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Article

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Impact of environmental, social and governance practices on financial performance: evidence from listed companies in Southeast Asia

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ABSTRACT

This study investigates the impact of Environmental, Social, and Governance (ESG) score on the financial performance of listed companies in the Southeast Asia. The study contributes to the existing literature in providing an empirical evidence for a regional analysis in developing countries, particularly in Southeast Asia and extending the existing models by incorporating macroeconomic and COVID-19 variables. The study estimates the impact of ESG score on financial performance using the Fixed Effect Model from the panel data comprising 225 listed companies in the six countries in the Southeast Asia including Singapore, Malaysia, Thailand, Indonesia, Vietnam, and the Philippines in three years from 2020 to 2022. The statistics implies the ESG practices in Southeast Asia still insufficient and significant variations among enterprises. A one-year lagged ESG variable has a significantly positive impact on financial performance. The COVID-19 infection rate has a significant negative impact on the return on asset (ROA); meanwhile, the ROA experiences a slight increase with a rise in GDP growth. The results also enhance our understanding of ESG investments and underscores their importance in shaping investment choices, especially in rapidly developing Southeast Asian economies, where prioritizing ESG factors is crucial for sustainable development.

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1. Introduction

The corporate mission has evolved significantly over time, with a historical debate between prioritizing short-term profit maximization under the Shareholder theory and focusing on long-term total value optimization for the broader society according to the Stakeholder theory (Zumente & Bistrova, 2021; Freeman, 1984). Especially in the context of growing concerns regarding the corporate sustainability strategy, there has been a transition towards emphasizing a more sustainable and enduring approach to value creation (Zumente & Bistrova, 2021). The Environmental, Social, and Governance (ESG) practice is gaining prominence in the corporate risk management and sustainability strategy due to factors like meeting stakeholder expectations, enhancing access to capital, ensuring operational resilience, fostering long-term value creation, mitigating risks and bolstering reputation (Zumente & Lăce, 2021; El Khoury et al., 2023).

Globally, the ESG practices are integral to achieving the Sustainable Development Goals as they provide a framework for businesses to contribute to sustainability efforts like climate change, inequality, and sustainable development (Galeazzo et al., 2023; Makhdalena et al., 2023). The integrating ESG factors into investment and risk management strategies not only aligns with ethical and regulatory standards but also serves as a cornerstone for achieving enduring financial success and societal impact. Corporate governance in ESG ensures ethical business practices and transparency, justice and strong institutions. Therefore, leveraging ESG principles as a strategic approach for businesses and policymakers to

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simultaneously drive the corporate investment growth and to advance the global sustainability, especially in the context of emerging Asian countries (Long & Johnstone, 2023).

The literature on the ESG impact on financial performance predominantly focused on developed countries such as Germany by Velte (2017), the United States by Alareeni and Hamdan (2020), and Korea in Hwang et al. (2021). Although developing countries have increasingly showed the importance of ESG practice in promoting sustainable development and environmental protection, only a few studies have been conducted in these countries including Thailand by Suttipun and Dechthanabodin (2022), India in Rao et al. (2023), and Saudi Arabia in Firmansyah et al. (2023). These studies primarily focused on financial indicators for measuring operational efficiency but have overlooked macroeconomic variables, especially the impact of the COVID-19 pandemic period. Therefore, this research aims to contribute to the existing literature by further analyzing macroeconomic variables, especially considering the impact of COVID-19, which is COVID-19 infection in the total population in developing countries.

The Asian region accounted for approximately 3.8% of global Gross Domestic Product (GDP) in 2022 (IMF, 2023). Additionally, according to the International Energy Agency (2022), the total CO₂ emissions of Southeast Asian countries in 2021 are 2.6 billion tons, accounting for about 6% of total global CO₂ emissions. With the rapid industrialization, urbanization, and increasing energy consumption in the Southeast Asian nations, it is imperative for companies in this region to prioritize ESG practices. Particularly, Indonesia, Malaysia, the Philippines, Singapore, and Vietnam, have recently experienced their significant economic growth rates (International Energy Agency, 2022). Previous studies with the analysis for a single nation may not provide a comprehensive impact assessment since the results depend on the socio-economic context. Up to date, a regional study on the impact of ESG factor on financial performance in developing countries has been missing (Suttipun & Yordudom, 2022; Sood et al., 2023). Therefore, the regional research could hold academic and practical significance to provide a comprehensive analysis of the topic in a broader view.

The previous models to analyze the ESG impact on financial performance have primarily focused on business corporate variables (Velte, 2017; Alareeni & Hamdan, 2020). Furthermore, macroeconomic factors have played a pivotal role in shaping financial performance. Particularly for the period from the year 2019 to 2022, which was characterized by macroeconomic instability due to the global impact of COVID-19, the global pandemic resulted in 296 million affected and 5.4 million deaths till January 2022 (World Health Organization, 2023). Emerging economies experienced the greatest output and employment losses, with GDP-per-capita falling by 6.7 percent and employment by 5.4 percent (IMF, 2021). Taking into account the impacts of both macroeconomic conditions and the COVID-19 pandemic on corporate financial performance is of utmost importance. However, this incorporation analysis has been missing in the literature.

The study contributes to the existing literature in two research gaps. First, it provides an empirical evidence for a regional analysis of developing countries, particularly Southeast Asian countries. Second, it extends the existing models in the literature by incorporating macroeconomic and COVID-19 variables in the analysis. This allows for a comprehensive understanding of the impact of macroeconomic factors on the companies' financial performance and thus providing insights for risk management and operational policies.

The study aims to investigate the impact of the ESG score on financial performance, as well as macroeconomic indicators on the financial performance of six Southeast Asian countries in the period from 2019 to 2022. The structure of the paper is as follows: Section 2 provides the literature review and hypothesis development. Section 3 describes the methodology and data collection for the study. The regression results, discussion and managerial implications are presented in Section 4 and Section 5. Section 6 delineates the avenues for future research and the Section 7 contains our conclusions.

2. Literature review and hypothesis development

2.1. Literature review

The study follows the Stakeholder and Legitimacy theories (Freeman, 1984; O'donovan, 2002). According to the Stakeholder theory, organizations aim to balance the expectations of all stakeholders including

employees, customers, suppliers, communities, and shareholders (Freeman, 1984). Stakeholders can influence corporate strategies by providing or withholding resources, such as capital, labor, and market access. Employee satisfaction enhances motivation, while customer satisfaction fosters loyalty, and supplier satisfaction may lead to discounts, collectively improving a firm's reputation, financial performance, and sustainability (Peng & Isa, 2020; Zahid et al., 2023). The theory suggests a direct causal link between stakeholder management practices and organizational performance, whereby proficient engagement with stakeholders serves as an intermediary mechanism conducive to achieving favorable outcomes. Managers should consider and maintain all stakeholders' expectations as they make corporate social responsibility decisions. ESG activities satisfy various stakeholders by enhancing the company's external reputation and operational efficiency. Implementing ESG activities is part of the company's differentiation strategy, resulting in value creation, customer benefits, and overall business improvement.

