The Impact of ESG Scores on the Returns of Stocks Listed on The Stock Exchange of Thailand

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ABSTRACT

Currently, global society is facing social issues and climate change, which are considered significant threats to humanity, society, and the economy. As a result, global investors are increasingly prioritizing investments in stocks or companies that emphasize ESG disclosures. This is because ESG disclosures reflect a business's sustainable operations and transparency, impacting its corporate image and attractiveness to investors. Hence, the objective of this study is to examine the impact of ESG score on stock returns on the SET. This analysis utilizes the ESG score obtained from Refinitiv EIKON for the period between 2015 and 2023. This study utilizes unbalanced panel data and applies the Fixed Effect Regression Model (FEM) to assess the impact of ESG score on the stock returns. This analysis indicates a negative relationship between the ESG score and the stock returns. The inverse correlation between ESG score and the stock returns can be ascribed to increased expenses and improved long-term viability. Nevertheless, there is a lack of empirical data supporting the correlation between E, S, and G score, and the stock return. The COVID-19 pandemic adversely affected stock returns, which may be attributed to several variables, including increased uncertainty and risk.

Keywords: Sustainable Investment, ESG score, Stock return, SET ESG Ratings.

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1. INTRODUCTION

Currently, global society is grappling with social problems and climate change, considered significant threats to humanity, society, and the economy (WHO, 2023). Additionally, social challenges such as increasing poverty, diseases, and inequality are compounding the effects on businesses (Hornberger, 2023). Consequently, global investors are prioritizing investments that benefit the environment and society. This trend favors companies that are environmentally friendly, socially responsible, and adhere to good governance practices. To measure companies' adherence to Environmental (E), Social (S), and Governance (G) principles, various sustainability indexes have been created, including the FTSE4Good Index, Dow Jones Sustainability Indices (DJSI), and MSCI ESG Index. In Thailand, the Stock Exchange of Thailand (SET) has established the SET ESG Rating to evaluate companies based on ESG practices. Companies must score at least 50% in each aspect to be considered sustainable. In 2023, 193 companies underwent SET ESG Ratings evaluation, a 16.27% increase from the previous year, indicating growing awareness of sustainable

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business practices among businesses and investors. An experiment with a portfolio of Thai companies following the DJSI index from 2015 to 2020 showed a cumulative return of 51%, higher than the SET100TRI index, with an average return of 13%. This implies that firms that implement ESG practices provide better returns and long-term investment stability, particularly during market volatility or crises (TRIS, 2021).

Research findings have yielded inconclusive outcomes on the relationship between ESG score and the stock performance. La Torre et al. (2020) found a positive relationship between ESG score and the stock return, especially in the energy and utilities sectors. Rahayu and Sanjaya (2024) found a positive impact of ESG implement on firms' profitability. Namchantra (2021) and Kamnerdtanmanee (2021) also observed a positive impact of ESG responsibilities on the stock returns. However, Teraparp (2022) found a negative correlation, suggesting that large companies with high market capitalizations and low book values per share may have low returns. Narula et al. (2024) and Sillapawongsa (2022)found no correlation between ESG score and company performance, potentially due to the market's slow recognition of ESG importance.

According to the above mentioned, the conclusion of the relationship between ESG score and stock return remains ambiguous. This study, thus, aim to investigate the relationship between the ESG score and stock return. Typically, a positive correlation between an ESG score and stock returns indicates that companies with elevated ESG scores are likely to achieve superior market performance. The impact of a favorable ESG score on stock returns can be analyzed through multiple possibilities, including long-term sustainability and growth, reduced capital costs, and heightened investor confidence. The objective of this study is to ascertain the impact of the ESG score on stock returns in the SET, considering the importance of ESG principles. The ESG score will be assessed on a scale of 0 to 100, with increasing levels of detail.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 Sustainable Investment

Sustainable investing, which prioritizes factors impacting society, the environment, and long-term risk management, is gaining global recognition. This approach goes beyond seeking maximum returns by considering social and environmental responsibilities, aiming to generate long-term value. It fosters confidence and creates value for both organizations and society by integrating ESG principles into their investment choices, linking to improved financial performance, risk management, competitiveness, and stakeholder acceptance. These principles are applicable across various investments, including stocks, securities, debt instruments, and investment funds (Teraparp, 2022). Sustainable investing is especially growing in Europe and America and is becoming increasingly attractive to institutional investors in Thailand. The ESG score of listed firms aids investors in making the efficient of their investment choices (Neamsampao, 2021).

