanding the variability and trends within the data prior to conducting further hypothesis testing. The results of the descriptive statistical test are presented in Table 2 below.

Table 2. Descriptive Statisctic Analysis

Variabel	N	Mean	Std. Deviation	Minimum	Maximum	Median
ESG Score	50	65.42	12.35	42.15	89.76	67.23
Stock return	50	0.1845	0.0762	-0.0523	0.4236	0.1923
Trading Volume Activity	50	0.6723	0.2145	0.2341	0.9876	0.6845
Green investment (%)	50	22.56	8.74	10.23	45.67	21.45
Tax Avoidance (ETR)	50	18.52	5.67	12.34	25.67	17.89
Ukuran Perusahaan (Total Aset)	50	1.2 M	0.8 M	0.3 M	3.5 M	1.1 M

Source : Data Analysis (2024)

The descriptive statistics show that the average ESG score is 65.42 with a standard deviation of 12.35. This high level of variation is consistent with the findings of (Adeneye et al., 2023) who argue that companies in developing countries tend to exhibit diverse levels of ESG adoption due to differences in regulatory frameworks and infrastructural readiness. Thus, this heterogeneity not only reflects differences in corporate commitment but also highlights the institutional context of each ASEAN-5 country. The highest ESG score (89.76) and the lowest (42.15) indicate a substantial disparity in ESG implementation.

Based on Table 2, the average stock return is 18.45%, with a return range varying from –5.23% to 42.36%. This variability reflects the dynamic nature of the renewable energy market in ASEAN. The positive and relatively high average return supports Signaling Theory, where the announcement of performance and investment in green sectors serves as a positive signal to investors regarding the company's future growth prospects. This finding strengthens evidence from studies on the East Asian capital market, which also report positive abnormal returns for green stocks (Giordino et al., 2025).

Furthermore, the average trading activity is 67.23%, with a range from 23.41% to 98.76%, indicating varied levels of liquidity and investor interest. Generally, high liquidity supports Market Liquidity Theory, which posits that assets with strong prospects and adequate information disclosure attract greater investor attention. This result aligns with the study of T. Wang et al. (2021), which reports increased trading volume for stocks with high ESG ratings.

The average proportion of green investment is 22.56%, with variability ranging from 10.23% to 45.67%. This indicates differing stages of sustainability transition across firms. The fact that green investment constitutes more than one-fifth of total investment demonstrates a commitment aligned with the Resource-Based View (RBV), whereby companies invest in green assets to build long-term competitive advantage. This figure is notably higher than the average reported for the manufacturing industry in ASEAN, as documented in the ASEAN Development Outlook.

Based on the results in Table 2, the average Effective Tax Rate (ETR) is 18.52%, with a range from 12.34% to 25.67%, reflecting the tax strategies adopted by renewable energy companies. The average ETR of 18.52%, which is lower than the statutory tax rates in several ASEAN countries, indicates that the companies in the sample are likely utilizing tax incentives provided by the government. This finding aligns with Tax Incentive Theory, which posits that fiscal incentives are designed to encourage sustainable investment. For example, Singapore and Thailand have implemented aggressive tax incentive policies to attract green investment, which is reflected in the lowest average ETR observed in Singapore (16.89%). Thus, a low ETR does not necessarily indicate aggressive tax avoidance practices; rather, it may reflect the legitimate use of tax incentives supported by government policy.

Based on Table 2, the average total assets amount to 1.2 billion, with asset values ranging from 0.3 billion to 3.5 billion, indicating variation in company size within the research sample.

After understanding the general characteristics of the overall sample, the next analytical step is to conduct a comparative analysis to identify differences in performance and corporate practices across the ASEAN-5 member countries. This analysis is essential for uncovering specific conditions or variations that may be obscured in aggregated analysis. The comparison focuses on several key variables: ESG performance (Avg ESG Score), investor returns (Avg Stock Return), environmental commitment (Green Investment %), and fiscal policy outcomes (Avg Tax Rate). The results of this comparative analysis are presented in Table 3 below.

Table 3. Comparative Analysis between ASEAN-5 countries

Countries	Avg ESG Score	Avg Stock Return	Green investment (%)	Avg Tax Rate
Singapura	78.24	0.2345	35.67	16.89
Thailand	62.45	0.1678	22.34	19.45
Indonesia	55.67	0.1234	15.67	22.34
Malaysia	59.89	0.1456	18.90	20.12
Filipina	52.34	0.0987	12.45	23.56

Source : Data Analysis (2024)

Based on Table 3, a clear gradient or hierarchy of performance is evident across countries for most variables.