Legitimacy theory suggests that organizations' actions should align with the prevailing values and societal norms (O'donovan, 2002). Legitimacy is crucial for accessing resources, maintaining market position, and ensuring long-term viability. Companies seek to demonstrate their legitimacy through various means, such as corporate social responsibility initiatives, compliance with ethical standards, and sustainability reporting. The level of environmental disclosure is shaped by firm size, financial leverage, and exposure to environmental news (Cormier et al., 2011). The causal link involves the company's legitimacy efforts leading to stakeholder support and reduced resistance, thereby enhancing the company's operational environment and contributing to its performance. To maintain the legitimacy, the organizations will report more ESG activities due to the community pressure so that the public will evaluate the company's performance. As ESG awareness in society continues to grow, and the demand for environmentally friendly products and services dominates firms' sales; ESG performance is the main legitimization strategy that firms are pivoting to the business environment (Drempetic et al., 2020). ESG disclosures vary based on industry. Manufacturing and industrial companies tend to release more ESG disclosures (O'donovan, 2002). These two theories are used in this study to develop the hypothesis on the impact of ESG score on financial performance.

2.2. Hypothesis development

In this study, the company's business performance is measured through return on assets (ROA) as one of the best measures for a company's financial performance according to Harvard Business Review (2010). The stakeholder theory proposes that a company's strong ESG performance can foster a favorable reputation, establish a stable growth environment, and consequently enhance the company's overall value (Freeman, 1984; Zahid et al., 2023). Improving a company's ESG performance leads to its greater public perception and potentially bolstering its attractiveness as an employer and facilitating the recruitment and retention of talented individuals. This underscores the notion that sustainable practices contribute to the accumulation of moral capital among stakeholder groups, fostering loyalty through a favorable appraisal of a company's ESG endeavors (Yang et al., 2023).

Investor reactions to corporate ESG data are linked to the quality of information, indicating that investors are more attentive to ESG information as its disclosure becomes more transparent (Krüger, 2015). Moreover, ESG disclosure enhances transparency regarding a company's ESG practices, motivating managers, investors, and stakeholders to make more informed decisions and evaluations (Zhao et al., 2018). Integrating ESG into business performance appears to be a superior strategy for safeguarding against business downturns, notably in periods of social or economic turmoil (Whelan et al., 2021). The good corporate ESG performance can reduce financing costs, minimize the degree of information asymmetry, and alleviate the financing constraints faced by enterprises. The ESG investment takes one to two years for declining operating costs and enhancing ROA. Accordingly, ESG has a positive impact on financial performance (Esposito et al., 2023; Tang, 2022; Alareeni & Hamdan, 2020; Velte, 2017). These analyses support the first hypothesis for the ESG variable.

H1: ESG has a positive impact on financial performance.

The firm size has served as a control variable in prior research on ESG practices to financial performance (Zahid et al., 2023; Abeyrathna & Priyadarshana, 2019; Doğan, 2013). These studies indicated larger companies benefit from economies of scale and market dominance, which boost their financial performance. Larger companies can reduce costs per unit, streamline production, negotiate better with suppliers, attract more customers willing to pay premium prices, and thereby improve their financial performance. Nguyen et al. (2018) also suggests that larger firms, with access to larger markets, typically achieve stronger sales growth compared to smaller firms competing in more crowded markets. Accordingly, the second hypothesis is as follows.

H2: Firm size has a positive impact on financial performance.

Non-financial companies tend to have a positive impact on financial performance compared to financial companies (Tailab, 2014; Borodin et al., 2019; and Agostini et al., 2022). Tailab (2014) finds that non-financial companies in the United States demonstrate superior profitability compared to their counterparts in financial sector. So, the third hypothesis is developed.

H3: Non-financial companies have a positive impact on financial performance compared to financial ones.

A review of the literature on how ESG factors affect financial performance indicates that asset turnover ratio is typically treated as a control variable. The higher the value of total asset turnover, the more impactful the value of the company's return on assets. Previous studies have demonstrated that asset turnover ratio has a significantly positive impact on financial performance (Karim et al., 2023; Damayanti & Chaerudin, 2021; Alareeni & Hamdan, 2020). The hypothesis H4 is formulated based on the aforementioned premises.

H4: Firm's asset turnover ratio has a positive impact on financial performance.

When companies begin to incur debt, they benefit from tax shields. The weighted average cost of capital may decrease with rising debt levels due to the advantageous combination of low debt costs and tax shields. As the company increases its debt load, the effective utilization of borrowed capital can enhance business performance according to the Modigliani and Miller's theorem of capital structure (Modigliani & Miller, 1958). Leveraging debt proves to be an efficient approach for minimizing free cash flow erosion, thereby bolstering business performance (Alareeni & Hamdan, 2020). Tang et al. (2023) also employed the debt-to-total-assets ratio variable in their model for ESG impacts. The hypothesis H5 is based on the prior information.

H5: Debt to total assets ratio of firms has a positive impact on financial performance.

GDP stands as a fundamental gauge for assessing the economic advancement of a specific region. The GDP growth helps to attract investors more privately, to enhance the quality of human life, to boost market demand, to increase output and revenue, to improve operational efficiency, and eventually to result in a positive impact on financial performance (Yusop et al., 2021; and Sinişin & Socol, 2020). The hypothesis H6 is proposed as follows.

H6: GDP growth has a positive impact on financial performance.

The COVID-19 outbreak marks the inaugural sustainability-linked crisis of the 21st century (Zahid et al., 2023). The COVID-19 pandemic has had a significant negative impact on operational efficiency and performance (Disemadi & Shaleh, 2020; Fahlenbrach et al., 2021). In times of elevated COVID infections, businesses might need to scale down their operational capacity due to constraints such as labor shortages, disruptions in the supply chain, and escalated costs (Fahlenbrach et al., 2021; Tawiah & O'Connor Keefe, 2020). The pandemic has triggered notable changes in consumer behavior with increased caution regarding spending, reducing revenue, profit, and cash flow. The COVID-19 pandemic impact on financial performance is essentially investigated under the hypothesis H7.

H7: Covid infection in total population has a negative impact on financial performance.

3. Methodology and data collection

3.1. Environmental, Social, and Governance score

Refinitiv, a part of the London Stock Exchange Group (LSEG), offers ESG scores as a transparent and objective measure of a company's ESG performance based on company-reported data (Thomson Reuters, 2023). The scores are based on the relative performance of ESG factors with the company's sector for environmental and social and country of incorporation for governance.

The data processing procedure commences by sourcing ESG disclosures directly from companies, supplemented by regulatory filings and data from third-party providers. Data integrity is safeguarded through the implementation of various quality assurance measures, including sector-specific assessments, scaling techniques, year-over-year variance analysis, and validation and screening protocols. The data is earmarked for subsequent independent audit and managerial review and the methodology undergoes validation and documentation to ensure transparency and reliability (LSEG, 2023).

The score calculation methodology involves several stages from the percentile rank scoring using boolean and numeric data points, creating weight factors for each category in each industry to assure an objective, impartial and trusted assessment, and calculating the score (LSEG, 2023). The ESG score covers a subset of 186 metrics being the most comparable and material for each respective industry. These metrics are categorized into ten themes including emissions, innovation, human rights, shareholders, and so on (Figure 1). The category scores are consolidated into three pillars, namely environmental, social, and corporate governance. The ESG score is a relative sum of the category weights, with variations in weights for the environmental and social based on the industry and across all industries for governance category (LSEG, 2023). The summary of the methodology employed for score calculation is provided in Appendix A.