2.1.2 Signaling Theory

The Signaling theory clarifies how companies convey information to the market or investors to demonstrate their quality or financial condition without relying solely on direct financial data. This theory is crucial for financial and market strategies, especially when financial data is uncertain. By sending signals, companies help investors understand their value and efficiency. According to Spence (1978), managers typically have more

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information than investors and use various channels to signal business directions and trends. Companies often disclose important information about their operations, including environmental, social responsibility, and governance practices, reflecting their policies and signaling to stakeholders. This helps stakeholders analyze and decide on investments, evaluate value, and predict future returns (Saithong-in & Promtong, 2023). Therefore, receiving ESG ratings related to social responsibility, environmental compliance, and good governance practices is a clear signal that companies operate responsibly. This enhances investor confidence in the long-term competitiveness and growth potential of such companies. it suggests firms with information regarding the social and environmental impacts on their operations, a crucial factor for socially responsible investors in making future investment decisions.

2.2 Literature Review

Current research on stock returns has mostly concentrated on examining the influence of ESG scores on stock returns, with diverse outcomes. La Torre et al. (2020) found a positive relationship between the ESG score and the stock returns for a few firms in the Eurostoxx50, particularly in specialized sectors like energy and utilities, with social and governance factors showing significant correlations. In their study, Carnini Pulino et al. (2022) found a direct relationship between the disclosure of ESG information and the performance of companies in Italy. Similarly, Bilyay-Erdogan et al. (2023) found that high ESG implement in European non-bank companies correlated with higher dividends, while Sandberg et al. (2023) the European food industry saw enhanced financial performance. Namchantra (2021) observed a positive correlation between governance scores and dividend yields in the SET100 and MAI. Conversely, Kamnerdtanmanee (2021) discovered a negative association between the ESG score and stock returns of firms listed on different stock exchanges. This implies that large-cap corporations with a high ESG score generally have poorer returns. Narula et al. (2024) reported mixed results in India, with negative correlations for environmental scores and positive ones for governance scores. Sillapawongsa (2022) found no impact of ESG score on firms' financial performance in the SET100 index. The discussion above highlights the gaps in previous research that this study aims to address. The primary objective is to assess how ESG score impact stock returns within sustainable stocks, focusing on overall ESG score. This research introduces a new method of measuring ESG score on a scale from 0 to 100, offering more detailed data to enhance research outcomes. Additionally, there is a lack of extensive research in Thailand regarding the relationship between ESG score and the stock returns, with previous findings yielding inconclusive results. Therefore, this study seeks to provide clearer insights into these relationships.

Based on the past study by La Torre et al. (2020), they has revealed that firms that have strong ESG score positively impact the stock returns of the company. All three aspects of ESG contribute to increasing returns. Firms with robust ESG implement are likely to have improved relationships with stakeholders and more effective management strategies. This leads to higher revenue and reduced income risk, thereby achieving higher returns. Furthermore, according to Signaling Theory, disclosing ESG information efficiently improves stock liquidity and increases stock prices. This is considered a positive signal and helps create a favorable image of the organization through channels that institutional investors are interested in, as well as avenues for risk reduction (Meng-tao et al., 2023). These findings lead to the following hypothesis formulation:

H_1: ESG score positively affect the stock return.

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H_2: E score positively affect the stock return.
H_3: S score positively affect the stock return.
H_4: G score positively affect the stock return.

