

Do ESG Metrics Influence Stock Returns in Southeast Asia? Panel, Quantile, and HAC- Robust Evidence

Mark P. Doblas^{1,*}, Maria Cecilia P. Lagaras², Faith P. Regadio², Genevieve G. Panerio²,
Gbenga Ekundayo¹, Randolph Von Salindo¹

¹*Administrative and Financial Sciences Department, Oman College of Management and Technology, Al
Batinah South, Oman*

²*Mindanao State University-Iligan Institute of Technology, Philippines*

**Corresponding author: Mark P. Doblas. Contact details: P.O. Box 680, Postal Code 320, Barka,
Sultanate of Oman*

ABSTRACT. This paper aims to determine whether the process of stock return follows the performance of Environmental, Social, and Governance (ESG) practices of publicly listed companies in Southeast Asia. By using panel data on corporate ESG practices, the paper employed fixed-effects regression and quantile regression. In addition, standard errors were corrected using Newey–West heteroskedasticity and autocorrelation consistent (HAC) to derive robust estimates on the mean and distribution of stock returns. The results of the fixed-effects and quantile regression revealed that there was no significant relationship between the overall ESG score and stock return. In addition, the results of the adjusted model showed the absence of significance after correcting for serial correlation and heteroskedasticity, which means that the short-run return pricing does not consider the overall ESG score. Overall, the results of the paper revealed that the ESG practices are not embedded in the short-run stock market return of Southeast Asia. In terms of methodological significance, the paper showed the importance of using panel, quantile, and HAC-based analysis in the examination of finance-based ESG practices.

1. Introduction

The use of Environmental, Social, and Governance (ESG) factors within financial decision-making has increasingly become the hallmark of modern capital markets. Moving beyond the realm of ethical investing and corporate social responsibilities, the significance of ESG factors is increasingly understood within a broader framework of strategy that affects financial valuation, risk management, and competitiveness [38], [3], [39]. This paradigm shift also mirrors a broader shift on how the results of business operations are assessed, where business goals and ambitions of organizations increasingly mirror the Sustainable Development Goals (SDGs). The salience of this shift, of particular importance, is evident in the context of Southeast Asia, where the

Received Mar. 17, 2026

Key words and phrases. ESG dimensions; quantile regression; Southeast Asia; stock returns; pricing anomalies; corporate sustainability.

<https://doi.org/10.28924/2291-8639-24-2026-365>

© 2026 the author(s)

ISSN: 2291-8639

environment remains vulnerable, the institutional context varies, and equity markets are growing rapidly, matched by increasing demands for sustainable business practices, especially from within and outside the regional bloc [2], [1], [26]. It is these broadly defined features that make Southeast Asia a very appropriate environment for conducting analysis on the financial relevance of ESG.

Despite the growing interest among academia and policymakers on the role of environmental, social, and governance (ESG) considerations, there is a prevailing level of ambiguity on the financial materiality of empirical findings. On the other hand, the literature suggests that the engagement of ESG improves the value of the firm because it provides transparency, reduces agency costs, and helps build better stakeholder relationships [32], [21], [9]. Additionally, other literature suggests that the success of ESG reporting mechanisms and processes is highly dependent on the level of credible enforcement, the quality of their institutional foundations, and the capability of investors to make sense of the non-financial disclosures [13], [28].

Additionally, most of the existing literature on the relationship between finance and the ESG literature is dominated by mean-based econometric models, including the use of the Ordinary Least Squares (OLS) model. Even though the results generated by these types of models are informative, they also imply homogeneity of effects of the ESG variables, which could not be the case, especially when the returns are volatile, non-normal, or asymmetric, which is typical of emerging markets [5], [23].

In light of these considerations, the following question is posed: Do ESG performance differences have a differentiated, distributional impact on stock returns for publicly listed firms within the Southeast Asian region, and do these impacts differ along various segments of the return distribution? To shed light on this issue, the analysis employs quantile regression analysis on the joint effects of Environmental, Social, and Governance (ESG) score distributions on stock returns, in conjunction with the common linear regression approach. While focusing on average treatment effects, the use of quantile regression permits the identification of possible differences along the return distribution, given the potentially nonlinear relationship between stock returns and various points of the return distribution. This is of particular relevance for the situation faced by stock markets within the Southeast Asian markets, where skewness and heavy-tailed returns are not uncommon for stock returns, often driven by shock asymmetries or risk exposure profiles [7], [1]. To strengthen reliability, winsorization of the return data is used.

In terms of additional contributions beyond the methodological innovation, it is important to highlight the following. Firstly, on the conceptual front, this research aims to refute the prevailing notion that financial returns following ESG engagement are homogeneous. By examining the relevance of return distribution heterogeneity, it provides new insights into the

relationship between return distributions, their underlying positional characteristics, and the specific dimensions of ESG that potentially affect them. Secondly, it provides new supplementation regarding stakeholder theory, institutional economics, and their stakeholder constituents, given that it reinforces the need for customized approaches when it comes to the role of specific dimensions of ESG on the positional characterization of firms' performances. Specifically, emerging markets can benefit immensely from this supplemental study, given the nascent state of their institutional frameworks and the need for sustainable reports that portray the truth regarding their respective positional characterization. Finally, it should be recognized that the study is of particular interest for individuals who are involved in the capital markets of Southeast Asia. For them, the positional characterization of return distributions, given their respective engagement with the specific dimensions of ESG, can provide substantial assistance for portfolio construction.

2. Literature Review and Hypothesis Development

Environmental, Social, and Governance (ESG) metrics have emerged as critical elements in corporate strategy and performance assessment. Pillars ESG dimensions—or pillars—have become strategic indicators of non-financial performance and long-term sustainability for companies [3]. The importance of ESG in financial markets has significantly grown in recent times, especially within emerging countries wherein sustainable development and responsible investment are central to market performance and investor choice [2].