3.2. Model specification

Following the suggestion by Sohibien et al. (2022), Alareeni and Hamdan (2020), and Velte (2017), this study utilizes Fixed Effect Model after conducting the specification model testing from the panel data comprising 225 listed companies in the six Southeast Asian countries in the three years from 2010 to 2022. The regression model is as follows.

$$ROA_{it} = \beta_0 + \beta_1 ESG_{i(t-1)} + \beta_2 SIZ_{it} + \beta_3 ATR_{it} + \beta_4 DTA_{it} + \beta_5 GDP_{it} + \beta_6 COV_{it} + \beta_7 TYP_{it} + \varepsilon_{it} \quad (1)$$

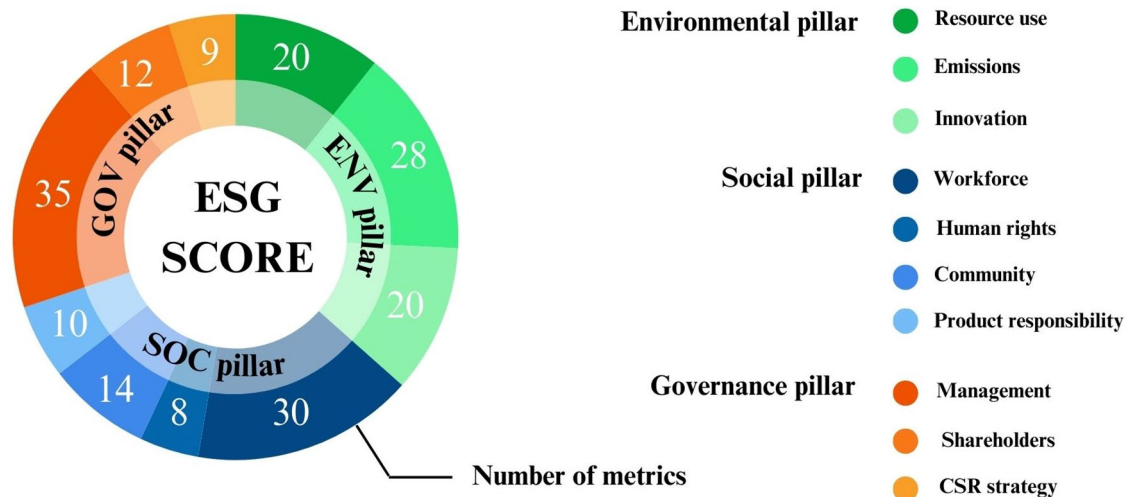


Figure 1. Environmental, social, and governance scoring.
Source: Adapted from Thomson Reuters (2023).

Where ROA_{it} is the return on asset measured by net income divided by total assets of the firm i , in the year t ; $ESG_{i(t-1)}$ is ESG score of firm i collected by Thomson Reuters database with one-year-lag; SIZ_{it} is enterprise size measured by natural logarithm of total assets; ATR_{it} is asset turnover ratio measured by dividing net sales by average total asset. DTA_{it} is debt to total assets ratio measured by dividing total debt by total asset. GDP_{it} is GDP growth measured by quotient of a change in GDP from year t and year $t-1$ divided by the GDP of year $t-1$, i.e. $GDP_{it} = (GDP_t - GDP_{t-1})/GDP_{t-1}$ and the result multiplied by 100%; COV_{it} is measured by the total number of new covid cases divided by the total population and also multiplied by 100%; TYP_{it} is a dummy variable for company type with a value of 1 for non financial industry and 0 for financial industry. It is noted that the ESG variable is lagged by one year compared to the other variables suggested by Alareeni and Hamdan (2020), Velte (2017), and Naimy et al. (2021).

3.3. Data collection

The Southeast Asian region, characterized by its rapid economic growth and diverse array of economies ranging from emerging markets such as Vietnam and the Philippines to more developed entities like Singapore, presents a fertile dataset for examining the impact of ESG factors on financial performance across various developmental stages and sectors. The number of companies with ESG scores in this region surged by over 202% from 2018 to 2022, indicating a significant uptrend in ESG rating adoption, the investors' focus increasingly on sustainable development (Thomson Reuters, 2023; Tzar & Siregar, 2023; Setiarini et al., 2023). During the period from 2004 to 2022, significant expansion was observed in both the ESG investment and disclosure in the six Southeast Asian countries including Indonesia, Thailand, Philippines, Singapore, Vietnam and Malaysia (Setiarini et al., 2023). The available dataset for Southeast Asian countries encompasses only these six countries, which were subsequently selected for the sample.

The research utilizes secondary data from various sources. The financial performance, particularly the ROA, financial indicators, business characteristics are collected from the Thomson Reuters database (Thomson Reuters, 2023). The GDP growth is obtained from the IMF database while the COVID-19 variable is sourced from the World Health Organization database (IMF, 2023a; IMF, 2023b; WHO, 2023). The data is collected from 779 listed companies in six Southeast Asian countries, namely Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam. Afterward, the data is subjected to processing and removing any missing variables. As a result, the dataset comprises 225 listed companies and a total of 672 observations over three years from 2020 to 2022, thereby guaranteeing a satisfactory number of observations that align with the study's time frame. The data is subjected to statistical description and necessary tests for panel data. These techniques are carried out using Stata 16 software.

4. Empirical results

4.1. Environmental, Social, and Governance scores and financial performance

There has been a notable shift in the business strategies of Southeast Asian companies towards a greater emphasis on ESG factors. Between 2020 and 2022, a histogram illustrates a noteworthy surge in ESG related activities, as businesses invest more and implement initiatives to enhance their ESG scores (Figure 2). Consequently, the distribution of ESG scores among regional firms is progressively tilting towards higher values. This demonstrates the growing recognition of ESG's value to businesses, signifying its increasing role in shaping corporate strategies.

Between 2020 and 2022, there was an increase in the average ESG score across the ASEAN countries from 52.9 to 59.2 points (Table 1). During this period, Malaysia emerged as the ASEAN country with the highest capacity for ESG performance and consistently maintained the highest average ESG score. In contrast, the Philippines had the lowest level of ESG performance in the region. Interestingly, despite its lower ESG investment, the Philippines witnessed an upward trend in its average ESG score over the years. Vietnam achieved the second-highest score in 2021, but it experienced a slight decline in 2022. These observations underscore the growing interest and investment in ESG initiatives within the ASEAN region.