3. DATA DESCRIPTION AND METHODOLOGY

3.1 Data description

This study analyzes 630 firm-years of observations of firms listed on the SET using SET ESG Ratings. We excluded medium and small businesses on the Market for Alternative Investment (mai) and financial industry companies because they have different financial structures and ratio calculation criteria. The dataset encompasses the temporal range spanning from 2015 to 2023, which was selected to coincide with Thailand's implementation of sustainable stock listing in 2015 and the most recent ESG ratings conducted by Refinitiv EIKON in 2023. The research focuses on firms that possess SET ESG Ratings, obtaining the ESG score from Refinitiv EIKON and financial information from SET Smart.

The ESG score, E score, S score, and G score are employed as the independent variables. The main dependent variable is stock returns. In accordance with previous studies, we use firm size, debt-to-assets ratio (DR), return on assets (ROA), price-to-book value ratio (PBV), price-to-earnings ratio (P/E Ratio), and beta as control variables (Bilyay-Erdogan et al., 2023; Namchantra, 2021; Narula et al., 2024; Siriassakul, 2023). This study specifically focuses on examining the influence of the COVID-19 epidemic on investing results. COVID is considered as a binary variable in the study, with a value of 1 assigned to the year 2020 when the pandemic took place, and a value of 0 assigned to all other years (Kamnerdtanmanee, 2021; Sandberg et al., 2023).

Table 1: Descriptive Statistics

Variable	Unit	N	Min	Max	Mean	Std. Deviation
Dependent Variable						
$RSET_{i,t}$	%	630	-89.55	808.41	-0.72	45.24
Independent Variables						
ESG $Scores_{i,t-1}$	Score	630	3.13	91.81	53.27	17.57
E $Scores_{i,t-1}$	Score	630	0.00	97.30	46.87	24.40
S $Scores_{i,t-1}$	Score	630	2.42	97.84	60.29	20.95
G $Scores_{i,t-1}$	Score	630	1.45	95.73	51.56	20.14
Control Variables						
$SIZE_{i,t}$	Log	630	21.06	27.90	24.58	1.53
$DR_{i,t-1}$	%	630	0.00	72.44	32.07	18.45
$ROA_{i,t-1}$	%	630	-18.41	64.17	9.77	7.40
$PBV_{i,t-1}$	Times	630	0.34	22.42	3.28	3.19
$PE_{i,t-1}$	Times	630	-2.94	4980.12	37.61	207.51

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Variable	Unit	N	Min	Max	Mean	Std. Deviation
$BETA_{i,t-1}$	-	630	-0.55	3.11	0.97	0.46
$COVID_{i,t}$	-	630	0.00	1.00	0.13	0.34

Descriptive statistics testing is employed to briefly overview the initial data of the variables utilized in the investigation. The objective is to analyze the factors associated with the ESG Score that impact stock returns. According to the data in Table 1, the average ESG Score is 53.27 points, while the average firm size is 24.58. The average debt-to-assets ratio is 32.07%, while the average return on assets is 9.77%. The average market-to-book ratio is 3.28, while the average price-to-earnings ratio is 37.61. The average stock beta is 0.97, however, the range of COVID-19 spread is either 0 or 1.

3.2 Methodology

This study employs unbalanced panel data, which consists of data from numerous time periods with varying numbers of firms. The data includes ESG score and other stock data reported on the SET. Consequently, regression analysis techniques will be employed to undertake statistical testing. Panel data analysis is used to estimate both the Random Effect Regression Model (REM) and Fixed Effect Regression Model (FEM) in order to evaluate the influence of ESG score on stock returns. The equation is formatted as follows:

$$RSET_{i,t} = \beta_0+\beta_1 ESG\ Score_{i,t-1}+\beta_2 size_{i,t}+\beta_3 DR_{i,t-1}+\beta_4 ROA_{i,t-1} +\beta_5 PBV_{i,t-1}+\beta_6 PE_{i,t-1}+\beta_7 beta_{i,t-1}+\beta_8 COVID_{i,t} + \varepsilon_{i,t-1} \quad (1)$$