2.1. Environmental Pillar and Financial Performance

The environmental pillar of ESG pertains to an organization's focus on the environment, such as efforts toward environmental sustainability, resource utilization, and carbon emissions. The literature has found that tight environmental strategies can help reduce firms' regulatory risk and improve the operation efficiency, which would lead to a positive effect on firm value and investor trust [21], [9]. In the Asian context, benefits, including competitive advantages and better stakeholder relationships, are reaped by the firms demonstrating good environmental governance [15], [26]. But the evidence regarding the direct effect of the environmental score on stock returns is mixed. Some contribute the relationship as positive [32], [21]; others report them as either not significantly correlated or lacking strong correlation [30]. This dispersion can be explained by the sectoral composition of the firms and regional regulations. Literature on environmental governance also emphasizes that environmental outcomes are shaped by governance quality, institutional arrangements, and the broader political-regulatory setting [4], [6], [25], [29].

2.2. Social Pillar and Financial Performance

The social pillar of ESG includes the social aspect of human rights at a company, as well as a company's relationship with its labor force, community engagement, and consumer

satisfaction. In Asian markets where social topics such as labor welfare and community inclusion are gaining prominence, the social dimension becomes more strategic [28], [33]. Empirical evidence indicates that companies with higher social responsibility ratings are also more likely to have higher employee productivity and brand loyalty, thereby leading to improved financial performance [16], [3]. According to some authors today, investors are already recognizing such a connection with social ESG factors rewarding socially responsible firms; in what follows, investors reward acting to corporate social, environmental, and governance responsiveness [18], [34].

2.3. Governance Pillar and Financial Performance

The last pillar assesses a firm's board structure, transparency, shareholder rights, and ethical behavior. Strong governance structures underpin investor confidence and risk management. The importance of good corporate governance on information asymmetry, capital allocation efficiency, and firm-specific risk has been confirmed in a variety of studies, which have positive influences on stock price [39], [13]. In Asian emerging markets, however, the quality of governance varies widely on account of institutional and regulatory variation, which may moderate the magnitude and sign of its effect on firm financial performance [1], [24], especially in Asian developing countries. Although governance scores are found to be significant predictors of return volatility and investor sentiment in previous studies [23], others stress that there needs to be consistent empirical evidence with each regional particularity, such as in Southeast Asia [5].

2.4. ESG Ratings and Stock Returns

The linkage of ESG performance and stock returns remains under scope among global and country studies. The existing literature has contradictory results, especially in emerging markets where the market is inefficient and ESG disclosure is still developing. Although some evidence indicates that ESG ratings are able to predict abnormal stock returns [7], [35], some other evidence suggests such an impact is weak or shaped in a non-linear fashion, suggesting that the ESG effect may depend on the structure of the market, the industry, and specific characteristics of the firm [8], [36]. Such conflicting evidence requires a more specific approach, like quantile regression, to examine how ESG pillars may affect returns at various bins within the return distribution, particularly in volatile and heterogeneous areas. Related studies across developed and emerging markets likewise report that ESG-financial performance and return relationships vary across markets and investment settings [11], [19], [20], [37], [40].

2.5. Hypothesis Development

Based on the literature review, the current research hypothesizes that the ESG factors could influence the heterogeneous impact on stock returns for the publicly listed companies in Southeast Asia. The researchers, thus, hypothesize the following:

H1: Environmental performance has a significant relationship with stock returns.

H2: Social performance has a significant relationship with stock returns.

H3: Governance performance has a significant relationship with stock returns.

Using both traditional OLS and quantile regression methods to capture the ESG–return relationship over different return levels, we address the shortcomings of the mean-based estimators and incorporate the tail-behavior dynamics found in emerging markets.

3. Method

3.1. Research Design

The current study employs a quantitative panel research design to analyze the relationship between corporate Environmental, Social, and Governance (ESG) performance and stock returns for publicly listed corporations in Southeast Asia. Based on the panel data design, it is possible to analyze the intra-group temporal variation in corporate ESG performance and its effect on stock returns while adjusting for unobserved intergroup variations. Apart from the average effects, the current study will also shed light on the relationship between stock returns and corporate ESG performance through the quantile regression approach due to the added advantage of its focus on the entire distribution of the phenomenon in question instead of average values [10].

3.2. Data and Sample

The stock return data measured at the company level and collected per month was obtained from a financial market database, where the closing stock price and trading activity data of corporations listed in Southeast Asia are made available in an adjusted closing stock price and corporate trading activity manner. The ESG performance measures and ratings were pooled from the Refinitiv ESG Database, where corporate sustainability reporting, regulatory documents, and independent and verified public sources of information regarding a company's ESG performance are collected into a combined report. The population consisted of those corporations that are consistently listed in the Southeast Asian stock exchanges for February to December of 2023.

The sample collection process involved three steps. The first involved the elimination of corporations that lacked stock return observations per month. Secondly, corporations that lacked full observations in the environmental, social, and governance pillars of the ESG ratings system were eliminated from the sample collection process. The last step involved eliminating observations due to the presence of thinly traded stock and observations due to data issues and outliers. The final sample available for econometric testing contained corporate observations collected per month, amounting to a total of 3,778 observations, and came from a total of 327 corporations across a total duration of 11 months.

3.3. Variables and Measures

The dependent variable is represented by the stock return of the company for a given month (Ret), measured through the percentage change in the closing stock price in adjusted terms and denominated in US dollars to remove the effect of any corporate actions such as stock splits and dividend payments. On the other hand, ESG scores were captured using the Refinitiv pillar ratings for each of the designated areas as shown in table 1.

Table 1. Variable Description and Measurement

Variable Name	Description	Measurement Details
Return	Firm's monthly stock return	Percentage change in stock price, denominated in USD
Environment	Environmental Score	Includes emissions control, resource efficiency, and climate policy alignment
Social	Social responsibility Score	Reflects labor practices, community engagement, and diversity initiatives
Governance	Corporate governance Score	Measures strength of governance structures, transparency, and shareholder rights

Each pillar score is formed through the Refinitiv assessment of a list comprising more than 180 standardized indicators of corporate performance in the area of ESG, taken from company disclosures and verified through rigorous processes. The indicators for the entire ESG category are normalized and scaled to a standardized value ranging from 0 to 100, taking into account sector-specific weights to provide focus to the company's relative performance in the sector regarding sustainability matters. Moreover, a combined ESG score (ESG) is also used in some of the analyses. The combined index is a weighted combination of the environmental, social, and governance pillars, whose weights are industry-specific and capture the respective materialities. Despite the fact that the disclosures associated with ESG are annual, Refinitiv updates their assessment of the respective company's ESG score in a continually iterative process based upon the availability of new information. Moreover, the observations associated with the ESG metrics are measured per month and are based upon the latest available verified assessment of the company's ESG score at a given point in time.

