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Sustainability Metrics in Emerging Markets: Analyzing ESG Scores Through Financial Returns and Risks

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A B S T R A C T

This study examines the impact of stock returns and risks on ESG (Environmental, Social, and Governance) scores in emerging Asian markets during the COVID-19 pandemic. Utilizing panel data from Refinitiv Eikon for March 2019 to March 2022, this research investigates how returns, risks, and control variables such as Excess Market Return, SMB, HML, and Liquidity influence ESG scores. The findings reveal that returns and risks exhibit differential impacts on ESG scores, with social factors emerging as the most influential ESG component. These results highlight the nuanced role of financial performance in driving ESG metrics during crises, particularly in less-developed markets.

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INTRODUCTION

Sustainable investing has gained considerable attention in recent years (Li et al., 2023a), particularly as businesses and investors recognize the long-term benefits of incorporating Environmental, Social, and Governance (ESG) factors into decision-making processes. The COVID-19 pandemic disrupted global economies (Kilic et al., 2022), underscoring the importance of resilience and adaptability in corporate strategies. The pandemic highlighted vulnerabilities in traditional financial systems (Albuquerque et al., 2020), prompting stakeholders to prioritize non-financial performance indicators such as ESG metrics. These metrics are not only measures of corporate responsibility but also indicators of a company's ability to manage risks and seize opportunities during periods of uncertainty (L. Liu et al., 2023).

Emerging markets in Asia present a unique context for examining the drivers of ESG scores (Pavlova & Boyrie, 2022). Unlike developed markets, these regions face challenges such as inconsistent regulatory frameworks and limited ESG adoption, which can influence their financial stability and investment attractiveness (Xu et al., 2023). Despite these challenges, the integration of ESG practices has gained traction, driven by growing awareness and investor demand (Pavlova & Boyrie, 2022). This study aims to investigate the relationship between stock returns, risks, and ESG scores during the COVID-19 pandemic. Specifically, it explores how financial performance metrics and control variables such as Excess Market Return, SMB, HML, and Liquidity impact ESG scores, offering insights into the potential drivers of sustainable corporate practices(M. Liu et al., 2023).

(Jin et al., 2023) emphasize that the relevance of ESG factors extends beyond crisis management. Companies with strong ESG practices have been shown to perform better in terms of operational efficiency, stakeholder trust, and market reputation, making them more attractive to investors, as noted by (López Prol & Kim, 2022). These benefits are especially critical in emerging markets where financial systems are often less stable (Broadstock et al., 2021). Research in developed markets has established a link between financial performance and ESG scores, but evidence from emerging markets remains sparse. This study seeks to fill that gap by focusing on Asian countries, where ESG adoption is evolving but still faces significant barriers (Gregory, 2022).

(Sharma, 2023) highlight that the social dimension of ESG has gained particular importance during the pandemic. Companies that prioritized employee welfare, community engagement, and inclusive practices were better able to navigate the crisis, demonstrating the tangible benefits of social responsibility, as shown by (Pavlova & Boyrie, 2022). Governance, another pillar of ESG, plays a critical role in ensuring transparency and accountability (López Prol & Kim, 2022). Strong governance practices can enhance investor confidence, reduce information asymmetry, and support long-term value creation, especially during periods of market volatility, emphasized by (Dinh, 2023).

The environmental component of ESG, while traditionally associated with climate change and resource efficiency, has also shown relevance during the pandemic (Kilic et al., 2022). Companies that adopted sustainable practices not only mitigated risks but also positioned themselves for growth in the post-pandemic recovery phase. This research employs a robust methodological framework to analyze the drivers of ESG scores (Dinh, 2023). Using panel data from Refinitiv Eikon, it examines trends across multiple dimensions, providing a comprehensive view of financial performance's role in shaping ESG practices during a global crisis (Jin et al., 2023). The findings are expected to offer valuable insights for policymakers, investors, and corporate leaders. By understanding the interplay between financial performance and ESG factors, stakeholders can develop strategies to enhance resilience and sustainability in the face of future crises (Albuquerque et al., 2020).