$$RSET_{i,t} = \beta_0+\beta_1 E\ Score_{i,t-1}+\beta_2 S\ Score_{i,t-1}+\beta_3 G\ Score_{i,t-1}+\beta_4 size_{i,t-1}+\beta_5 DR_{i,t-1}+\beta_6 ROA_{i,t-1} +\beta_7 PBV_{i,t-1}+\beta_8 PE_{i,t-1}+\beta_9 beta_{i,t-1}+\beta_{10} COVID_{i,t-1} + \varepsilon_{i,t-1} \quad (2)$$

$$RSET_{i,t} = \beta_0+\beta_1 ESG\ Score_{i,t-1}+\beta_2 size_{i,t}+\beta_3 DR_{i,t-1}+\beta_4 ROA_{i,t-1}+\beta_5 PBV_{i,t-1}+\beta_6 PE_{i,t-1}+\beta_7 beta_{i,t-1} +\beta_8 COVID_{i,t} + \beta_9 ESG\ Score_{i,t-1} * size_{i,t} + \varepsilon_{i,t-1} \quad (3)$$

$$RSET_{i,t} = \beta_0+\beta_1 E\ Score_{i,t-1}+\beta_2 S\ Score_{i,t-1}+\beta_3 G\ Score_{i,t-1}+\beta_4 size_{i,t-1}+\beta_5 DR_{i,t-1}+\beta_6 ROA_{i,t-1} +\beta_7 PBV_{i,t-1}+\beta_8 PE_{i,t-1}+\beta_9 beta_{i,t-1}+\beta_{10} COVID_{i,t-1} + \beta_1 E\ Score_{i,t-1} * size_{i,t} +\beta_2 S\ Score_{i,t-1} * size_{i,t}+\beta_3 G\ Score_{i,t-1} * size_{i,t}+ \varepsilon_{i,t-1} \quad (4)$$

Where $RSET_{i,t}$ is the stock return of firm i in year t, E $Score_{i,t-1}$ is the environmental score of firm i in year t-1, S $Score_{i,t-1}$ is the social score of firm i in year t-1, G $Score_{i,t-1}$ is the governance score of firm i in year t-1, ESG $Score_{i,t-1}$ is the environmental, social, and governance score of firm i in year t-1, $size_{i,t}$ is the firm size in year t-1, $DR_{i,t-1}$is the debt-to-assets ratio of firm i in year t-1, $ROA_{i,t-1}$ is the return on assets of firm i in year t-1, $PBV_{i,t-1}$ is the price-to-book value ratio of firm i in year t-1, $PE_{i,t-1}$ is the price-to-earnings ratio of firm i in year t-1, $beta_{i,t-1}$ is the beta value of firm i in year t-1, $COVID_{i,t}$ is the occurrence of the COVID-19 pandemic, taking the value 1 during the year 2020 and 0 otherwise and β is the regression coefficient of each variable in sequence "n".

4. EMPIRICAL RESULTS

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4.1 The impact of ESG score on the stock return

The panel data analysis is utilized to examine the relationship between the ESG score and stock return. The Hausman Test, presented in Table 2, is a statistical test employed in econometrics to ascertain whether the FEM or REM estimator should be utilized in a regression model, depending on the correlation between individual effects and the independent variables.

Table 2: Hausman test to determine the ESG score testing model.

Hausman Test	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value
Cross-section random	124.785	8	0.000***

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

According to Table 2, P-Value is 0.000 that is below the threshold of 0.050. Thus, the researcher acknowledges the alternative hypothesis, affirming the presence of a correlation between the error term and the independent variables. Therefore, to examine the equation that relates the ESG score to stock returns in the SET stocks, we will employ the FEM, which is suitable for this analysis.