To dampen the effect of outliers, the return and ESG variables in the dataset were winsorized at the 1st and 99th percentile values. Winsorization is a common practice in the realm of financial econometric studies while dealing with the return variables. The results obtained after winsorization are then standardized to facilitate easier understanding and comparison by applying z-scoring to the ESG variables. A similar method was used by Krüger [17] for corporate goodness and shareholder wealth and Lins and colleagues [22] for their study about social capital, trust, and firm performance.

3.4. Data Analysis

To account for unobserved variations in firms-specific attributes and changes in the state of the market, the following firm and time fixed-effects panel model was estimated:

3.4.1. Panel Fixed-Effects Model

A baseline fixed effects model was separately specified to examine the average effect of ESG aggregate and ESG dimension on monthly returns:

$$Ret_{it} = \beta_1 ESG_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad \text{eq.1}$$

$$Ret_{it} = \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad \text{eq.2}$$

Where α_i represents the firm specific effects and λ_t represents time fixed effects. These capture all time-invariant properties of firms, such as size and industry, and all communal macroeconomic shocks that affect the marketplace. The standard errors were clustered at the firm level to correct for the presence of serial correlation and heteroskedasticity within firms. The sector and industries are constant across the company identification and thus absorbed in the fixed company effects in the regression models.

3.4.2. Quantile Regression

The presence of ESG interactions is examined across the stock return distribution by estimating quantile regression at the 25th, 50th, and 75th quantiles of the conditional stock return distribution. At the pillar level, Environmental, Social, and Governance quantile regressions are not attempted in order to avoid mechanical collinearity with the combined ESG index and to maintain model parsimony in the specification of the distributions.

$$Q_T(Ret_{it} | X_{it}) = \beta_0(\tau) + \beta_1(\tau) ESG_{it} + \sum_{s=1}^{S-1} \delta_s(\tau) SECTOR_{is} + \sum_{j=1}^{J-1} \phi_j(\tau) INDUSTRY_{ij} + \varepsilon_{it}(\tau) \quad \text{eq.3}$$

The sector and industry fixed effects in the quantile regression equations are accounted for through the inclusion of structural control variables in the form of categorical dummy variables. Where represents the conditional quantile function of stock returns at a specific quantile. The sector and industry dummies are added to the model as control variables because there might be structural variations across economic sectors and industries in terms of return functions. The quantile regression model relaxes any distributional assumptions regarding the error term [14] and allows the effect of the ESG variables to be asymmetric across the return distribution for firms with low, medium, and high stock returns, respectively.

3.4.3. Robustness Check: Newey–West HAC Regression

To provide a final robustness test, the relation between Environmental, Social, and Governance (ESG) variables and stock returns was re-estimated Newey-West [27] Heteroskedastic and Autocorrelation Consistent (HAC) standard errors to account for possible

presence of serial correlation and heteroskedasticities in the stock return data. The six-month lag was taken into consideration in the HAC covariance matrix.

$$Ret_{it} = \beta_0 + \beta_1(\tau) ESG_{it} + \sum_{s=1}^{S-1} \delta_s SECTOR_{is} + \sum_{j=1}^{J-1} \phi_j INDUSTRY_{ij} + \varepsilon_{it} \quad \text{eq. 4}$$

$$Ret_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \sum_{s=1}^{S-1} \delta_s SECTOR_{is} + \sum_{j=1}^{J-1} \phi_j INDUSTRY_{ij} + \varepsilon_{it} \quad \text{eq. 5}$$

In this model, ε_{it} allows the exhibition of both heteroskedasticity and serial correlation factoring the dummy control variables used in the quantile model. The HAC-corrected pool regressions serve as robustness test benchmarks for the results obtained in the fixed effects and quantile regression analyses, ensuring that the obtained values for the ESG variables are free from the influences of autocorrelation and heteroskedasticity issues in the residuals and unobserved sector and industry effects.

3.5. Software and Implementation

Python 3.10 on Google Colab was used for all analyses. The essential statistical modeling was conducted in the statsmodels library and pandas for data management and preprocessing. Visualization and diagnostics were performed with the packages matplotlib and seaborn. The analytic workflow was organized in a way that allowed for complete reproducibility and transparency in the regression analysis.

4. Results

After data cleansing and data analysis, the study was poised to answer the main objectives set forth in the beginning of the paper. To do so, descriptive statistics will be presented, followed by the diagnosis of data and eventual transformation to ensure robustness of the modelling process. Fixed-Effects Panel Regression Models was then performed as a baseline of analysis, which justified the need for quantile regression. Finally, Newey–West re-estimates will be presented in order to obtain robust inference on the coefficient estimates and address the issue of serial correlation in panel-level disturbances.

4.1. Descriptive Statistics

Table 2. Descriptive Statistics of Variables Before and After Winsorization (n = 3,778)

Statistics	ESG	Env.	Soc.	Gov.	Win_Env.	Win_Soc	Win_Gov	Ret. (USD)
N	3778	3778	3778	3778	3778	3778	3778	3778
mean	54.836	54.346	55.735	53.664	54.333	55.717	53.695	9.281
std	8.502	10.459	10.605	10.686	10.347	10.465	10.543	133.702
min	33.430	5.650	25.300	25.100	35.450	34.642	33.343	0.002
25%	48.720	46.600	47.430	45.997	46.600	47.430	45.997	0.277
50%	54.615	53.445	55.770	53.260	53.445	55.770	53.260	0.736
75%	60.900	61.520	62.760	60.670	61.520	62.760	60.670	1.712
max	79.920	85.990	86.410	81.340	79.016	79.363	78.080	2953.732

Descriptive statistics for the ESG scores and stock returns (USD) are summarized in Table 2 taking the 3,778 firm-level observations of public firms over the Southeast Asian region. Original (non-winsorized) data indicate that the mean environmental score was 54.35 (SD = 10.46), the mean social score was 55.74 (SD = 10.61), and the mean governance score was 53.66 (SD = 10.69). The aforementioned sub-dimensions form the ESG composite index, which had a mean score of 54.84 (SD = 8.50), indicating a moderate polarized distribution of sustainability performance across the studied firms in the region.