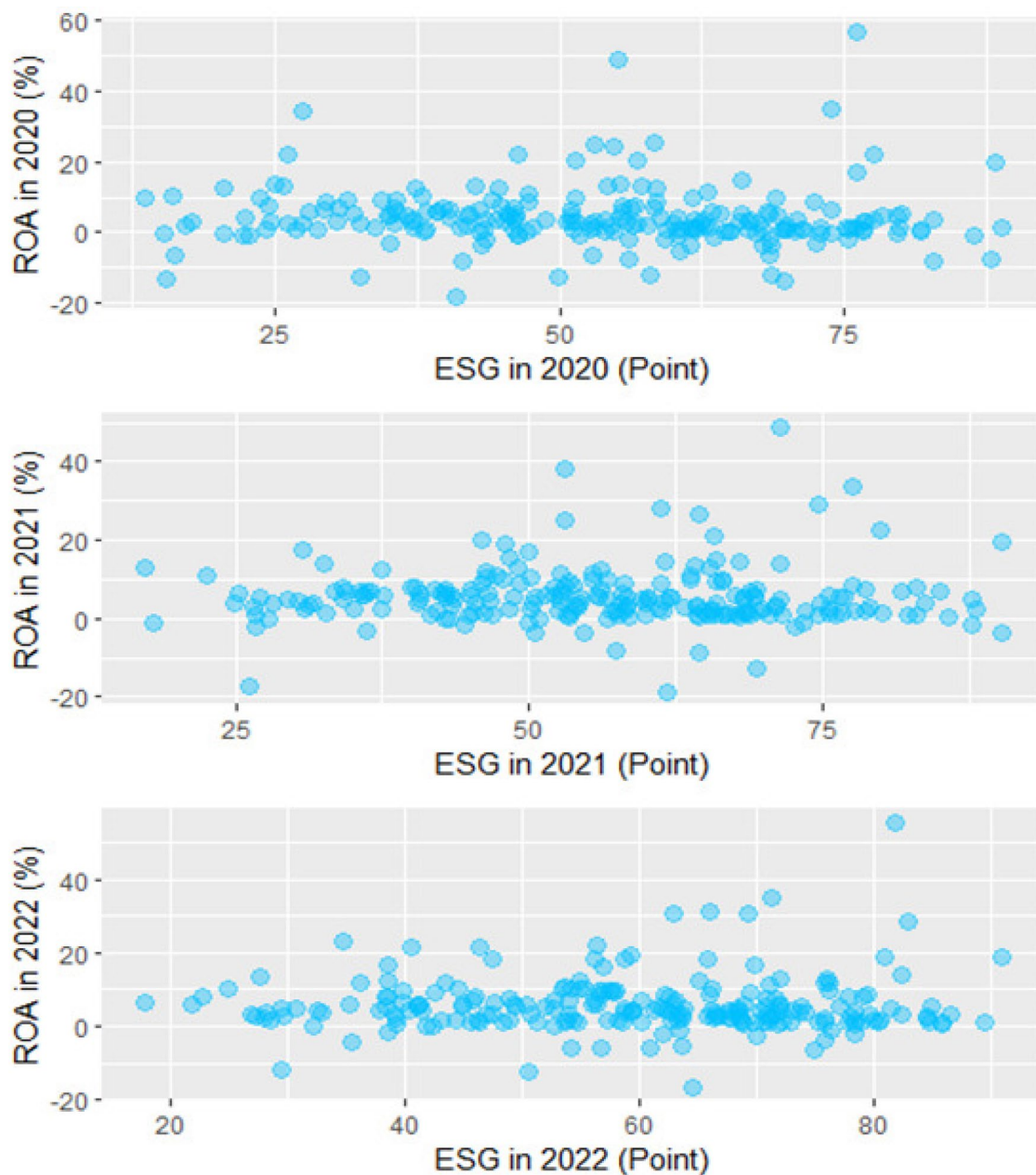


Figure 2. Environmental, social, and governance scores and return on asset by years.

Table 1. ESG scores by country and year.

Nation	2020	2021	2022	Average in 2020–2022
Indonesia	49.1	52.2	55.4	52.2
Malaysia	57.4	60.4	65.5	61.1
Philippines	48.1	52.5	55.3	52.0
Singapore	50.8	53.0	56.1	53.3
Thailand	54.2	58.3	59.7	57.4
Vietnam	53.0	59.4	48.2	52.8
ASEAN	52.9	56.1	59.2	56.1

Between 2020 and 2022, it was observed that non-finance companies exhibited a wider range of ESG scores in comparison to their counterparts in the finance sector. This implies that non-finance companies engaged in a more diverse range of ESG activities. Furthermore, the average return on assets for non-finance companies generally surpassed that of finance companies, indicating that, during this period,



Figure 3. Environmental, social, and governance scores and return on asset by company type.

non-finance companies achieved stronger financial performance compared to their counterparts in the finance sector within the dataset (Figure 3).

4.2 Descriptive statistics and model specification testing

The average ESG score stands at approximately 55.6 points with a standard deviation of 16.6 points, implying that the typical values fall within the range of about 40 to 60 points (Table 2). This suggests that the adoption of ESG practices in Southeast Asia is still insufficient. Regarding the company type, the average value is approximately 0.8616, signifying that 86.16% of the sample comprises non-finance companies. The return on assets is positively oriented but relatively modest at around 0.05. Furthermore, with its minimum and maximum values ranging from -0.26 to 0.39 and a standard deviation of 0.09, it becomes apparent that there are significant variations in business performance among enterprises.

The debt to total assets ratio with an average value of around 0.57 could be considered a substantial risk when a significant portion of company's assets is tied up in debt (Table 2). This situation may, in part, be attributed to the disruptions caused by the Covid-19 pandemic, affecting business operations during this period. The average GDP growth rate stands at 1.525%. This figure closely aligns with the Southeast Asia's overall GDP growth of 1.93%. However, this Southeast Asia region's overall GDP growth lags behind East Asia and South Asia by 1.6% and 1.67%, respectively (IMF, 2022).

A model specification testing is conducted to decide between two frequently employed models for panel data regression: the fixed effect model (FEM) and the random effect model (REM). The Hausman test is performed, where the null hypothesis (H_0) posits that there is no significant difference between the FEM and the REM. The p-value obtained from this test is 1%, signifying the statistical significance favoring the use of the FEM as the most suitable choice for this dataset (Tables B1 and B2 in the Appendix B).

Table 2. Variable descriptive statistics.

Variable	Notation	Unit	Mean	Std. Dev	Min	Max
Return on asset	ROA	%	0.0515	0.0906	−0.4678	0.8463
ESG scores	ESG	score	55.5996	17.3867	2.0600	90.9900
Enterprise size	SIZ	USD	9.7157	0.6462	8.1771	11.7441
Asset turnover	ATR	time	0.5268	0.2258	0.0004	1.5429
Debt to total assets ratio	DTA	time	0.2903	0.1922	0.0000	0.9030
Covid-19 infection in total population by year	COV	%	0.0495	0.0840	0.00001	0.3407
GDP growth	GDP	%	1.5250	5.2353	−9.5000	8.9000
Company type	TYP	0 and 1	0.8616	0.3455	0.0000	1.0000

4.3 Regression results

For the autocorrelation test, we can reject the null hypothesis test with the F-statistic value of 0.198 and the Prob>F value of 0.6568, indicating that this regression model does not suffer from autocorrelation (Table B3 in the Appendix B). For the heteroscedasticity test, since the p-value in the Wald test is 0.0000, this implies that the regression model does not exhibit heteroscedasticity (Table B4 in the Appendix B). Panel unit root and panel cointegration tests are not necessary due to the short time frame and data collection from multiple companies. The statistical analysis from these tests indicates the presence of autocorrelation within the model, yet there is an absence of heteroscedasticity. Therefore, the autocorrelation is solved by using the feasible Generalized Least Squares method in the regression.

The model is statistically significant with a P-value of 0.000. With an R-square value of 0.9722, the regression model demonstrates a high level of explanatory power, indicating that approximately 97.22% of the variance in the dependent variable can be explained by the independent variables in the model (Table 3). Particularly, the first hypothesis is confirmed indicating that the ESG variable has a significantly positive coefficient with a one-year lag (Table 4). This is also consistent with Velte (2017), Alareeni and Hamdan, (2020), Ahmad et al. (2021), Liu et al. (2022), and Tahmid et al. (2022) with a significant and positive coefficient of ESG score on the ROA or generally on financial performance. Holding other factors constant, a one-point increase in ESG score results in a 0.0387 percentage increase in the ROA in the following year.