Table 3 indicates that the ESG score has a p-value of 0.001, which is below the threshold of 0.01. This suggests that compelling evidence supports the assumption that the ESG score influences the stock return. However, the coefficient of ESG score is -0.717, which is negative. The presence of a negative coefficient in the ESG score suggests that the ESG score has an adverse effect on the stock returns. The study identified many control variables that had a significant correlation with the stock returns. These variables include COVID, price-to-book value ratio, return on assets, and size. The coefficients for these variables are -22.072, -8.648, -1.511, and 45.231, respectively. Based on the findings, larger companies often exhibit better returns compared to smaller ones. Companies that exhibit a high price-to-book value ratio and a high return on assets typically experience poorer returns in comparison to their counterparts. Amidst the COVID pandemic, companies typically experience diminished return in comparison to other times. On the other hand, there is statistically insignificant evidence regarding the relationship between price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio and the stock return. This discovery suggests that the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio do not influence the stock returns. The model provides a 17.6% capacity for explaining the stock return.

Table 3: The impact of ESG score on the stock return using the fixed effects model

Variable	Coefficient	Std. Error	t-stat	P-value
Intercept	-1022.381	116.344	-8.788	0.000
$ESG\ Scores_{i,t-1}$***	-0.717	0.223	-3.214	0.001
$SIZE_{i,t}$***	45.231	4.752	9.519	0.000
$DR_{i,t-1}$	-0.086	0.261	-0.332	0.740
$ROA_{i,t-1}$***	-1.511	0.358	-4.220	0.000
$PBV_{i,t-1}$***	-8.648	1.160	-7.456	0.000
$PE_{i,t-1}$	-0.000	0.009	-0.067	0.947
$BETA_{i,t-1}$	-9.064	5.683	-1.595	0.111

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$COVID_{i,t}$***	-22.072	5.185	-4.257	0.000
R Square = 0.360, Adjusted R Square = 0.176, Std. Error = 45.239				

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

According to the Hausman Test, presented in Table 4, P-Value is 0.000 that is below the threshold of 0.050. Thus, the FEM will be employed the relationship between ESG score to stock returns in the SET.

Table 4: Hausman test to determine the ESG score with moderator testing model

Hausman Test	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value
Cross-section random	131.467	9	0.000***

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

Table 5 demonstrates that the ESG score has a p-value of 0.091, which is within the 0.10 criterion. This indicates that substantial data corroborates the hypothesis that the ESG score affects stock returns. The analysis discovered several control factors that had a substantial association with stock returns. These variables include COVID, price-to-book value ratio, return on assets, and size. The coefficients for these variables are -22.310, -8.560, -1.498, and 63.685, respectively. According to the findings, larger companies frequently provide superior returns compared to smaller ones. Companies that exhibit a high price-to-book value ratio and a high return on assets typically experience lower returns in comparison to their counterparts. During the COVID epidemic, companies often encounter reduced returns relative to previous periods. The size variable is also added as the moderator. The coefficient of the moderator is -0.292. On the other hand, there is statistically insignificant evidence regarding the relationship between price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio and the stock return. This discovery suggests that the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio do not influence the stock returns. The model provides a 17.9% capacity for explaining the stock return.

Table 5: The impact of ESG score with moderator on the stock return using the fixed effects model

Variable	Coefficient	Std. Error	t-stat	P-value
Intercept	-1483.377	270.877	-5.476	0.000
$ESG\ Scores_{i,t-1}$*	6.597	3.889	1.696	0.091
$SIZE_{i,t}$***	63.685	10.884	5.851	0.000
$DR_{i,t-1}$	-0.100	0.261	-0.385	0.700
$ROA_{i,t-1}$***	-1.498	0.357	-4.192	0.000
$PBV_{i,t-1}$***	-8.560	1.157	-7.393	0.000
$PE_{i,t-1}$	-0.000	0.009	-0.018	0.985
$BETA_{i,t-1}$	-6.493	5.830	-1.114	0.266
$ESG\ Score_{i,t-1} * size_{i,t}$*	-0.292	0.155	-1.883	0.060
$COVID_{i,t}$***	-22.310	5.173	-4.313	0.000

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R Square = 0.365, Adjusted R Square = 0.179, Std. Error = 40.969

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

4.2 The impact of E, S, and G score on stock return

Before employing panel data analysis to investigate the correlation between the E score, S score, and G score and stock return. The Hausman test is employed to ascertain whether the REM or FEM should be utilized in a regression model. P-value of 0.000have been presented in Table 6 shows a, which is below the significance level of 0.050, confirming the presence of a correlation among the independent variables and the error term. Hence, in order to analyze the equation that relates to the ESG score to stock returns in the SET stocks, the FEM, which is well-suited for this investigation, have been used.