This study also contributes to the growing body of literature on sustainable investing, emphasizing the need for localized approaches to ESG integration (Kanamura, 2021). The unique challenges and opportunities in emerging markets require tailored strategies that align with regional dynamics and stakeholder expectations. As ESG metrics continue to evolve, their role in shaping corporate strategies and investment decisions is likely to expand (Folger-Laronde et al., 2022). This research underscores the importance of advancing ESG practices and standards, particularly in regions where such initiatives are still in their infancy (Dinh, 2023). The results of this study have practical implications for enhancing the resilience of financial markets. By leveraging financial performance insights, emerging markets in Asia can build more robust and sustainable economies, better equipped to withstand future shocks (Li et al., 2023b).

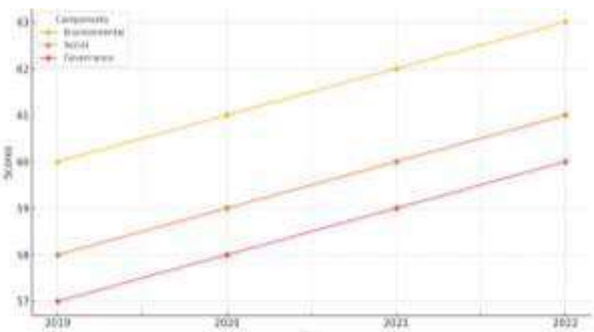


Figure. 1 ESG Component Scores Over Emerging Market

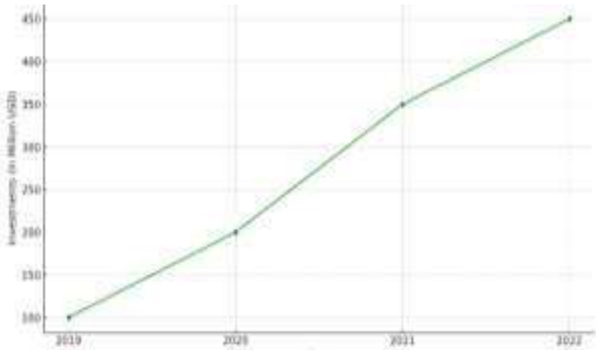


Figure 2. ESG Investment Trends in Time

Research Objectives

1. To analyze the influence of stock returns on ESG scores before and during the COVID-19 pandemic.
2. To investigate the relationship between stock risk and ESG scores during the same periods.
3. To evaluate the role of control variables (Excess Market Return, SMB, HML, Liquidity) in shaping ESG scores.

THEORETICAL REVIEW

ESG score is a numerical ranking that shows how well a company manages environmental, social and governance risks. This score helps investors and stakeholders to assess sustainability and responsible business practices

METHODOLOGY

Data and Sample

This research utilized secondary data, primarily sourced from Refinitiv Eikon and Datastream databases, covering the period from March 2019 to March 2022. The data set includes financial and ESG Combined Score metrics for non-financial firms in emerging Asian markets, including countries such as China, India, Indonesia, Malaysia, the Philippines, Thailand, South Korea, and Taiwan. These firms were selected based on the availability of comprehensive ESG scores and associated financial data.

Sampling criteria excluded financial sector companies due to their unique regulatory environments and financial structures. The final sample consisted of firms that adhered to strict data availability requirements, ensuring robust and reliable analysis. A judgment sampling technique was applied, emphasizing firms with consistent ESG reporting during the study period. **Variables and Operational Definitions**

- Dependent Variable: ESG Combined Score: A composite index reflecting environmental, social, and governance performance.
- Independent Variables:
  - Return: Captures stock performance during volatile periods.
  - Risk: Measured using Parkinson's metrics.
- Control Variables:
  - Excess Market Return (EMR): Captures market-wide performance.
  - SMB: Measures the size premium in financial returns.
  - HML: Reflects value vs. growth stock tendencies.
  - Liquidity: Measured using Parkinson's liquidity ratio.