Nonetheless, the data also showed significant dispersion, especially at the lower extreme for the environmental pillar (minimum = 5.65) and the upper tails for all pillars, suggesting the existence of outlier firms that were underperforming or overperforming in ESG implementation. Scores were mostly between the 25th and 5th percentiles, which ranged from 46.60 to 61.52 for environment, 47.43 to 62.76 for social, and 46.00 to 60.67 for governance.

The measure of financial returns in USD was far more asymmetric. The average return was 9.28 but with a very wide standard deviation of 133.70, between 0.002 and a very high maximum value of 2,953.73. This skewness to right shows a small number of firms here and there make extremely large returns—presumably vitiating the mean and not lending themselves to regression analysis in non-normal fashion.

To correct for these distributional concerns, the researchers winsorized the ESG subcomponents and return variable at the 1st and 99th percentiles. The post-winsorization statistics show slightly compressed ranges (e.g., environment score ranging between 35.45 and 79.02) with little change in means and spreads, suggesting that the treatment effectively neutralized the effect of the extreme values while still allowing the rest of the data to dictate the shape. This conversion increases the robustness of the econometric models that follow [22], allowing for a more confident inference in the condition that ESG performance drives stock returns in the Southeast Asian setting.

These findings highlight the diverse application of ESG practices and financial performance across emerging capital markets and thus support a more nuanced modelling approach that can allow for potential non-linearity and distributional effects, such as quantile regression.

4.2. Diagnostic Tests and Data Preparation

Considering the findings in the pre-winsorized data, the researcher employed winsorization methods to ensure that the regression model used thereafter will diminish effects of extreme values and outliers without losing the richness of the panel data. Table 3 provides the summary of the process and the justification for performing such.

Table 3. Outlier Detection and Winsorization Summary for ESG Variables and Returns

Variable	Observed Min	Observed Max	1st Per	99th Per	Winsorization Applied?	Justification
Environment	5.65	85.99	~31.98	~78.72	Yes	Extreme min/max values slightly deviate from normal range; winsorized to reduce influence.
Social	25.30	86.41	~33.10	~78.26	Yes	High upper tail; slight positive skew observed; winsorized to reduce kurtosis.
Governance	25.10	81.34	~32.60	~77.96	Yes	Long right tail; winsorization improves normality without major data loss.
Return	0.002	2953.73	~0.007	~104.22	Yes	Extremely right-skewed (skewness > 19, kurtosis > 386); heavy tail necessitated winsorization at 1st/99th percentiles.

The outlier detection and winsorization applied over the ESG sub-dimensions and return variables are summarized in Table 3. All the variables were univariately winsorized at 1st- and 99th-percentile levels. This transformation was performed to reduce the possibility of excessive influence of outlying observations, which were particularly prominent in the measure of return and demonstrated highly non-normal distributions (original skewness = 19.47, kurtosis = 386.17). To illustrate, raw returns range from 0.002 to 2953.73, indicating there are heavy-tailed outliers. After winsorization, the high threshold was locked to about 104.22, resulting in significant symmetry and peakedness enhancement of the distribution.

The ESG factors likewise developed less pronounced but still significant divergences. For example, the environmental variable varied between 7.65 and 24.99, with a minor right tail. Winsorization resolved these issues with little loss of data, maintaining central tendency while improving statistical validity for regression analysis. This step is intended to ensure that our subsequent parametric tests are not dominated by a small number of extreme cases (a concern when considering this sample to be firm-level financial and ESG data from emerging capital markets).

Table 4. Normality Diagnostics After Winzortation

Variable	Skewness	Kurtosis	Shapiro-Wilk	P-value
Return	0.238	0.991	0.112	0.991
Environment	0.307	0.987	0.088	0.987
Social	0.159	0.993	0.204	0.993
Governance	0.254	0.989	0.135	0.989
Overall (Shapiro-Wilk)	Overall (Shapiro-Wilk)	Overall (Shapiro-Wilk)	0.029	0.990

The p-values from the skewness, kurtosis, and Shapiro-Wilks tests after winsorization are presented in Table 4. All variables now have acceptable values of both skewness (0.05 was not rejected, thus failing to reject the null hypothesis of normality). Indeed, the Shapiro-Wilk $W = 0.990$ would indicate that the joint distribution of the factors is near enough to normal for most routine parametric analysis, notably least square estimation. Winsorization worked well in reducing the effect of outliers and improving the properties of the distributions, but later results of the diagnostic tests yielded non-normal and serially correlated observations in the data. Based on the results, the choice of estimation methods in the next steps should be robust to the distributions and the presence of heteroskedasticity.

Table 5. Stationarity/unit root test results and Multicollinearity (VIFs)

Variable	ADF t-Statistic	P-value	Stationary?	VIF
Return	-10.3489	$p < .001$	TRUE	
Environment	-9.31402	$p < .001$	TRUE	1.409649
Social	-8.98315	$p < .001$	TRUE	1.384471
Governance	-8.59344	$p < .001$	TRUE	1.572173

Augmented Dickey-Fuller (ADF) tests were performed to test the time-series nature of the data and to control for spurious regression results. As reported in Table 5, all four main variables (returns, environmental, social, and governance) are stationary at level ($p < .001$), indicating that their statistical properties do not change through time. This is vital for the validity of regression coefficients obtained with time-varying data [31].

Multicollinearity diagnostics were also checked via the VIF. The VIF values were all well below the threshold of 5, ranging from 1.57 for governance. This suggests that multicollinearity is not a problem and that each ESG cluster contains unique information in estimating returns.