Table 6: Hausman test to determine the E, S, and G score testing model.

Hausman Test	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value
Cross-section random	125.555	10	0.000

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

Based on the data shown in Table 7, the coefficients for the E, S, and G score are statistically insignificant and have negative values. Specifically, the coefficients are -0.362, -0.241, and -0.114, respectively. The P-values, namely 0.105, 0.303, and 0.556, exceed the threshold of 0.10. There is no observed evidence to substantiate the assertion that the E, S, and G scores have any influence on the stock returns. In addition to the results presented in Table 3, the study discovered many control variables that exhibited a statistically significant correlation with stock returns. The variables encompassed are COVID, price-to-book value ratio, return on assets, and size. The coefficients for these variables are -21.538, -8.833, -1.548, and 44.924, respectively. According to the data, larger organizations often provide superior returns in comparison to smaller ones. Companies with a high return on assets and a high price-to-book value ratio generally have lower returns compared to their peers. During the COVID epidemic, firms generally experience reduced in return compared to other periods, similar to the outcome described in Equation 1. However, there is insufficient statistical evidence to support a significant correlation between the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio and the stock return. This finding indicates that the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio have no impact on the stock returns. The model has a capacity for the explanation of 17.6% in predicting the stock return.

Table 7: The impact of E, S, and G score on the stock return using the fixed effects model

Variable	Coefficient	Std. Error	t-stat	P-Value
Intercept	-1014.173	117.647	-8.621	0.000
E $Scores_{i,t-1}$	-0.362	0.223	-1.623	0.105
S $Scores_{i,t-1}$	-0.241	0.276	-0.874	0.383
G $Scores_{i,t-1}$	-0.114	0.194	-0.590	0.556
$SIZE_{i,t}$***	44.924	4.783	9.392	0.000
$DR_{i,t-1}$	-0.084	0.262	-0.321	0.748

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Variable	Coefficient	Std. Error	t-stat	P-Value
$ROA_{i,t-1}$***	-1.548	0.360	-4.300	0.000
$PBV_{i,t-1}$***	-8.833	1.173	-7.532	0.000
$PE_{i,t-1}$	-0.001	0.009	-0.102	0.919
$BETA_{i,t-1}$*	-9.578	5.694	-1.682	0.093
$COVID_{i,t}$***	-21.538	5.205	-4.138	0.000
R Square = 0.363, Adjusted R Square = 0.177, Std. Error = 45.239				

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

The Hausman Test results, as shown in Table 8, indicate a P-Value of 0.000, which is below the 0.050 threshold. Consequently, the FEM will be utilized to examine the connection between E, S, and G score and stock returns in the SET.

Table 8: Hausman test to determine the E, S, and G score with moderator testing model.

Hausman Test	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value
Cross-section random	136.762	13	0.000***

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

Based on the data shown in Table 9, the coefficients for the E and S score are statistically insignificant. Specifically, the coefficients are -3.241 and 6.050, respectively. There is no observed evidence to substantiate the assertion that the E and S scores have any influence on the stock returns. G score, however, statistically significant. The coefficient of G score is 6.084 and the P-values is 0.033, below the threshold of 0.05. The study discovered many control variables that exhibited a statistically significant correlation with stock returns. The variables encompassed are COVID, price-to-book value ratio, return on assets, and size. The coefficients for these variables are -21.014, -8.603, -1.549, and 70.878, respectively. According to the data, larger organizations often provide superior returns in comparison to smaller ones. Companies with a high return on assets and a high price-to-book value ratio generally have lower returns compared to their peers. During the COVID epidemic, firms generally experience reduced in return compared to other periods, similar to the outcome described in Equation 1. However, there is insufficient statistical evidence to support a significant correlation between the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio and the stock return. This finding indicates that the price-to-earnings ratio, stock beta ratio, and debt-to-assets ratio have no impact on the stock returns. The size variable is also added as the moderator. The size interact with E and S scores are statistical insignificant. However, the size interact with G scores are statistically significant with the coefficient of -0.248. Adding moderator variables increase capacity of the model to 18.5% in predicting the stock return.

