



Financial constraints of ASEAN firms: Impact alleviation by ESG pillars

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ABSTRACT

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The purpose of this study is to examine whether ESG plays a positive moderating role in the negative relationship between financial constraint, the Kaplan-Zingales (KZ) and Whited and Wu (WW) indexes, and firm performance: Return of Asset (ROA) and Return of Equity (ROE). This study uses information from the Thomas Refinitiv database, which covers the Association of Southeast Asian Nations (ASEAN-5): Indonesia, Malaysia, Singapore, Thailand, and the Philippines non-financial firms from 2011 to 2019. Fixed-effects (FE) are used as the baseline model, and random-effects (RE) act as the robustness of methods. The results show that the main effect of financial constraints is to act as an obstacle to firm performance. However, the marginal effects of financial constraints can be improved in the presence of ESG. Firms with a high ESG score are better at alleviating the adverse impact of financial constraints as compared to those with a low ESG score. When the ESG score is further broken down into three sub-pillar dimensions, the S-score is of the greatest magnitude in its moderating role in the ESG breakdown. The findings have important implications: effective financial support and the source of funding from the government are crucial to supporting firm performance. ESG-compliant strategies should also be formulated to encourage ESG disclosure, which leads to increased capital allocation efficiency. The firms should be stringent on S-score, which helps drive the company as employees respond by giving their best. Governments and firms need to deploy ESG guidelines in order to succeed in thriving competitive firm performances.

Contribution/Originality: The main contributions consist of the use of variables to represent financial constraints; establishing the country level and ASEAN-5 as a whole analysis; the study of ESG in totality and its breakdown into three pillars; and the interaction between ESG and financial constraints, which provide more support to developing countries.

1. INTRODUCTION

The importance of corporate governance has gained greater recognition, which has driven corporate governance reforms in emerging markets since the Asian Financial Crisis in 1997. Each ASEAN country was able to come out relatively unscathed after dealing with corporate foreign debt and restructuring their industrial sectors to remedy the crisis. The environmental, social, and governance (ESG) score has become a key component of corporate strategy for affecting the cash flows of businesses in both positive and negative ways. It has developed as a key pillar of corporate social responsibility (CSR).

According to [Corporate Knights \(2019\)](#) ASEAN countries have shown varying levels of progress in implementing ESG practices within their stock exchanges. Thailand notably ranks ninth among 47 global stock exchanges and leads in the Asia-Pacific (APAC) region, followed by the Singapore Exchange, Philippine Stock Exchange, and Indonesia Stock Exchange, ranking at 24, 30, and 36, respectively.

[Figure 1](#) illustrates how the ESG performances of the ASEAN-6 nations vary, with Thailand leading the way owing to its moderate risk exposure and generally high management rankings. Conversely, Vietnam and Indonesia are more vulnerable to ESG risks because of their lower management scores and increased exposure to high-risk industries, including steel, mining, oil and gas, electric utilities, and food ([Sustainalytics, 2021](#)). On average, ASEAN-6 countries carry a higher ESG risk compared to European and North American companies but align closely with the APAC average. Notably, when it comes to ESG standards, these nations, aside from Thailand, fall short of the worldwide norm.