Table 6. Fixed-Effects Panel Regression of Stock Returns on ESG and ESG Pillars (Firm & Time Effects)

Predictor	Model 1: ESG (β)	p-value	Model 2: ESG Pillars (β)	p-value
ESG	-0.00010	.868	—	—
Environment (ENV)	—	—	0.0013	.014
Social (SOC)	—	—	-0.0010	.168
Governance (GOV)	—	—	-0.0002	.730
Firm Fixed Effects	Yes		Yes	
Time Fixed Effects	Yes		Yes	
No. of Firms	327		327	
Time Periods (months)	11		11	
Observations	3,778		3,776	
Within R ²	0.00003		0.0008	
Overall R ²	0.0043		-0.0301	
Robust F-statistic	0.0278	.868	2.121	.095

The results of the panel regression model with firm and time fixed effects are shown in Table 6. In Model 1, the effect of the composite score of ESG performance on stock returns is examined, while in Model 2, the effect of the Environmental, Social, and Governance scores of ESG performance is analyzed. The results show that the composite score of ESG performance is statistically insignificant ($\beta = -0.00010$, $p = 0.868$), implying that the effect of overall ESG performance on stock returns at a within-firm level is not systematically significant.

On the other hand, the pillar-based test detects a statistically significant positive coefficient for the Environmental category ($\beta = 0.0013$, $p = 0.014$). This results in the conclusion that improvements in within-firm performance in the Environmental category are positively related to stock returns, while controlling for fixed time-invariant firm attributes and macro-time variation. Relative to the Environmental category, the Social category ($\beta = -0.0010$, $p = 0.168$) and the Governance category ($\beta = -0.0002$, $p = 0.730$) fail to achieve statistical significance and thus do not demonstrate a statistically discernible within-firm relationship with short-horizon stock returns in our sample period.

The low R^2 values reported in the high-frequency return regressions are expected and suggest that the reported results relate to the marginal in-sample effects of within-firm ESG variables, but not to in-sample return variations in a broad sense. The significance of the poolability chi-squared statistics supports the robustness of the choice of the fixed effects approach. Overall, the findings suggest that the only component of the ESG dataset that is promptly priced in the market is environmental performance, while social, governance, and total ESG scores fail to provide a persistent return pattern even when unobserved heterogeneity has been properly controlled for.

Table 7. Quantile Regression Results of Composite ESG on Stock Returns with Sector and Industry Controls

Variable	Q25 (β)	p-value	Q50 (β)	p-value	Q75 (β)	p-value
ESG	-0.00004	.795	0.00030	.118	> .10.	> .10
Sector Controls	Yes		Yes		Yes	
Industry Controls	Yes		Yes		Yes	
Observations	3,778		3,778		3,778	
Pseudo R^2	0.0148		0.0275		0.0203	

Table 7 shows the quantile regression results for the combined ESG score at the 25th, 50th, and 75th quantiles of the stock return distribution, with sector and industry fixed effects included in each model. For each quantile, the ESG coefficient is insignificant. For the 25th quantile, the negative effect of ESG is very small in magnitude but negative ($\beta = -0.00004$, $p = .795$), while for the median quantile, the effect is slightly positive but again insignificant ($\beta = 0.00030$, $p = .118$). For the final quantile, the results for the 75th quantile are also insignificant. The pseudo R -squared

ranges from 0.0148 to 0.0275, aligns with expectations due to the high frequency nature of stock return data. Overall, the results indicate the absence of any cross-sectional and distributional return effects due to the performance in sector and industry-adjusted groups, and thus provide a further confirmation of the fact that ESG is unpriced and is not a driver of systematic market-wide returns.

Table 8. Newey–West Robust OLS Estimates of ESG and ESG Pillars on Stock Returns

Variable	Model 1: ESG (B)	p-value	Model 2: ENV–SOC–GOV (B)	p-value
Intercept	−0.0184	.032	−0.0177	.034
ESG	−0.00004	.795	—	—
Environmental (ENV)	—	—	n.s.	> .10
Social (SOC)	—	—	n.s.	> .10
Governance (GOV)	—	—	n.s.	> .10
Sector Controls	Yes		Yes	
Industry Controls	Yes		Yes	

Model Statistics:

Model 1: N = 3,776; R² = .015; Adj. R² = −.006; F(79, 3696) = 2.33, p < .001

Model 2: N = 3,778; R² = .014; Adj. R² = −.006; F(77, 3700) = 2.39, p < .001

Covariance Type = Newey–West (HAC, lag = 6)

Note. Newey–West heteroskedasticity and autocorrelation consistent (HAC) standard errors are reported. Sector and industry fixed effects are included in both models but omitted from the table for brevity. Full dummy-variable estimates are provided in Appendix A. n.s. = not significant at conventional levels.

To make sure that the results using the fixed-effects and quantile regression approaches allow for valid statistical inference regarding the presence of serial correlation and heteroskedasticity, the results were also analyzed using the implementation of Newey–West standard errors. The results using the Newey–West approach for the composite ESG model (Model 1) reveal that the ESG score results do not have a statistically significant relationship with stock returns ($\beta = -0.00004$, p-value = .795.) In addition, The pillar-level Newey–West model (Model 2) reveals that the Environmental, Social, and Governance factors do not have statistically significant impacts on returns. It is noteworthy that the significant environmental variable, which existed when the fixed-effects model was estimated, loses significance after HAC correction, implying that the initial significance was perhaps driven by serial correlation. Both the Social and Governance factors remain insignificant.

Yet, the fact that both approaches obtain joint significance because of the inclusion of sector and industry dummies actually helps validate the interpretation of the very low values of the R² because the data on stock returns is of a high frequency. Overall, the results provided by the Newey–West estimates indicate strongly that the composite measure of ESG, as well as the pillars, are not systematically incorporated into the stock markets of Southeast Asia.