Table 9: The impact of E, S, and G score with moderator on the stock return using the fixed effects model

Variable	Coefficient	Std. Error	t-stat	P-Value
Intercept	-1662.315	286.931	-5.793	0.000

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Variable	Coefficient	Std. Error	t-stat	P-Value
$E\ Scores_{i,t-1}$	-3.241	3.977	-0.815	0.415
$S\ Scores_{i,t-1}$	6.050	5.113	1.183	0.237
$G\ Scores_{i,t-1}$**	6.084	2.851	2.134	0.033
$SIZE_{i,t}$***	70.878	11.540	6.142	0.000
$DR_{i,t-1}$	-0.062	0.263	-0.235	0.814
$ROA_{i,t-1}$***	-1.549	0.359	-4.314	0.000
$PBV_{i,t-1}$***	-8.603	1.173	-7.337	0.000
$PE_{i,t-1}$	-0.000	0.009	-0.070	0.944
$BETA_{i,t-1}$	-6.787	5.813	-1.167	0.244
$E\ Score_{i,t-1} * size_{i,t}$	0.115	0.115	0.727	0.467
$S\ Score_{i,t-1} * size_{i,t}$	-0.252	0.205	-1.231	0.219
$G\ Score_{i,t-1} * size_{i,t}$**	-0.248	0.114	-2.180	0.023
$COVID_{i,t}$***	-21.014	5.201	-4.040	0.000
R Square = 0.374, Adjusted R Square = 0.185, Std. Error = 40.846				

Note: *, ** and *** denote the statistical significance levels of 10%, 5% and 1%, respectively.

5. DISCUSSION AND CONCLUSION

The objective of this study is to examine the effect of the ESG performance on the return of stocks on the SET. The ESG score will be evaluated using Refinitiv EIKON from 2015 to 2023, covering a total of 630 company-years. The study uses regression analysis, primarily panel data analysis, to investigate the factors that affect stock returns. The data is classified as imbalanced panel data, making it appropriate for studying the relationship throughout the given time period.

This analysis reveals a detrimental correlation between the ESG score and the return of stocks listed on the SET, thus H_1 is rejected. This finding aligns with research by Sahut and Pasquini-Descomps (2015) and Gavrilakis and Floros (2023). The adverse correlation between ESG score and the return of stocks should be explained by increased in cost. Firms with high ESG score is firms that place a strong priority on ESG activities generally experience increased expenses. For instance, the implementation of ecologically sustainable technology or the enforcement of equitable labor standards might incur significant costs. These expenses might decrease profit margins and thus have a negative impact on stock prices, ultimately leading to diminished stock returns (Albuquerque et al., 2019; Bansal & DesJardine, 2014; Cheng et al., 2014; Sanjaya & Sianturi, 2024). Additionally, ESG initiatives often prioritize long-term sustainability, which may not correspond with the short-term profit maximization that many investors prioritize. Consequently, firms that allocate significant resources to ESG initiatives may experience worse performance in the near future as compared to those that prioritize generating immediate profits. In addition, firms that allocate cash to ESG projects may have a reduced amount of capital for other potentially lucrative initiatives, such as research and development or market expansion. This might impede growth and diminish profits.