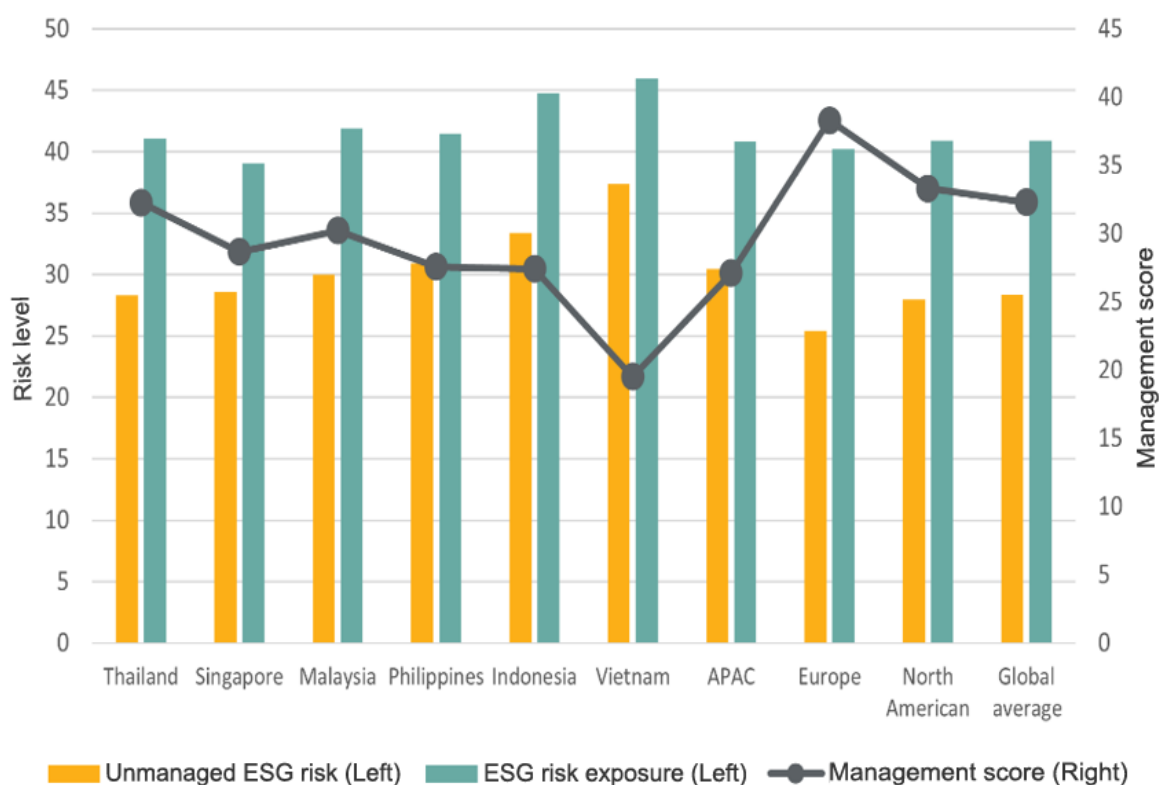


Figure 1. ESG performance comparison.

Source: [Sustainalytics \(2021\)](#).

According to stakeholder theory, a company's true success is dependent on how it treats all of its stakeholders, including the environment, rather than just those who stand to profit financially from its stock ([Freeman, 1984](#)). Whether ESG is an investment or a cost for firms, the results of previous studies on the association between ESG and corporate performance have been inconsistent. Furthermore, little research has been done on the synergistic impacts of financial constraint mechanisms and ESG, which are rarely discussed together. The model's implications about the moderating effect of ESG and the influence of financial constraints on business performance are developed in this study. ESG is a thorough assessment method for businesses that looks at the breakdown of three areas: environment, society, and governance.

This study contributes in several ways. The first emphasis of this study is the ASEAN region's rising economies. To create the ASEAN Economic Community, ASEAN has always placed a high value on the rapidly increasing economy that currently has the fifth-largest gross domestic product (GDP) in the world ([ASEAN, 2022](#)). Financial allocation is therefore essential for ASEAN enterprises to attain improved performance in light of this

trend. Second, ESG has become a crucial ethical concept in ASEAN. This study examines how financial constraints and ESG scores interact with each other to affect corporate performance. Thirdly, the moderating role of ESG is further investigated by segmenting into the pillars of E-score, S-score, and G-governance in relation to the aforementioned relationship. This study clarifies the role that ESG plays in mitigating or worsening the negative impact of financial constraints on corporate performance.

2. LITERATURE REVIEW

Cost-concerned school on environmental investment represents cost, which is supported by Hassel, Nilsson, and Nyquist (2005) that environmental performance hurts the market value of a firm. Due to the allocation of resources needed for their operation, ESG lowers company performance and reduces profitability (Duque-Grisales & Aguilera-Caracuel, 2021). The investment of money in ESG does not ensure the development of competitive advantages that improve financial outcomes. Besides, Kumari, Assaf, Moussa, and Pandey (2023) demonstrate that businesses operating in nations with greater energy sustainability performance will face rising compliance expenses, which could diminish profitability and result in lower returns. Besides, Narula, Rao, Kumar, and Matta (2024) state that not all components of ESG are significantly related to Indian firm performance. G-score is positively associated with firm performance as India has strengthened its corporate governance activities to reduce excessive concentration of authority. E-score gives a mixed finding, while S-score is found to be insignificant.

On the other hand, the value creation school views ESG as an investment rather than a cost. Gonçalves, Barros, and Avelar (2023) show that the S-score is found to have the largest magnitude when compared to the other ESG components. The E-score exhibits a significant positive link with business performance, while the G-score is not significant. Palmieri, Ferilli, Stefanelli, Geretto, and Polato (2023) also support the widespread adoption of ESG metrics, especially E-score, as having the most significant impact on mitigating a firm's probability of default. According to Zhang, Wang, and Dong (2023) an organization's financial constraints can be addressed by its ESG performance. ESG disclosure is therefore encouraged, which increases the effectiveness of capital allocation and lowers the cost of business financing. This is supported by Wen, Ho, Gao, and Yu (2022) who found that good ESG disclosure quality enhances the firms' market values and financial returns.

Financial constraints influence firms' decisions since there is a limitation on capital access, and difficulty in obtaining loans, hindering firm growth (Priya & Sharma, 2023). The effect of the financial constraints on a firm's exit process tends to intensify during the crisis period (Ponikvar, Zajc Kejžar, & Peljhan, 2018). Thus, access to finance by participating in the financial market promotes firm growth resource availability is the driver of firm growth (Cowling, Liu, & Zhang, 2018; Fowowe, 2017). Du and Nguyen (2022) have proposed a mechanism for cognitive financial restrictions on business expansion from the financial demand side, going beyond the traditional paradigm. According to their findings, companies that intend to borrow even if they haven't sought bank loans perform better than those that don't due to cognitive financial constraints.