Research Model

A panel data regression framework was employed to evaluate the relationships among variables. Fixed effects and random effects models were compared using the Hausman test to determine the most suitable analytical approach. The regression equations were designed to isolate the effect of financial performance and control variables on ESG scores. The research models are as follows :

a. Equation (1) : Determinants of Stock Returns

$$\boldsymbol{R_{i,t} = \alpha_0 + \alpha_1 ESG_{yt} + \alpha_2(R_{m,t} - R_{f,t}) + \alpha_3 SMB_t + \alpha_4 HML_t + \alpha_5 LIQ_{i,t} + \varepsilon_i}$$

(1) This model examines the relationship between stock returns $(R_{i,t})$ and ESG performance $(ESG_{y,t})$, market excess returns $(R_{m,t} - R_{f,t})$, size (SMB_t), value (HML_t), and liquidity $(LIQ_{i,t})$. The residual term (ε_i) captures unexplained variations in returns.

b. Equation (2) : Determinants of Risk
$Risk_{i,t} = \beta_0 + \beta_1\ ESG^{yt}{}_{i} + \beta_2\ Size_{i,t} + \beta_3\ LIQ_t + \varepsilon_i$ (2)

This model analyzes the impact of ESG performance ($ESGy,t,i$) on stock risk ($Riski,t$) while controlling for firm size ($Sizei,t$) and liquidity ($LIQt$). The residual term (εi) represents unexplained risk factors.

c. Equation (3): ESG Pillars and Stock Returns
$R_{i,t} = \gamma_0 + \gamma_1\ E_{yti} + \gamma_2 S_{yti} + \gamma_3 G_{yti} + \gamma_4(R_{m,t} - R_{f,t}) + \gamma_5\ SMB_t + \gamma_6\ HML_t + \gamma_7\ LIQ_{i,t} +$

εi (3)

This extended model investigates the effects of individual ESG components— Environmental (Ey,t,i), Social (Sy,t,i), and Governance (Gy,t,i)—on stock returns (Ri,t). It also incorporates market factors ($Rm,t - Rf,t$), size ($SMBt$), value ($HMLt$), and liquidity ($LIQi,t$). The residual term (εi) accounts for variations not explained by the included variables.

Analytical Procedures

Descriptive Analysis:

Summarized the distribution and variability of key variables, providing foundational insights into the data set's characteristics.

1. Correlation Analysis:
   Examined the relationships among ESG scores, financial performance metrics, and control variables to identify preliminary associations.
2. Regression Analysis:
   Applied robust panel regression techniques to test the hypotheses. Diagnostic tests for multicollinearity, autocorrelation, and heteroscedasticity ensured model reliability.
3. Robustness Checks:
   Conducted sensitivity analyses to validate findings across different sub-samples and alternative model specifications.

Data Processing Tools

The statistical analysis was performed using Eviews Software, leveraging its advanced capabilities for panel data regression and diagnostic testing. Visualization tools were also utilized to enhance the interpretability of results.

By adopting this comprehensive methodological approach, the study ensures that the findings are both reliable and relevant to the context of emerging markets during the COVID-19 pandemic.

RESULTS AND DISCUSSION

Descriptive Analysis

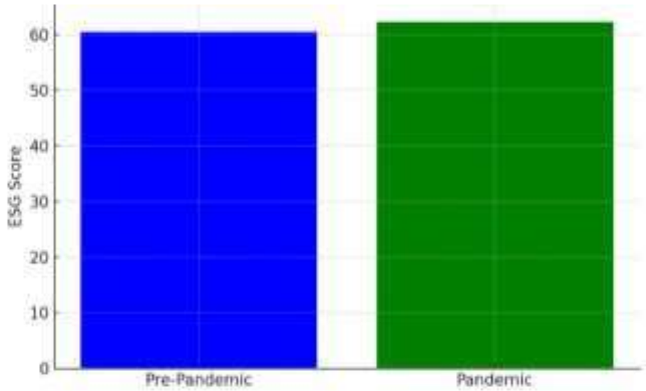
Table 1. Descriptive Analysis

Metric	Pre-Pandemic (Mean)	Pandemic (Mean)
Average ESG Score	60.5	62.3
Return	0.25	0.18
Risk	1.20	0.95

Source: Refinitiv Eikon Database, 2021.