5. Discussion and Implications of the Findings

The study aimed at examining the existence of the role of Environmental, Social, and Governance (ESG) in stock returns within the equity markets of Southeast Asian countries using a multi-step econometric model. The proposed model included fixed effects panel regression, quantile regression, and the use of the Newey-West Heteroskedasticity and Autocorrelation Consistent (HAC) technique. To avoid the presence of skewness and kurtosis, returns were Winsorized, following the model used by other studies on financial volatility [5], [23]. This multi-methodology approach allowed for the evaluation of return effects on average and on the distribution, remaining robust for serial correlation and heteroskedasticity.

The results of the fixed-effects analysis show that the composite ESG score does not have a statistically significant within-firm relationship with stock returns, suggesting that overall ESG practices do not affect the stock returns of firms after controlling for differences. On the disaggregated level, only the environmental pillar is positively and significantly related to stock returns, using the fixed-effects model, compared with the social and governance practices, which are not significant. However, the model explains only a marginal variation of stock returns, which is expected, given the nature of stock return data, especially for the high frequency of data.

The results of the quantile regression analysis again affirm that there are no systematic effects of ESG on the return distribution. For the 25th, 50th, and 75th quantiles, the overall composite score of ESG factors is not statistically significant, suggesting that differential effects of good and poor ESG performance on lower, median, and better-performing firms are not distinguishable when industry and sector dummies are controlled for. This result provides support for the inference that the lack of ESG pricing is not confined to the mean return effects, but extends throughout the return distribution, consistent with the very recent literature on emerging markets [2], [9].

The Newey-West robust re-estimations offer conclusive inferential support for the findings. Even after accounting for the presence of serial correlation and heteroskedasticity, the composite variable of ESG, and the underlying Environmental, Social, and Governance pillars, fail to contain statistical significance. This is because the environmental variable identified through the fixed-effects model fails the test of persisting significance after HAC correction, indicating that the initial significance was probably the result of time-series correlation rather than a return relationship. This suggests that the ESG variables do not have a lasting relationship with stock returns.

Theoretically, these results can be seen to contribute to the current literature on ESG and finance in that they show that the effects of ESG are highly sensitive to econometric model specifications, even for emerging markets. Also, the difference between the fixed-effects model and the Newey-West model highlights the need for considerations of serial correlation, consistent

with warnings given in previous studies of ESG that were nearly exclusively estimated using mean-based specifications [36]. The fact that the return effects are persistently weak and imprecise suggests that rather than engaging short-run stock market mechanisms, the relationship between ESG and Southeast Asian economic performance is better explained by a mediation that operates on a longer time scale, consistent with considerations of structure and reputation [38].

Regarding the investment perspective, the results imply that the integration of ESG principles into the Southeast Asian markets should not be viewed as a mechanism that offers short-term augmentations of returns. Even though the use of ESG factors remains important for risk management, portfolio screening, and alignment with sustainable goals, they do not offer a short-term return premium. For the management of businesses, the results imply that stock market benefits are not attainable through short-term ESG investments, but may offer benefits of a long-term nature through legitimacy, stakeholder trust, and institutional credibility [21], [12].

On the policy front, the absence of comprehensive ESG pricing suggests the existence of material PDSR gaps, enforcement challenges, and imbalances of information in the respective Southeast Asian capital markets. Progress on regulatory harmonization and the quality of ESG disclosures is thus critical for the materiality of sustainable data [28], [33]. Divergence and integrity of ESG rating concerns also continue to support the need for regulatory reforms in disclosure practices [7].

This paper provides strong empirical support for the idea that the ESG performance, whether measured using a composite approach or the pillars, lacks any systematic relationship with short-horizon stock returns on the Southeast Asian stock markets, when controlling for the effects of underlying stock differences, industry compositions, the effects of distributions, and the presence of serial correlation. This suggests that the relevance of ESG practices within the Asian stock markets lies only within the long-term framework of sustainable practices, and not short-term financial returns.

6. Conclusion

This paper contributes to the growing body of literature on the interface of environmental, social, and governance (ESG) factors and finance by shedding light on the importance of sustainability performance in the emerging market environment. Through the lens of the Southeast Asian equity markets, it is demonstrated that the financial relevance of ESG cannot be expected to follow the same patterns that emerge for developed markets, because ESG within this geographic environment is merely the long-term indicator of the quality of the underlying institution, and not the characteristic that presently has monetary value.

In the broader context, the results imply that the market impacts of sustainability practices are highly sensitive to the level of institutional development, the quality of disclosures, and the

time horizons of the investors. This also emphasizes the view that the financial interpretation of ESG is market-structure dependent and not universally priced.

Pragmatically, the results of the study make it clear that the integration of ESG considerations within the Southeast Asian context can better be explained through the lens of risk management strategy rather than through a mechanism for financial benefits. For policymakers, it is essential that there is steady progress on the path of harmonization, enforcement, and data standardization of disclosures.

Taken together, these studies affirm that the economic role of ESG factors within emerging capital markets works procedurally and evolutionarily, and not instantaneously. Therefore, the direction of future investigation should shift toward the longer-term effects of valuation, transitions pertaining to regulation, and mechanisms on the business level whereby sustainability could, eventually, provide positive financial results.

7. Limitations and Future Research Directions

Despite the rigorous empirical approach, the study also contains several limitations that should not be overlooked. Firstly, the study only considers publicly listed firms, specifically in the Southeast Asian region. This approach is certainly specific and provides regional findings. However, the results cannot be applied in the same manner concerning private firms or markets that operate with different institutional frameworks.

Secondly, the use of winsorization helps to promote better distributional properties, although it can reduce the tail risk that is potentially informative for risk analysis. Future studies should use tail risk approaches, for example, extreme-value analysis, to better model the risk exposure that is driven by the dynamics of the ESG variables.

Third, ESG performance is measured on the basis of total pillar scores, meaning that the diversity of the underlying components for each pillar is not captured. Future studies should use additional, more specific indicators, like carbon intensity, structure of the board, and labor safety, to identify the underlying channels of the stock of financial relevance for each.

Fourth, the current analysis is based on existing, or historical, ESG variables and does not examine the dynamic, or forward, looking effects. Future studies using Dynamic Panel Models, Panel Vector Autoregressions, or machine learning-based forecasting approaches can potentially offer novel interpretations on the delayed stock market reactions to sustainable data disclosures.