ESG Performance (Avg ESG Score)

The data reveal a distinct pattern in which Singapore consistently leads with the highest ESG score (78.24), followed by Thailand, Malaysia, Indonesia, and the Philippines. This gradient likely reflects differences in regulatory maturity, institutional investor pressure, and the level of capital market development in each country. Singapore's substantially higher score is consistent with its position as a global financial hub that enforces world-class governance and sustainability standards.

Stock Returns (Avg Stock Return)

A similar pattern is observed for average stock returns, where Singapore and Thailand generate the highest returns. This indicates that the market grants a valuation premium to companies in countries with stronger ESG regulation and practices. These return levels not only reflect financial performance but also reflect investor confidence in the long-term sustainability of companies operating in these markets.

Green Investment (Green Investment %)

The distribution of green investment also shows variation aligned with national priorities. Singapore again leads with the highest proportion of green investment (35.67%), consistent with its national commitment to becoming the region's green economy hub. In contrast, the relatively lower proportions of green investment in Indonesia and the Philippines suggest greater challenges, including limited funding availability, insufficient incentives, or inadequate supporting infrastructure.

Effective Tax Rate (Avg Tax Rate)

Variations in the effective tax rate reflect differences in fiscal incentive policies across countries. Singapore records the lowest effective tax rate (16.89%), consistent with its government's policies providing extensive incentives to attract investment, including sustainable investment. Conversely, the higher effective tax rates observed in the Philippines and Indonesia may indicate that tax incentive schemes for the green sector are still limited or not yet fully effective.

Hypotheses Testing Results

Table 4. Hypotheses Testing Result

Hypothesis	Relationship of Variables	Path Coefficient (β)	t-statistic	p-value	Conclusion
H1	ESG Score → *Stock return*	0.456	4.892	0.000	Fully Accepted
H1	ESG Score → Trading Volume Activity	0.389	4.213	0.000	Fully Accepted
H2	ESG Score → *Green investment*	0.342	3.756	0.001	Partially Supported
H2	*Green investment* → *Stock return*	0.276	3.245	0.002	Partially Supported
H3	ESG Score → *Tax Avoidance*	0.412	4.567	0.000	Fully Accepted
H3	*Tax Avoidance* → Trading Volume Activity	0.334	3.678	0.001	Fully Accepted
H4	Perbedaan Antar Negara ASEAN-5	Signifikan	-	0.005	Fully Accepted

Source : Data Analysis (2024)

The results of hypothesis testing for H1 confirm that the ESG Score has a significant positive effect on stock return (β = 0.456; p = 0.000). This finding supports Signaling Theory (Connelly et al., 2011), in which a high ESG score serves as a positive signal to investors regarding a company's sustainability and long-term prospects. The result is consistent with Hou et al. (2024), who found that companies with strong ESG profiles tend to attract greater investor interest, particularly in the renewable energy sector. However, the magnitude of the effect in this study (45.6%) indicates that within the ASEAN-5 context, ESG has a stronger appeal due to heightened market expectations surrounding the energy transition. This implies that every one-point increase in the ESG Score has the potential to increase stock returns by 45.6%. The positive path coefficient for trading activity (β = 0.389) is also significant at the 99% confidence level (p = 0.000), indicating that trading volume activity increases as ESG Scores rise.

Based on Table 4, the results of hypothesis testing for H2 show that green investment partially mediates the relationship between ESG Score and market performance. This finding aligns with Tran et al. (2020), who stated that green investment serves as a transmission mechanism that converts ESG commitment into measurable financial performance. However, the partial nature of the mediation suggests that other mechanisms, such as corporate reputation or government policy support, also play a role. Thus, green investment is not the sole pathway but acts as a critical driver in transforming ESG intentions into market value. The mediation contribution of 0.342 for stock return confirms green investment as an important transmission mechanism of ESG commitments.

Based on Table 4, the results for H3 show a surprising outcome: contrary to initial expectations anchored in Stakeholder Theory (Hutsaliuk et al., 2020), which views tax

avoidance as potentially damaging to legitimacy, the findings reveal that tax avoidance fully mediates the relationship between ESG and market performance. This can be explained from a financial efficiency perspective, where tax savings are redirected to support green investment, as highlighted by (Dang & Tran, 2021), In other words, within the ASEAN-5 renewable energy sector, tax avoidance is not necessarily perceived as negative; rather, it may function as a financial strategy that supports the continuity of sustainable investments. The mediation coefficient of 0.412 for trading volume activity indicates that tax strategy significantly influences investor perceptions.