The hypotheses H4 and H5 are rejected. Financial factors negatively impact businesses' return on assets, emphasizing the significance of prudent debt management, especially amid rising interest rates in the year 2022. This aligns with the findings of Velte (2017), Liu et al. (2022) and Boshnak et al. (2023). Excessive debt usage can harm a company's financial performance, particularly when it is disproportionately allocated to asset acquisition. According to the trade-off theory, an excessive debt financing can also elevate the risk of bankruptcy due to heightened interest expenses during economic downturns or crises (Gunawan et al., 2022). As the likelihood of financial distress escalates relative to a company's debt burden, businesses relying on modest debt levels for financing are better positioned to withstand economic challenges (Mahardika & Mulyawan, 2023). Asset turnover ratio negatively impacts businesses' return on assets, echoing the findings by Ratnaningtyas and Nurbaeti (2023) who observed that during the Covid-19 pandemic, poor asset turnover ratio hindered effective production and marketing management. This resulted in lower sales and reduced profits, thereby lowering ROA. Additionally, the pandemic led to weak profit margins, with the real estate sector facing financial crises that compelled property sales at reduced prices due to low demand and the need for cash to cover regular expenses (Van Thi Hong Pham & Nguyen, 2022).

The rejection of hypothesis H2 indicates the enterprise size has a negative impact on ROA. Despite its large scale, an unwieldy and inefficient organizational structure not only fails to enhance operational efficiency but also diminishes it. Furthermore, oversized businesses may surpass market demand, particularly evident during the COVID-19 pandemic, where larger enterprises incurred greater losses than smaller counterparts. Given the growing trend towards sustainability, small and medium-sized enterprises become a pertinent choice. This aligns well with the Southeast Asia, where the startup ecosystem is thriving with a focus on smaller-scale ventures. Smaller business sizes facilitate easier management and reduce risks in case of setbacks. The result is consistent with Liu et al. (2022) and Xu et al. (2021).

Table 3. Model regression result.

Regressor	Notation	Coefficient	SE	P> z
Constant		0.03875	0.02107	0.0000
ESG score	ESG	0.00032	0.00005	0.0000
Enterprise size	SIZ	−0.03139	0.00210	0.0000
Asset turnover	ATR	−0.05741	0.00479	0.0000
Debt to total assets ratio	DTA	−0.08743	0.00527	0.0000
Covid-19	COV	−0.02146	0.00999	0.0320
GDP growth	GDP	0.00101	0.00012	0.0000
Company type	TYP	0.00649	0.02107	0.0450
Model specification			Fixed Effect	
Number of obs.	=	672		
R-squared	=	0.9722		
Wald chi2(7)	=	1766.39		
Prob> chi2	=	0.000		

Table 4. Hypothesis testing results.

Hypothesis description	Coefficient	P-value	Results
H1: ESG has a positive impact on financial performance.	.000321	0.0000	Accepted
H2: Firm size has a positive impact on financial performance.	−.03139444	0.0000	Rejected
H3: Non-financial companies have a positive impact on financial performance compared to financial ones.	.0064895	0.0450	Accepted
H4: Firm's asset turnover ratio has a positive impact on financial performance.	−0.0574059	0.0000	Rejected
H5: Debt to total assets ratio of firms has a positive impact on financial performance.	−0.0874325	0.0000	Rejected
H6: GDP growth has a positive impact on financial performance.	0.001006	0.0000	Accepted
H7: Covid infection in total population has a negative impact on financial performance.	−0.0214584	0.0320	Accepted

The empirical model substantiates the acceptance of hypothesis H3. The findings also indicate that companies in non-financial sectors exhibit a higher return on assets in comparison to their counterparts in the financial sector. All else being equal, non-financial industries boast an ROA level that is 0.0064 percentage points superior to that of financial companies. Between 2020 and 2022, it was observed that non-finance companies exhibited a wider range of ESG scores in comparison to their counterparts in the finance sector. This implies that non-financial companies invest more in ESG and their performance is also better than financial companies.

The COV variable not only represents the rate of COVID-19 infections in the population but also serves as a general indicator of the overall healthcare context. Hypothesis H7 is affirmed at a 5% p-value, offering substantial evidence that COV significantly adversely affects the return on assets. As all other variables remain unchanged, a one-percentage-point rise in the new infection rate relative to the total population will lead to a 0.021 percentage-point decrease in the company's ROA. The aftermath of the pandemic, particularly for banks, is likely to entail a significant surge in loan defaults, challenging recovery efforts, and a decrease in savings patterns. These contribute to a decline in banks' profitability both during and after the pandemic, ultimately impacting their return on assets (Xie et al., 2022). The effect of the Covid 19 was severe on firm performance than that of the crisis 2008 (Ahmad et al., 2022). Meanwhile, the acceptance of hypothesis H6 suggests that, holding all other variables constant, a 1% increase in GDP growth is associated with a marginal increase of 0.001 percentage points in the company's ROA. This finding is consistent with Tan and Floros (2012), Singh et al. (2021) and Msomi (2023), where the economic growth enhances the business environment, reduces barriers to entry for banks, and intensified competition hampers bank profitability. This underscores the significance of community health and national progress for business development.

5. Discussion and managerial implications

Stakeholder theory asserts that the success of an organization hinges on its capability to navigate and fulfill the diverse expectations and demands of its stakeholders. Legitimacy theory extends the idea of stakeholder influence by emphasizing the social contract between organizations and their broader societal environment with their activities consistent with the values or norms of the society to push the corporate performance. The ESG performance allows various stakeholders to be satisfied, which in turn leads to an improvement in the company's external reputation and thus its performance improvement.

Between 2020 and 2022, there was an increase in the average ESG score across the ASEAN countries from 52.9 to 59.2 points. Aligned with these theoretical perspectives, our research results demonstrate that the ESG score variable has a favorable impact on corporate financial performance in the Southeast Asian region.

ESG scores have a significantly positive influence on financial performance, particularly on return on assets. Such findings elucidate the nuanced dynamics of ESG investments, thereby reinforcing their pivotal role in guiding investment strategies. This is especially pertinent in the context of burgeoning economies in Southeast Asia, a region witnessing accelerated industrial expansion in recent times. This underscores the imperative to integrate ESG criteria into the core of corporate strategic planning, serving as a catalyst for promoting sustainable development initiatives.

Furthermore, there have been misconceptions disseminated by the media and a prevailing belief that environmental and social investments necessitate an extended time horizon to show results (e.g. in Den et al., 1994). Nevertheless, the findings from this research have challenged these notions, demonstrating that after just one year, ESG scores have a positive influence on financial performance, particularly on return on assets. As a result, it may not be imperative for the government and businesses to adhere strictly to long-term investment strategies for ESG initiatives. They can contemplate short-term investments as a means to attain improved financial performance.

The results from the rejection of the hypotheses H4 and H5 revealed that financial variables exert an adverse influence on firms' return on assets, thereby underscoring the critical importance of prudent debt management strategies. Furthermore, the scale of the enterprise is inversely related to ROA, suggesting that smaller organizational structures may offer certain advantages. In the context of the burgeoning emphasis on sustainable practices, small and medium-sized enterprises (SMEs) emerge as increasingly relevant entities. This observation resonates particularly in Southeast Asia, a region characterized by a flourishing startup ecosystem with a predilection for ventures of a smaller magnitude. The diminutive size of these businesses offers the benefits of streamlined management and a diminished exposure to risk in the event of adverse conditions.