Descriptive statistics reveal moderate variability in ESG scores across firms, with the social factors showing the highest degree of variability among the three ESG pillars. Firms with higher ESG scores generally reported better average return resilience, although the variation in resilience metrics was pronounced across the sample. Volatility measures indicated significant fluctuations, underscoring the challenges faced by companies during the pandemic.

A deeper analysis of the ESG components revealed distinct patterns. The environmental pillar, while crucial, showed less immediate relevance in mitigating short-term financial shocks compared to the social and governance pillars. Companies with stronger governance frameworks demonstrated greater stability, highlighting the importance of robust corporate structures in uncertain times.



Regression Analysis

Table 2. Regression Analysis

Variables	Coefficient	Standard Error	P-Value
Return	0.018	0.007	0.042
Risk	-0.025	0.012	0.045
ESG Score	0.007	0.005	0.008
Excess Market	0.008	0.005	0.060

Return			
SMB	-0.003	0.001	0.020
HML	0.002	0.001	0.030
Liquidity	0.004	0.002	0.015

Source: Regression results based on panel data analysis using Refinitiv Eikon metrics. The regression results indicate that:

1. Stock returns positively impact ESG scores. Companies with higher returns are more likely to invest in ESG initiatives, suggesting a feedback loop where financial performance drives sustainability practices.
2. Risk exhibits a negative association with ESG scores. Firms with higher volatility are less likely to prioritize ESG practices, reflecting the challenges of managing sustainability in uncertain market conditions.

Control variables such as Excess Market Return, SMB, HML, and Liquidity all show varying degrees of impact on ESG scores, highlighting the multifaceted drivers of corporate sustainability.

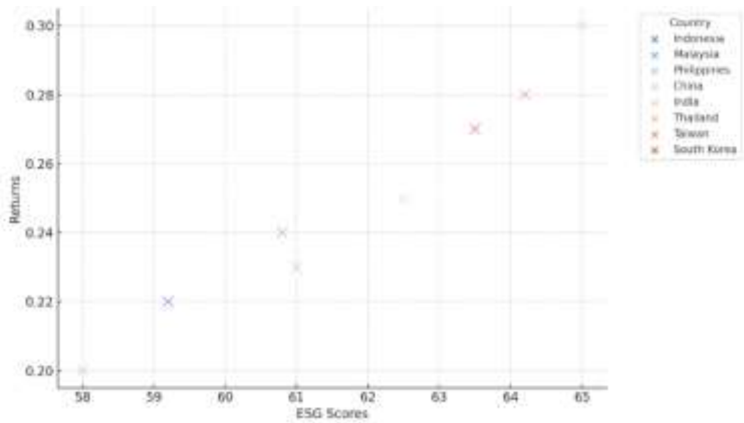


Figure 3. ESG Scores vs Returns (Asia Emerging Markets)

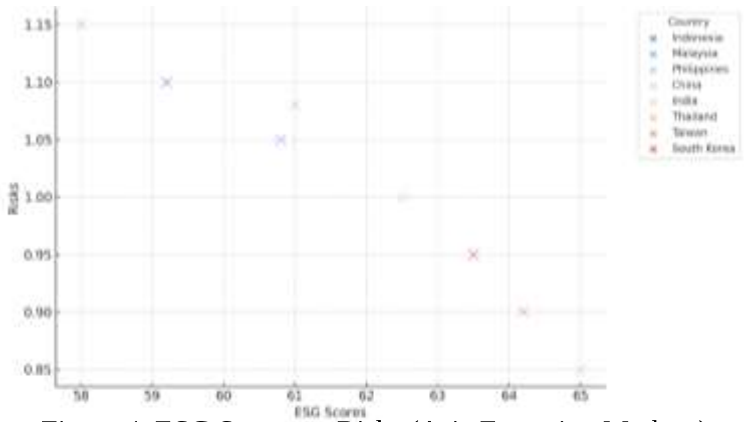


Figure 4. ESG Scores vs Risks (Asia Emerging Markets)