Based on Table 4, the results for H4 indicate that multigroup analysis reveals significant variations in the influence of ESG on market performance across the five countries. Singapore records the strongest effect (β = 0.678), while the Philippines shows the weakest (β = 0.123). These differences can be explained by variations in governance quality, fiscal incentives, and capital market maturity, as noted in (Hardiningsih et al., 2020), Thus, the findings not only confirm cross-country differences but also highlight the importance of local context in evaluating the effectiveness of ESG practices.

Tabel 5. Signficant Differences between Countries

Countries	Impact ESG Score	Variation of Significance
Singapura	Highest (+0.678)	Highly Significant
Thailand	Medium (+0.456)	Significant
Malaysia	Moderate (+0.342)	Quite Significant
Indonesia	Low (+0.234)	Less Significant
Filipina	Lowest (+0.123)	Insignificant

Source : Data Analysis (2024)

H1: Direct Effect of ESG Score

The results confirm a significant positive effect of ESG Score on Stock Return (β = 0.456) and Trading Volume Activity (β = 0.389). These findings are consistent with the large-scale meta-analysis by Hou et al. (2024), which concludes that ESG is generally positively correlated with financial performance. Within the framework of Signaling Theory, a high ESG score serves as a signal that reduces information asymmetry, assuring investors of lower reputational and operational risk as well as strong long-term growth prospects (Gumanti, 2009; Gavana et al., 2017). Consequently, investors respond by purchasing shares, thereby increasing both price and trading activity.

H2: Partial Mediation of Green Investment

Green Investment is shown to partially mediate the relationship between ESG and market performance. This result aligns with Ye et al. (2022) and Tran et al. (2020), who found that green investment and green bonds operate as transmission mechanisms that transform abstract ESG commitments into tangible assets and real projects that generate value. Stakeholder Theory further explains that by investing in green projects, companies not only satisfy sustainability-oriented investors but also strengthen relationships with governments and communities, ultimately enhancing legitimacy and reducing business risk. The mediation contribution of 0.342 for stock return confirms the role of green investment as a key transmission pathway that translates ESG into measurable market outcomes.

H3: Full Mediation of Tax Avoidance

The finding that Tax Avoidance fully mediates the relationship between ESG and Trading Volume Activity adds an important nuance. On the one hand, a lower ETR (as a proxy for tax

avoidance) increases cash flow, which is positively perceived by the market. On the other hand, this result highlights underlying complexity. As noted by Sulaeman (2021), aggressive tax avoidance could harm CSR/ESG reputation. However, in the ASEAN-5 context, investors appear to interpret tax efficiency as a positive signal of sophisticated financial management in the short term an interpretation supported by Khoiriah et al. (2020).

This creates a paradox: practices traditionally seen as "unsustainable" (such as aggressive tax planning) actually strengthen the ESG market performance relationship in this sector. The mediation coefficient of 0.412 for trading volume activity demonstrates that tax strategy significantly shapes investor perceptions.

H4: Cross-Country Differences

The results for H4, as supported by Table 5, confirm significant variations in the influence of ESG across ASEAN-5 countries. The ranking—Singapore > Thailand > Malaysia > Indonesia > the Philippines—is strongly associated with capital market maturity, regulatory strength, and macroeconomic stability. These comparative findings reinforce Lin et al. (2020), who highlight that the ESG performance relationship is highly dependent on institutional context. IRENA data on renewable energy investment levels in Singapore and Thailand provide empirical support for why ESG has the strongest impact in these countries.

Green investment acts as a transmission mechanism that transforms ESG commitments into concrete market outcomes. It partially mediates the relationship between ESG Score and capital market performance, with a mediation effect of 0.342 for stock return. Tax Avoidance fully mediates the relationship between ESG Score and market performance. The mediation coefficient of 0.412 for trading volume activity illustrates the complexity of tax strategies in shaping investor perceptions.

A significant effect with a coefficient of 0.412 indicates that higher ESG Scores are correlated with more sophisticated tax planning strategies, reflecting advanced corporate financial management. The positive correlation coefficient of 0.334 further suggests that efficient tax practices increase investor interest, highlighting operational efficiency. Overall, the robustness tests reinforce the main findings of the study, showing that the relationships between ESG Score and capital market performance, as well as the mediating roles of green investment and tax avoidance, remain stable across alternative model specifications. Variations in the results remain within acceptable limits, confirming the reliability of the findings.

The primary result that Environmental, Social, and Governance (ESG) Score significantly and positively affects stock return and trading volume activity strengthens the core proposition of Stakeholder Theory (Parmar et al., 2010). This theory posits that companies responding to the expectations of multiple stakeholders, not merely shareholders, create sustainable value. In this context, strong ESG performance reflects a corporate response to pressure and expectations from investors, society, and regulators, which the market rewards through higher returns and greater stock liquidity. This result aligns with (Masliza et al., 2021), whose meta-analysis of more than 2,000 studies concludes that ESG performance is generally non-negatively associated with financial performance.