Moreover, the acceptance of hypothesis H6 and H7 implies that the augmentation of economic growth serves to enrich the business milieu, highlighting the integral role played by both community well-being and national advancement in fostering business development. Governments can implement community health policies and proactively mitigate risks, preparing for unexpected "Black Swan" events, such as the COVID-19 pandemic. When community health is stable and enhanced, it becomes a substantial driver of business growth.

6. Limitation and future research

The study provides a foundation for enhanced academic exploration. The empirical analysis has employed a single proxy variable for ESG performance as a comprehensive indicator, without examining individual ESG factors. Nevertheless, this is essential for conducting a comprehensive analysis across different countries in this regional analysis, necessitating a common and readily available indicator. Future research could explore comparative studies that scrutinize both ESG performance and financial outcomes within and across various industries and countries.

7. Conclusion

Between 2020 and 2022, a noteworthy surge in ESG-related activities enhance the ESG scores from 52.9 to 59.2 points with a wider range in non-finance companies compared to their finance counterparts. This implies the ESG practices in Southeast Asia still insufficient. The return on assets is positively oriented but relatively modest at around 0.05 with a standard deviation of 0.09, apparently indicating significant variations in business performance among enterprises. The one-year lagged ESG variable has a statistically significant positive impact on financial performance. This findings have challenged the belief that environmental and social investments necessitate an extended time horizon to show fruitfulness in financial performance, e.g. from Den et al. (1994). This enhances our understanding of ESG investments

and underscores their importance in shaping investment choices, especially in rapidly developing Southeast Asian economies, where prioritizing ESG factors is crucial for sustainable development. The COVID-19 infection rate has a significant negative impact on the ROA; meanwhile, the ROA experiences a slight increase with a rise in GDP growth. This highlights the importance of community health and national progress in business development. Governments can enact health policies and proactively manage risks like the COVID-19 pandemic. The stable and improved community health significantly drives business growth.

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Data availability statement

Data will be available on request.

References

- Abeyrathna, S. P. G. M., & Priyadarshana, A. J. M. (2019). Impact of firm size on profitability. *International Journal of Scientific and Research Publications (IJSRP)*, 9(6), 9081. <https://doi.org/10.29322/IJSRP.9.06.2019.p9081>
- Agostini, M., Costa, E., & Korca, B. (2022). Non-financial disclosure and corporate financial performance under directive 2014/95/EU: Evidence from Italian listed companies. *Accounting in Europe*, 19(1), 78–109. <https://doi.org/10.1080/17449480.2021.1979610>
- Ahmad, M., Bashir, R., & Waqas, H. (2022). Working capital management and firm performance: Are their effects same in Covid 19 compared to financial crisis 2008? *Cogent Economics & Finance*, 10(1), 2101224. <https://doi.org/10.1080/23322039.2022.2101224>
- Ahmad, N., Mobarek, A., & Roni, N. N. (2021). Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis. *Cogent Business & Management*, 8(1), 1900500. <https://doi.org/10.1080/23311975.2021.1900500>
- Alareeni, B. A., & Hamdan, A. (2020). ESG impact on the performance of US S&P 500-listed firms. *Corporate Governance*, 20(7), 1409–1428. <https://doi.org/10.1108/CG-06-2020-0258>

- Borodin, A., Shash, N., Panaedova, G., Frumina, S., Kairbekuly, A., & Mityushina, I. (2019). The impact of the publication of non-financial statements on the financial performance of companies with the identification of intersectoral features. *Entrepreneurship and Sustainability Issues*, 7(2), 1666–1685. [https://doi.org/10.9770/jesi.2019.7.2\(61\)](https://doi.org/10.9770/jesi.2019.7.2(61))
- Boshnak, H. A., Alsharif, M., & Alharthi, M. (2023). Corporate governance mechanisms and firm performance in Saudi Arabia before and during the COVID-19 outbreak. *Cogent Business & Management*, 10(1), 2195990. <https://doi.org/10.1080/23311975.2023.2195990>
- Cormier, D., Ledoux, M. J., & Magnan, M. (2011). The informational contribution of social and environmental disclosures for investors. *Management Decision*, 49(8), 1276–1304. <https://doi.org/10.1108/00251741111163124>
- Damayanti, E., & Chaerudin, C. (2021). The role of current ratio (CR), debt to equity ratio (DER), and total asset turnover (TATO) on return on asset (ROA) in multi-industrial sector manufacturing companies that registered to the Indonesia stock exchange for 2015–2019. *Dinasti International Journal of Management Science*, 2(6), 915–924. <https://doi.org/10.31933/dijms.v2i6.921>
- Den Butter, F. A. G., & Verbruggen, H. (1994). Measuring the trade-off between economic growth and a clean environment. *Environmental and Resource Economics*, 4(2), 187–208. <https://doi.org/10.1007/BF00692203>
- Disemadi, H. S., & Shaleh, A. I. (2020). Banking credit restructuring policy amid COVID-19 pandemic in Indonesia. *Jurnal Inovasi Ekonomi*, 5(02), 63–70. <https://doi.org/10.22219/jiko.v5i02.11790>
- Doğan, M. (2013). Does firm size affect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, 4(4), 53–59.
- Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167(2), 333–360. <https://doi.org/10.1007/s10551-019-04164-1>
- El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: Concavity–convexity patterns. *Journal of Sustainable Finance & Investment*, 13(1), 406–430. <https://doi.org/10.1080/20430795.2021.1929807>
- El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). The determinants of ESG in the banking sector of MENA region: A trend or necessity? *Competitiveness Review: An International Business Journal*, 33(1), 7–29. <https://doi.org/10.1108/CR-09-2021-0118>
- Esposito, P., Ahmad, Z., Riso, V., & Mustafa, N. (2023). Beyond the business case? Retracing the walk of Corporate social responsibility and financial performance relationship in the Oil and Gas sector. *Corporate Social Responsibility and Environmental Management*, 31(3), 2211–2224. <https://doi.org/10.1002/csr.2676>
- Fahlenbrach, R., Rageth, K., & Stulz, R. M. (2021). How valuable is financial flexibility when revenue stops? Evidence from the COVID-19 crisis. *The Review of Financial Studies*, 34(11), 5474–5521. <https://doi.org/10.1093/rfs/hhaa134>
- Firmansyah, E. A., Umar, U. H., & Jibril, R. S. (2023). Investigating the effect of ESG disclosure on firm performance: The case of Saudi Arabian listed firms. *Cogent Economics & Finance*, 11(2), 2287923. <https://doi.org/10.1080/23322039.2023.2287923>
- Freeman, R. E. (1984). *Strategic management: A stockholder approach*. Pitman. Cambridge University Press.
- Galeazzo, A., Miandar, T., & Carraro, M. (2023). SDGs in corporate responsibility reporting: A longitudinal investigation of institutional determinants and financial performance. *Journal of Management and Governance*, 28(1), 113–136. <https://doi.org/10.1007/s10997-023-09671-y>
- Gunawan, R., Widiyanti, M., Malinda, S., & Adam, M. (2022). The effect of current ratio, total asset turnover, debt to asset ratio, and debt to equity ratio on return on assets in plantation sub-sector companies listed on the Indonesia Stock Exchange. *International Journal of Economic, Business, Accounting, Agriculture Management and Sharia Administration (IJEBAAS)*, 2(1), 19–28. <https://doi.org/10.54443/ijeabas.v2i1.139>
- Harvard Business Review. (2010). *The best way to measure company performance*. Retrieved August 10, 2023, from <https://hbr.org/2010/03/the-best-way-to-measure-compan>
- Hwang, J., Kim, H., & Jung, D. (2021). The effect of ESG activities on financial performance during the Covid-19 pandemic—Evidence from Korea. *Sustainability*, 13(20), 11362. <https://doi.org/10.3390/su132011362>
- International Energy Agency. (2022). Key findings – Southeast Asia Energy Outlook. Retrieved August 10, 2023, from <https://www.iea.org/reports/southeast-asia-energy-outlook-2022/key-findings>
- International Monetary Fund. (2023a). Population. *International Monetary Fund*. Retrieved August 10, 2023, from <https://www.imf.org/external/datamapper/LP@WEO/VNM/IDN/PHL/MMR/MYS/KHM/LAO/THA/SGP/BRN>
- International Monetary Fund. (2023b). (2). Real GDP Growth. *International Monetary Fund*. Retrieved July, 2023, from https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD/IDN
- Karim, A., Widyarti, E. T., & Santoso, A. (2023). Effect of current ratio, total asset turnover, and size, on profitability (ROA) Empirical Study on Manufacturing Companies listed on the IDX in 2017–2020. *Diponegoro International Journal of Business*, 6(1), 57–63. <https://doi.org/10.14710/dijb.v6i1.2023.57-63>
- Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115(2), 304–329. <https://doi.org/10.1016/j.jfineco.2014.09.008>
- Liu, H., Wu, K., & Zhou, Q. (2022). Whether and how ESG impacts on corporate financial performance in the Yangtze River Delta of China. *Sustainability*, 14(24), 16584. <https://doi.org/10.3390/su142416584>
- London Stock Exchange Group (LSEG). (2023). Environmental, social and governance scores from LSEG. London Stock Exchange Group. Retrieved January 20, 2024, from https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf