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When we specifically focus on E score, S score, and G score separately, there is no evidence of the relationship between E, S, and G score and stock return. According to the finding, H_2, H_3, and H_4 are rejected. This finding suggests that only E, S, and G score separately does not provide enough impact on the stock return. In addition, environmental initiatives frequently prioritize long-term sustainability and the reduction of risks, which may not yield immediate financial gains. Investors that prioritize short-term gains may not observe an immediate or direct influence on stock performance, which may lead them to believe that environmental scores are not significant in the short run (Eccles et al., 2014; Friede et al., 2015). In addition to environmental activities, social initiatives frequently result in long-term advantages, such as improved corporate reputation, increased staff retention, and greater consumer loyalty. The positive effects of these advantages may not be immediately evident in financial indicators such as stock price, which may create the impression that social scores have less influence (Eccles et al., 2014). Additionally, factors related to society, such as the contentment of employees, involvement in the community, and the presence of diversity, are sometimes abstract and hard to accurately quantify. Investors may have difficulties in evaluating how these elements directly correlate with financial performance, so impeding their ability to discern their influence on stock returns. As well as environmental and social initiatives, the advantages of good governance may not be immediately apparent and might have a gradual rather than instant effect on stock returns. Effective governance frequently leads to advantages such as less risk, improved decision-making, and heightened corporate reputation (Bebchuk et al., 2009).

However, there is mild evidence of positive impact of ESG and E scores on stock return when size is incorporated as the moderator variable. This finding aligns with research by Sandberg et al. (2023); Bilyay-Erdogan et al. (2023); Carnini Pulino et al. (2022); Namchantra (2021); and La Torre et al. (2020). The positive impact of ESG and E scores on stock return could be explained by multiple possibilities, including long-term sustainability and growth, reduced capital costs, and heightened investor confidence.Firms that achieve higher ESG scores typically prioritize long-term objectives, including sustainable development and innovation. They are strategically placed to leverage emerging trends, resulting in more sustainable stock returns over time. Furthermore, organizations that prioritize robust ESG practices tend to excel in navigating long-term risks, including shifts in regulations. This minimizes their exposure to possible legal, reputational, and operational risks, thereby stabilizing earnings and enhancing returns. Additionally, companies that achieve high ESG scores frequently benefit from reduced borrowing costs due to their perception as lower-risk investments. Access to more affordable financing options or advantageous terms from lenders may be available to them. A reduced cost of capital may result in increased profitability, which can enhance stock returns. In addition, there is a growing emphasis among investors on sustainability and ethical governance. Organizations that perform strongly on ESG criteria often enjoy enhanced reputations, leading to greater brand loyalty and increased consumer trust. This has the potential to enhance sales and market presence, which can ultimately result in better financial outcomes and stock performance.

The COVID-19 epidemic adversely affected the results of investments, which may be attributable to many factors. Initially, heightened uncertainty and risk arising from the epidemic prompted investors to divest from equities and reallocate money to more secure assets such as bonds or gold. Consequently, this led to a decline in stock prices and diminished profits on securities. Furthermore, the pandemic resulted in the implementation of city-wide lockdowns and the suspension of economic activities, causing a decline in corporate earnings and a decrease in investor confidence in stock investments.

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Consequently, this led to a reduction in stock prices and a decrease in returns on securities. Moreover, changes in consumer behavior have had a significant influence on certain sectors like tourism and aviation, resulting in decreased revenue and diminished stock prices and returns on securities in these industries. Finally, governments and central banks worldwide implemented diverse measures to alleviate the effects of the pandemic, such as reducing interest rates and providing economic stimulus. These actions have the potential to enhance long-term confidence, but initially, they raised uncertainty and risk. As a result, investors refrained from investing in stocks, resulting in a decline in stock prices and the stock returns (Baker et al., 2020; Goodell, 2020; Wagner & Ramelli, 2020). This is consistent with the findings of Sandberg et al. (2023) and Kamnerdtanmanee (2021).

The research on the effects of ESG implement and the return of stocks is constrained by many limitations, which provide significant obstacles. At the beginning of the study, the data obtained from Refinitiv EIKON for ESG score was restricted and only rarely accessible. The variance in data completeness arose due to the absence of data during specific periods or the lack of thorough disclosure of ESG scores by particular firms. The presence of uncertainties makes it difficult to accurately analyze the actual connection between ESG score and the return of stocks, which might result in study conclusions that are biased. Thus, extending the period of study should be advantageous.

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