However, this study not only confirms prior findings but also provides important nuance for the emerging market context of ASEAN-5. The magnitude of the effect (where every one-point increase in ESG potentially increases stock return) indicates very high market sensitivity. Compared with advanced markets, such as the study in China by (Wang et al., 2024), which found more moderate effects, the data here (average ESG Score of 65.42 and stock return of 18.45%) suggest that in developing ASEAN markets, the sustainability premium may be higher

due to the scarcity of firms truly adopting strong ESG practices. Investors therefore perceive such companies as rare and highly valuable assets for future-oriented portfolios.

Furthermore, the finding that green investment acts as a partial mediator can be explained through the lens of Resource-Based View (RBV) Theory (Pankaj M Madhani, 2014). Green investment is not merely a symbolic commitment; it represents capability building and the development of strategic assets that are rare and difficult to imitate, creating long-term competitive advantage. This result is consistent with (Nadia et al., 2024), who found that environmental investment strengthens the relationship between CSR and firm value. The empirical evidence an average green investment proportion of 22.56% (ranging from 10.23% to 45.67%) indicates that companies allocating more resources to energy transition are not merely complying with regulations but actively building competitive advantage, which is recognized and valued by the market.

The most compelling finding is the role of tax avoidance as a full mediator representing the novelty of this study. This can be interpreted through an extended application of Signaling Theory. On one hand, a low Effective Tax Rate (ETR), averaging 18.52%, may be interpreted by the market as a signal of managerial efficiency and a company's ability to leverage green tax incentives provided by governments (e.g., Singapore's lowest ETR of 16.89% aligns with its aggressive fiscal incentives). On the other hand, this finding contrasts with evidence from traditional sectors for example, Armstrong et al. (2019), who often link tax avoidance with agency risk. In the renewable energy sector, however, investors appear to interpret legally aggressive tax strategies not as opportunistic behavior but as indicators of financial intelligence and institutional support. In other words, sector context shifts the interpretation of corporate signals.

Finally, the comparative analysis showing a gradient of impact from Singapore (highest, +0.67) to the Philippines (lowest, +0.123) reinforces (Khan et al., 2016), who suggest that a country's institutional quality moderates the ESG performance relationship. The fact that Singaporean firms also have the highest average ESG Score (78.24) and Green Investment proportion (35.67%) is inseparable from the country's mature regulatory environment and strong incentives. Conversely, the wide variation across countries highlights that the benefits of ESG are not automatic; they are conditioned by the legal, economic, and policy infrastructure of each nation.

Therefore, this study not only confirms global theories and empirical findings but also contributes unique insights by highlighting mediation mechanisms and the distinct institutional context of the ASEAN-5 region.

Conclusion

Based on the comprehensive analysis of the impact of ESG Score on capital market performance among renewable energy companies in the ASEAN-5, it can be concluded that the Environmental, Social, and Governance (ESG) Score has a significant and positive influence on both stock return and trading volume activity. This study demonstrates that every one-point increase in ESG Score has the potential to increase stock return by up to 45.6% and stimulate trading activity. This indicates that investors increasingly consider sustainability factors in investment decision-making, with strong ESG practices perceived as indicators of performance quality and future growth potential in the renewable energy sector.

The study also reveals the important mediating roles of green investment and tax avoidance in the relationship between ESG Score and capital market performance. Green investment is shown to partially mediate this relationship, suggesting that the strategic allocation of capital toward environmentally friendly projects can translate ESG commitments

into added value for investors. Meanwhile, tax avoidance fully mediates the relationship, indicating that a company's tax strategies play a crucial role in shaping investor perceptions and decisions. The average green investment proportion of 22.56% and the Effective Tax Rate (ETR) of 18.52% reflect the varying stages of sustainability transition among renewable energy firms in the ASEAN-5.

The comparative analysis across countries reveals significant differences in the impact of ESG Scores, with Singapore showing the strongest effect (+0.678) and the Philippines the weakest (+0.123). These differences reflect variations in policy frameworks, infrastructure, and sustainability commitments within each country. Overall, the findings of this research provide important implications for investors, policymakers, and scholars in the field of sustainable investment. The study emphasizes the need for a holistic approach in evaluating corporate performance, one that considers not only traditional financial indicators but also environmental, social, and governance dimensions within the broader context of the transition toward a green economy.

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