- Long, F. J., & Johnstone, S. (2023). Applying 'Deep ESG' to Asian private equity. *Journal of Sustainable Finance & Investment*, 13(2), 943–961. <https://doi.org/10.1080/20430795.2021.1879562>
- Mahardika, M. R., & Mulyawan, F. (2023). The influence of current ratio, return on asset, debt asset ratio, and total asset turnover on financial distress. Case study of Manufacturing Companies in the Coal Mining Sub Sector Listed on the Indonesia Stock Exchange in 2019–2021. *Jurnal Ekonomi*, 12(02), 701–708.
- Makhdalena, M., Zulvina, D., Zulvina, Y., Amelia, R. W., & Wicaksono, A. P. (2023). Environmental, social, governance, and firm performance in developing countries: Evidence from Southeast Asian. *ETIKONOMI*, 22(1), 65–78. <https://doi.org/10.15408/etk.v22i1.25271>
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3), 261–296.
- Msomi, T. S. (2023). Macroeconomic and firm-specific determinants of financial performance: Evidence from non-life insurance companies in Africa. *Cogent Business & Management*, 10(1), 2190312. <https://doi.org/10.1080/23311975.2023.2190312>
- Naimy, V., El Khoury, R., & Iskandar, S. (2021). ESG versus corporate financial performance: Evidence from East Asian firms in the industrials sector. *Studies of Applied Economics*, 39(3). <https://doi.org/10.25115/eea.v39i3.4457>
- Nguyen, D., Nguyen, H., & Nguyen, K. S. (2018). Ownership feature and firm performance via corporate innovation performance: Does it really matter for Vietnamese SMEs? *Journal of Asian Business and Economic Studies*, 25(2), 239–250. <https://doi.org/10.1108/JABES-10-2018-0078>
- O'donovan, G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal*, 15(3), 344–371. <https://doi.org/10.1108/09513570210435870>
- OECD. (2022). *ESG ratings and climate transition: An assessment of the alignment of E pillar scores and metrics*. OECD Business and Finance Policy Papers., No. 06. OECD Publishing. <https://doi.org/10.1787/2fa21143-en>
- OECD. (2022). *Policy guidance on market practices to strengthen ESG investing and finance a climate transition*. OECD Business and Finance Policy Papers. No. 13, OECD Publishing. <https://doi.org/10.1787/2c5b535c-en>
- Peng, L. S., & Isa, M. (2020). Environmental, social and governance (ESG) practices and performance in Shariah firms: Agency or stakeholder theory? *Asian Academy of Management Journal of Accounting and Finance*, 16(1), 1–34. <https://doi.org/10.21315/aamjaf2020.16.1.1>
- Rao, A., Dagar, V., Sohag, K., Dagher, L., & Tanin, T. I. (2023). Good for the planet, good for the wallet: The ESG impact on financial performance in India. *Finance Research Letters*, 56, 104093. <https://doi.org/10.1016/j.frl.2023.104093>
- Ratnaningtyas, H., & Nurbaeti, N. (2023). The effect of current ratio and total assets turnover on stock prices and return on assets as intervening variables. *At-Tadbir: jurnal Ilmiah Manajemen*, 7(1), 54–65. <https://doi.org/10.31602/atd.v7i1.8654>
- Refinitiv. (2022). *Environmental, social and governance scores*. Refinitiv. Retrieved October 29, 2023, from https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf
- Setiarini, A., Gani, L., Diyanty, V., & Adhariani, D. (2023). Strategic orientation, risk-taking, corporate life cycle and environmental, social and governance (ESG) practices: Evidence from ASEAN countries. *Business Strategy & Development*, 6(3), 491–502. <https://doi.org/10.1002/bsd2.257>
- Singh, S. K., Basuki, B., & Setiawan, R. (2021). The effect of non-performing loan on profitability: Empirical evidence from Nepalese commercial banks. *The Journal of Asian Finance, Economics and Business*, 8(4), 709–716. <https://doi.org/10.13106/jafeb.2021.vol8.no4.0709>
- Sinițin, N., & Socol, A. (2020). Determinants of banking profitability through ROA and ROE: A panel data approach. *Ovidius University Annals, Economic Sciences Series, Ovidius University of Constantza, Faculty of Economic Sciences*, 20(1), 1037–1043.
- Sohibien, G. P. D., Laome, L., Choiruddin, A., & Kuswanto, H. (2022). COVID-19 pandemic's impact on return on asset and financing of Islamic commercial banks: Evidence from Indonesia. *Sustainability*, 14(3), 1128. <https://doi.org/10.3390/su14031128>
- Sood, K., Pathak, P., Jain, J., & Gupta, S. (2023). How does an investor prioritize ESG factors in India? An assessment based on fuzzy AHP. *Managerial Finance*, 49(1), 66–87. <https://doi.org/10.1108/MF-04-2022-0162>
- Suttipun, M., & Dechthanabodin, P. (2022). Environmental, social and governance (ESG) committees and performance in Thailand. *Asian Journal of Business and Accounting*, 15(2), 205–220. <https://doi.org/10.22452/ajba.vol15no2.7>
- Suttipun, M., & Yordudom, T. (2022). Impact of environmental, social and governance disclosures on market reaction: An evidence of Top 50 companies listed from Thailand. *Journal of Financial Reporting and Accounting*, 20(3/4), 753–767. <https://doi.org/10.1108/JFRA-12-2020-0377>
- Tahmid, T., Hoque, M. N., Said, J., Saona, P., & Azad, M. A. K. (2022). Does ESG initiatives yield greater firm value and performance? New evidence from European firms. *Cogent Business & Management*, 9(1), 2144098. <https://doi.org/10.1080/23311975.2022.2144098>
- Tailab, M. (2014). Analyzing factors effecting profitability of non-financial US firms. *Research Journal of Finance and Accounting*, 5(22), 17–26.
- Tan, Y., & Floros, C. (2012). Bank profitability and GDP growth in China: A note. *Journal of Chinese Economic and Business Studies*, 10(3), 267–273. <https://doi.org/10.1080/14765284.2012.703541>