Finally, although the quantile regression model accounts for the existence of distributional differences, areas for further study include using quantile treatment effects, the Bayesian approach for modeling quantiles, and interaction studies that use factors that can condition the impacts of institutional structure, market environment, and other variables that affect emerging markets, developed markets, and different economies. Closing the gaps will help clarify how each of the components of the ESG works.

Authors' individual contribution: Conceptualization – M.D and M.L.; Methodology – M.D. and G.E; Software – M.D. and G.E; Formal Analysis – M.D., M.L. and F.R., and G.P.; Investigation – F.R., G.P and R.S; Data Curation – F.R. and G.P.; Writing – Original Draft – M.D, M.L, R.S; Writing – Review & Editing – G.E and R.S, F.R. and G.P; Supervision – M.L; Project Administration – M.D and G.E; Funding Acquisition – M.L, F.R. and G.E.

Conflicts of Interest: The author(s) declare that there are no conflicts of interest regarding the publication of this paper.

References

- [1] U.M. Adanma, E.O. Ogunbiyi, Evaluating the Effectiveness of Global Governance Mechanisms in Promoting Environmental Sustainability and International Relations, *Financ. Account. Res. J.* 6 (2024), 763–791. <https://doi.org/10.51594/farj.v6i5.1151>.
- [2] M. Abu Afifa, N.M. Nguyen, D.T.T. Vo, D. Van Bui, H.V. Van, Environmental, Social and Governance Practices: A New Perspective from Asian Developing Countries, *Corp. Soc. Responsib. Environ. Manag.* 32 (2025), 1079–1095. <https://doi.org/10.1002/csr.3006>.
- [3] M.F. Alsayegh, R. Abdul Rahman, S. Homayoun, Corporate Economic, Environmental, and Social Sustainability Performance Transformation through ESG Disclosure, *Sustainability* 12 (2020), 3910. <https://doi.org/10.3390/su12093910>.
- [4] N. Apergis, C. García, Environmentalism in the EU-28 Context: The Impact of Governance Quality on Environmental Energy Efficiency, *Environ. Sci. Pollut. Res.* 26 (2019), 37012–37025. <https://doi.org/10.1007/s11356-019-06600-1>.
- [5] D. Bag, S. Mohanty, Impact of Environmental, Social and Governance (ESG) Factors on Stock Returns of Emerging Markets, preprint, (2021). <https://doi.org/10.2139/ssrn.3866655>.
- [6] E. Bliznetskaya, Global Environmental Governance and International Environmental Diplomacy, *Int. Trends* 18 (2020), 126–153. <https://doi.org/10.17994/it.2020.18.3.62.8>.
- [7] R. Gibson Brandon, P. Krueger, P.S. Schmidt, ESG Rating Disagreement and Stock Returns, *Financ. Anal. J.* 77 (2021), 104–127. <https://doi.org/10.1080/0015198X.2021.1963186>.
- [8] J. Cao, S. Titman, X. Zhan, W. Zhang, ESG Preference, Institutional Trading, and Stock Return Patterns, *J. Financ. Quant. Anal.* 58 (2023), 1843–1877. <https://doi.org/10.1017/S0022109022000916>.
- [9] H. Chang, Y. Li, M. Liu, The Role of Government Social Media in Enhancing Environmental Governance, *China Econ. J.* 17 (2024), 40–55. <https://doi.org/10.1080/17538963.2023.2300865>.
- [10] M. Doblas, F. Rajab, W. Salman, A. Alabbas, R. Salindo, Influence of Digital Commerce and Mobile Point-of-Sale Payments on Bank Risk and Performance in Bahrain: A Dynamic Panel Analysis, *Risk Gov. Control: Financ. Mark. Inst.* 15 (2025), 134–147. <https://doi.org/10.22495/rgcv15i2p12>.
- [11] J. Kabderian Dreyer, M. Moreira, W.T. Smith, V. Sharma, Do Environmental, Social and Governance Practices Affect Portfolio Returns? Evidence from the US Stock Market from 2002 to 2020, *Rev. Account. Finance* 22 (2023), 37–61. <https://doi.org/10.1108/raf-02-2022-0046>.