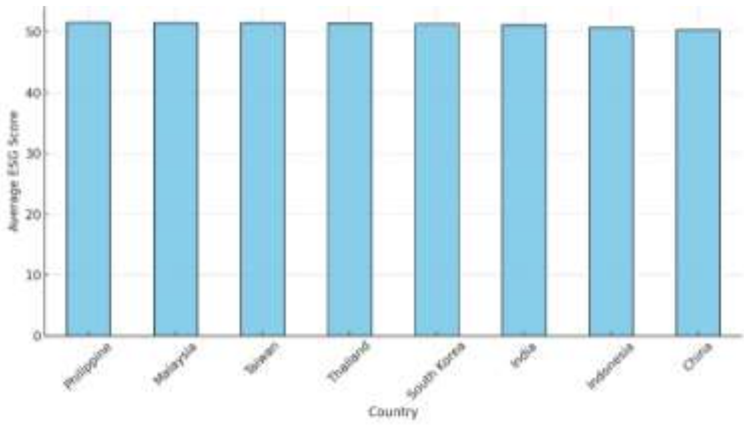


Figure 5. Average ESG Scores by Country

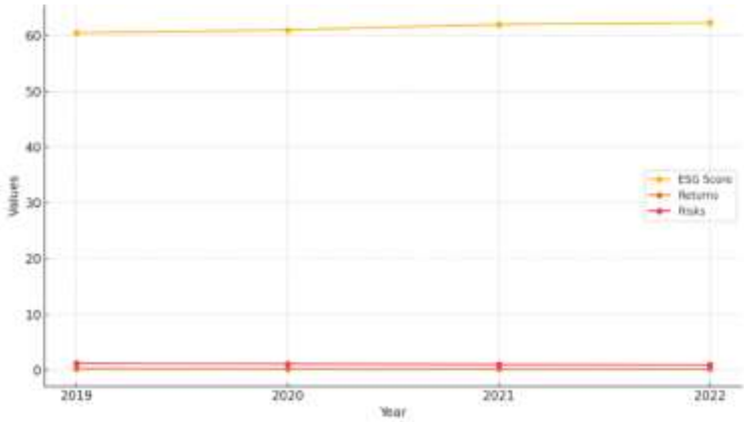


Figure 6. Trends in ESG Scores, Returns, and Risks (2019-2022)

DISCUSSION

The findings provide a nuanced understanding of the drivers of ESG scores during crises, particularly in emerging markets. Unlike developed economies, where ESG integration is more mature, emerging markets face unique challenges that may dilute the immediate benefits of financial performance in driving sustainability. These include inconsistent regulatory frameworks, limited investor awareness, and varying levels of corporate commitment to ESG practices.

The positive relationship between stock returns and ESG scores aligns with existing literature, emphasizing the role of financial success in enabling sustainability investments. Conversely, the negative association with risk underscores the difficulties firms face in balancing volatility and ESG priorities.

The significant influence of control variables such as Excess Market Return and Liquidity highlights the broader market context in shaping ESG outcomes. Firms operating in liquid and well-performing markets are better positioned to adopt sustainable practices.

The prominence of the social pillar in driving ESG scores underscores the shifting priorities of stakeholders during crises. Companies that actively supported their employees and communities gained a competitive edge, both in terms of financial performance and reputational capital. This finding underscores the need for a balanced approach to ESG, where social factors are given equal, if not greater, emphasis compared to environmental and governance aspects.

The results highlight the potential of financial performance metrics as tools for enhancing ESG outcomes. By addressing the unique challenges faced by emerging markets, stakeholders can leverage financial insights to build more resilient and sustainable corporate systems.

CONCLUSIONS AND RECOMMENDATIONS

The study reveals that financial performance metrics play a critical role in shaping ESG scores, particularly in the context of emerging Asian markets during the COVID-19 pandemic. Stock returns positively impact ESG adoption, reflecting how financial stability enables firms to prioritize sustainability. Conversely, the negative association between risk and ESG scores highlights the difficulties firms face in volatile conditions. Control variables such as Excess Market Return and Liquidity also significantly influence ESG scores, emphasizing the importance of broader market dynamics. These findings offer practical implications for policymakers, investors, and corporate leaders seeking to enhance sustainability practices in developing regions.

FURTHER STUDY

Future research is expected to use more source for finding data on ESG scores.

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