- Tang, H. (2022). The effect of ESG performance on corporate innovation in China: The mediating role of financial constraints and agency cost. *Sustainability*, 14(7), 3769. <https://doi.org/10.3390/su14073769>
- Tang, H. Y., Fu, T., & Loang, O. K. (2023). The impact of environmental, social, and governance performance on the financial performance of listed manufacturing companies in China. *Journal of Islamic*, 8(56), 335–347. <https://doi.org/10.55573/JISED.085630>
- Tawiah, B., & O'Connor Keefe, M. (2020). Cash holdings and corporate investment: Evidence from COVID-19. *SSRN Electronic Journal*, <https://doi.org/10.2139/ssrn.3712767>
- Thomson Reuters. (2023). *Refinitiv Eikon datasets* (version 2023). Thomson Reuter. Retrieved June 15, 2023, from <https://eikon.refinitiv.com/>
- Tzar, J., & Siregar, S. V. N. P. (2023). The effect of ESG on ASEAN public companies' green innovation per 2021. *Indonesian Journal of Economics and Management*, 3(3), 509–521. <https://doi.org/10.35313/ijem.v3i3.4891>
- Van Thi Hong Pham, V. T., & Nguyen, N. (2022). Impact of COVID-19 on the profitability performance of real estate businesses in Vietnam. *International Journal of Economics and Finance Studies*, 14(1), 377–395. <https://doi.org/10.34109/ijefs.20221417>
- Velte, P. (2017). Does ESG performance have an impact on a performance? Evidence from Germany. *Journal of Global Responsibility*, 8(2), 169–178. <https://doi.org/10.1108/JGR-11-2016-0029>
- Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2021). *ESG and financial performance. Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015-2020*. NYU STERN Center for sustainable business.
- World Health Organization. (2023). WHO COVID-19 dashboard data. World Health Organization. Geneva, Switzerland. Retrieved July 14, 2024, from <https://data.who.int/dashboards/covid19/data?m49=704&n=c>
- Xie, H., Chang, H. L., Hafeez, M., & Saliba, C. (2022). COVID-19 post-implications for sustainable banking sector performance: Evidence from emerging Asian economies. *Economic Research-Ekonomska Istraživanja*, 35(1), 4801–4816. <https://doi.org/10.1080/1331677X.2021.2018619>
- Xu, Q., Zhang, L., & Zhang, L. (2021). *The influence of coronavirus on the profitability of educational enterprises* [Paper presentation]. 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021) (pp. 2626–2631). Atlantis Press. <https://doi.org/10.2991/assehr.k.211209.427>
- Yang, X., Sheikh Hassan, A. F., Lau, W. T., & Ab Razak, N. H. (2023). The discordance of governance performance from environmental and social performance on idiosyncratic risk: The effect of board composition. *Cogent Economics & Finance*, 11(2), 2276556. <https://doi.org/10.1080/23322039.2023.2276556>
- Yusop, N. Y., Alhyari, J. A., & Bekhet, H. A. (2021). Dynamic elasticities between financial performance and determinants of mining and extractive companies in Jordan. *The Journal of Asian Finance, Economics and Business*, 8(7), 433–446. <https://doi.org/10.13106/jafeb.2021.vol8.no7.0433>
- Zahid, M., Naqvi, S. U. U. B., Jan, A., Rahman, H. U., & Wali, S. (2023). The nexus of environmental, social, and governance practices with the financial performance of banks: A comparative analysis for the pre and COVID-19 periods. *Cogent Economics & Finance*, 11(1), 2183654. <https://doi.org/10.1080/23322039.2023.2183654>
- Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and corporate financial performance: Empirical evidence from China's listed power generation companies. *Sustainability*, 10(8), 2607. <https://doi.org/10.3390/su10082607>
- Zumente, I., & Bistрова, J. (2021). ESG importance for long-term shareholder value creation: Literature vs. Practice. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2), 127. <https://doi.org/10.3390/joitmc7020127>
- Zumente, I., & Läce, N. (2021). ESG Rating—Necessity for the investor or the company? *Sustainability*, 13(16), 8940. <https://doi.org/10.3390/su13168940>

Appendices

Appendix A

The ESG score calculation methodology is presented in LSEG (2023). Firstly, the percentile rank score is calculated from boolean or numeric data points for each of 186 metrics.

$$\text{Score} = \frac{\text{Number of companies with a worse value} + \frac{\text{Number of companies with the same value}}{2}}{\text{Number of companies with a value}}$$

For this calculation the company' value is compared to other companies within the same industry group as the benchmark for the environmental and social category scores and within the country of incorporation as the benchmark for the governance categories.

Secondly, the category weights are formulated for each industry to assure the relative importance of the category for each individual industry. The category weights are based on the weight method and a combination industry medians and transparency. In the computation of magnitude weights within the governance category, it is imperative to recognize the equal significance of each data point. Accordingly, the procedure involves dividing each data

point within the category by the aggregate of governance data points (as part of the scoring mechanism); and this quotient is multiplied by the cumulative total of 15 points, reflecting three categories with a default value of 5 points each (LSEG, 2023).

$$\text{Category weight of an industry} = \frac{\text{Magnitude weight of a category}}{\text{Sum of Magnitude of all categories}}$$

Finally, the calculation of the company's ESG score is achieved by integrating the scores across ten categories specific to the company, in conjunction with the weightings assigned to these categories based on the particular industry to which the company pertains.

Appendix B

Table B1. Model specification testing.

Variables	Notation	(b) FEM	(B) REM	(b-B) Difference	Sqrt (diag(V _b V _B)) SE
ESG score	ESG	-.0004038	.0002389	-.0006427	.0003994
Enterprise size	SIZ	.2712897	-.0325817	.3038714	.0726129
Asset turnover	ATR	-.0777125	-.0292791	-.0484334	.0547198
Debt to total asset ratio	DTA	-.3180646	-.1460416	-.172023	.0689139
Covid-19	COV	-.0018524	-.0075711	.0057186	.0106195
GDP growth	GDP	.0010241	.0012086	-.0001845	.0002162

Note: FEM: Fixed Effect Model; REM: Random Effect Model.

b=consistent under Ho and Ha; B=inconsistent under Ha, efficient under Ho.

Table B2. Hausman test.

Test: Ho: difference in coefficients not systematic

$\chi^2(6) = (b-B)' [(V_b - V_B)^{-1}] (b-B)$

= 75,71

Prob > χ^2 = 0.00000

Table B3. Autocorrelation test.

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 218) = 0.198

Prob > F = 0.6568

Table B4. Heteroscedasticity test.

Modified Wald test for groupwise heteroskedasticity

in fixed effect regression model

H0: $\sigma^2(i)$ for all i

$\chi^2(222) = 5.8e+08$

Prob > χ^2 = 0.0000