- [12] M. ElRayes, M.M. Sobeh, M.A.M. Elshorbagy, D.G. Zaki, The Role of Environmental Governance Applications in Activating the Social Responsibility of Industrial Companies and Their Impact on Their Value of Shares (A Field Study), *J. Environ. Sci.* 52 (2023), 79–103. <https://doi.org/10.21608/jes.2023.215903.1542>.
- [13] K. Kaleeswari, R.B. Chaudhuri, Analyzing the Evolving ESG Regulations in India: A Guide to Implementing ESG Strategies, *J. Law Leg. Res. Dev.* 1 (2024), 6–10. <https://doi.org/10.69662/jllrd.v1i4.23>.
- [14] M. Kazemi, S. Nazari, N. Motamed, S. Arsang-Jang, R. Fallah, Prediction of Hospitalization Length. Quantile Regression Predicts Hospitalization Length and Its Related Factors Better than Available Methods, *Ann. Ig.* 33 (2021), 177–188. <https://pubmed.ncbi.nlm.nih.gov/33570089/>.
- [15] M. Kenney-Lazar, A. Johnson, F. Sultana, M. Himley, A.J. Bebbington, et al., Relational Environmental Governance: A Critical Framework for Praxis with the Material World, *J. Polit. Ecol.* 30 (2023), 677–698. <https://doi.org/10.2458/jpe.5542>.
- [16] E. Koroleva, M. Baggieri, S. Nalwanga, Company Performance: Are Environmental, Social, and Governance Factors Important?, *Int. J. Technol.* 11 (2020), 1468–1477. <https://doi.org/10.14716/ijtech.v11i8.4527>.
- [17] P. Krüger, Corporate Goodness and Shareholder Wealth, *J. Financ. Econ.* 115 (2015), 304–329. <https://doi.org/10.1016/j.jfineco.2014.09.008>.
- [18] A. Kulal, N. Abhishek, S. Dinesh, D. M.S., Impact of Environmental, Social, and Governance (ESG) Factors on Stock Prices and Investment Performance, *Macro Manag. Public Policy* 5 (2023), 14–26. <https://doi.org/10.30564/mmpp.v5i2.5659>.
- [19] M. La Torre, F. Mango, A. Cafaro, S. Leo, Does the ESG Index Affect Stock Return? Evidence from the Eurostoxx50, *Sustainability* 12 (2020), 6387. <https://doi.org/10.3390/su12166387>.
- [20] G. Landi, M. Sciarelli, Towards a More Ethical Market: The Impact of ESG Rating on Corporate Financial Performance, *Soc. Responsib. J.* 15 (2019), 11–27. <https://doi.org/10.1108/SRJ-11-2017-0254>.
- [21] W. Li, J.A. Puppim de Oliveira, Environmental Governance for Sustainable Development in Asia, *J. Environ. Manage.* 290 (2021), 112622. <https://doi.org/10.1016/j.jenvman.2021.112622>.
- [22] K.V. Lins, H. Servaes, A. Tamayo, Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis, *J. Finance* 72 (2017), 1785–1824. <https://doi.org/10.1111/jofi.12505>.
- [23] S. Mechrgui, S. Theiri, The Effect of Environmental, Social, and Governance (ESG) Performance on the Volatility of Stock Price Returns: the Moderating Role of Tax Payment, *J. Financ. Report. Account.* 24 (2026), 2134–2150. <https://doi.org/10.1108/jfra-03-2024-0140>.
- [24] A. Melinda, R. Wardhani, The Effect of Environmental, Social, Governance, and Controversies on Firms' Value: Evidence from Asia, in: *Advanced Issues in the Economics of Emerging Markets*, Emerald Publishing Limited, pp. 147–173, (2020). <https://doi.org/10.1108/s1571-038620200000027011>.
- [25] N. Middeldorp, P. Le Billon, Deadly Environmental Governance: Authoritarianism, Eco-populism, and the Repression of Environmental and Land Defenders, *Ann. Am. Assoc. Geogr.* 109 (2019), 324–337. <https://doi.org/10.1080/24694452.2018.1530586>.

- [26] A. Mitra, S.S. Gaur, Does Environmental Concern Drive Asian Firms' Governance?, *J. Asia Bus. Stud.* 14 (2020), 481–503. <https://doi.org/10.1108/jabs-06-2019-0189>.
- [27] W.K. Newey, K.D. West, Hypothesis Testing with Efficient Method of Moments Estimation, *Int. Econ. Rev.* 28 (1987), 777–787. <https://doi.org/10.2307/2526578>.
- [28] T.-H. Ng, C.-T. Lye, K.-H. Chan, Y.-Z. Lim, Y.-S. Lim, Sustainability in Asia: The Roles of Financial Development in Environmental, Social and Governance (ESG) Performance, *Soc. Indic. Res.* 150 (2020), 17–44. <https://doi.org/10.1007/s11205-020-02288-w>.
- [29] A. Obydenkova, Sustainable Development and Actors of Regional Environmental Governance: Eurasia at the Crossroads, *Probl. Post-Communism* 69 (2022), 436–443. <https://doi.org/10.1080/10758216.2022.2109116>.
- [30] R. Pernamasari, R. Bintara, Y. Rosdiana, H. Helliana, The Impact of Environment Social Governance (ESG) Performance on Stock Returns in Indonesian Companies, *Int. J. Res. Innov. Soc. Sci.* VIII (2024), 2868–2876. <https://doi.org/10.47772/ijriss.2024.803198>.
- [31] M.B. Rani, M.P. Doblas, S. Chellakan, R.V.N. Salindo, Determinants of Digital Payment Intensity in the MENA Region: A Panel Data Analysis, *Int. J. Anal. Appl.* 23 (2025), 8. <https://doi.org/10.28924/2291-8639-23-2025-8>.
- [32] L. Ruan, H. Liu, Environmental, Social, Governance Activities and Firm Performance: Evidence from China, *Sustainability* 13 (2021), 767. <https://doi.org/10.3390/SU13020767>.
- [33] Commonwealth Secretariat, Environmental, Social and Governance Practices for Value Creation in the Commonwealth, Commonwealth Secretariat, 2023. <https://doi.org/10.14217/comsec.1104>.
- [34] S. Shanaev, B. Ghimire, When ESG Meets AAA: The Effect of ESG Rating Changes on Stock Returns, *Financ. Res. Lett.* 46 (2022), 102302. <https://doi.org/10.1016/J.FRL.2021.102302>.
- [35] E. Sorensen, G. Mussalli, S. Lancetti, D. Belanger, ESG, Fundamentals, and Stock Returns, *J. Portfol. Manag.* 48 (2022), 193–205. <https://doi.org/10.3905/jpm.2022.1.408>.
- [36] O. Stotz, Expected and Realized Returns on Stocks with High- and Low-ESG Exposure, *J. Asset Manag.* 22 (2021), 133–150. <https://doi.org/10.1057/s41260-020-00203-z>.
- [37] N. Vinodkumar, G. Alarifi, Environmental Social Governance: A Core Value to Responsible Stakeholders and Stock Market Sustainability in the Kingdom of Saudi Arabia, *J. Sustain. Financ. Invest.* 12 (2022), 1085–1101. <https://doi.org/10.1080/20430795.2020.1827602>.
- [38] L. Widyawati, A Systematic Literature Review of Socially Responsible Investment and Environmental Social Governance Metrics, *Bus. Strategy Environ.* 29 (2020), 619–637. <https://doi.org/10.1002/bse.2393>.
- [39] J.C. Wolfe, Environmental and Social Governance, in: *Disruption in the Boardroom*, Apress, Berkeley, CA, pp. 107–119, (2020). https://doi.org/10.1007/978-1-4842-6159-0_6.
- [40] X. Zhang, X. Zhao, Y. He, Does It Pay to Be Responsible? The Performance of ESG Investing in China, *Emerg. Mark. Financ. Trade* 58 (2022), 3048–3075. <https://doi.org/10.1080/1540496X.2022.2026768>.