By removing financial obstacles, ESG performance enhances company performance (Zhang & Lucey, 2022). Strong ESG performance helps businesses obtain more trade credit, which enhances their financial environment and performance by sending a high-quality signal to the credit market. The difference between ranging agency-weighted ESG ratings serves as a signal of ESG manipulation; the greater the disparities, the worse the firm performance (Lee, Raschke, & Krishen, 2023). In order to increase company value, Fu, Ren, Tian, Narayan, and Weber (2023) advise charging more to companies that participate in anti-ESG activities and implement ESG practices.

Corporate governance disclosure and corporate social responsibility negatively affect firm performances, and it is believed that the board of directors works on social policies for their benefit. ESG, on the other hand, has a positive relationship with firm performance (Buallay, 2019). ESG at the emerging set-up is in its infancy stage,

with ESG evaluation standards lacking convergence and may face stronger negative externalities (Narula et al., 2024).

3. METHODS

A static regression model is carried out in this study. The Breusch and Pagan (Lagrangian Multiplier) test is used to choose between pooled regression and random effects. Since p-value is significant at the 5% level, the pooled model is rejected in comparison to the random effects model. Next, with the hypothesis to control unobserved heterogeneity, the Hausman test is used to select between the fixed-effects model and the random-effects model. To exclude the effects of unobservable and time-independent elements, the fixed effect model is preferred as the p-value is significant at the 5% level.

This study examines panel data in ASEAN-5 countries from 2011 to 2019 every year using STATA software. The data was sourced from Thomas Refinitiv. The exact definition of each variable and the data sources are shown in Table 1. The econometric specification is described as follows:

$$\log FP_{it} = \beta_0 + \beta_1 \log FC_{it} + \beta_2 \log ESG_{it} + \beta_3 (\log FC * \log ESG)_{it} + \beta_4 \log FirmSize_{it} + \beta_5 \log Profitability_{it} + \beta_5 \log Workingcap_{it} + \epsilon_{it}$$

Where FP_{it} is firm performance, $\log FC_{it}$ is a financial constraint, $\log ESG_{it}$ is ESG, $\beta_3 (\log FC * \log ESG)_{it}$ is the interaction term between financial constraint and ESG, $\log FirmSize_{it}$ is market capitalization, $Profitability_{it}$ is gross profit margin, and $\log Workingcap_{it}$ is working capitalization, and ϵ_{it} is the error term. This study uses ROE and ROA as the dependent variables for firm performance indicators. Both WW and KZ indices served as the main independent variables for the financial constraint index. FC*ESG used to focus on the ESG function as moderator. In addition, control variables include firm characteristics, such as firm size, profitability, and working capital.

Table 1. Definition of variables.

Variable	Proxies	Variable definitions
Dependent variable		
Firm performance	Return of equity (%)	$\frac{\text{Net income after taxes}}{\text{Total equity}}$
	Return of asset (%)	$\frac{\text{Net income after taxes}}{\text{Average total assets this year and the previous year's}}$
Independent variable		
Financial constraint	Log WW index (Index)	$-0.091 \times \frac{\text{Cash flow}}{\text{Total assets}}$ $-0.062 \times \text{Dividend dummy} + 0.021 \times \frac{\text{Long term liabilities}}{\text{Total assets}}$ $- 0.044 \text{Log total assets}$ $+ 0.102 \text{ industry sales Growth}$ $- 0.035 \text{ sales growth}$
	Log KZ index (Index)	$-1.001909 \times \frac{\text{Cash flow}}{\text{Total assets}}$ $+0.2826389 \times \frac{\text{TobinQ}}{\text{Debt}}$ $+3.139193 \times \frac{\text{Total capital}}{\text{Dividends}}$ $-39.368 \times \frac{\text{Total assets}}{\text{Cash}}$ $-1.315 \times \frac{\text{Cash}}{\text{Total assets}}$
Moderating variable		
ESG	Log ESG score	Overall company score ranging from 0 to 100 based on self-reported information in the environmental, social, and corporate

Variable	Proxies	Variable definitions
		governance pillars computed by Thomas Refinitiv.
Control variable		
Firm size	Log market capitalisation (%)	Total market capitalization
Profitability	Gross profit margin (%)	$\frac{\text{Gross income}}{\text{Net sales}}$
Working capital	Working capital (Ratio)	$\frac{\text{Current asset}}{\text{Current liability}}$

The important features of this dataset are as follow: First of all, because financial institutions engage in radically different operating, investing, and financing activities, and because they are subject to extensive legal regulation, including with regard to their governance structure, this study excludes financial institutions and real estate. Besides, financial firms are protected by various provisions and guarantees. Secondly, the ASEAN ESG database is limited because it's a beginning for the region to move in this direction and still regards it as a box-ticking exercise, with the emphasis being on the ESG disclosure requirement rather than what ESG meant for their organization (Accounting and Business, 2020). In addition, there are interconnected ESG issues, such as inefficiencies in governmental coordination and a lack of regional alignment (Bangkok Post, 2023). Vietnam is excluded from this study because no data is available from the year 2011 to the year 2019. The research used ASEAN-5 as the sample selection, with the source being Thomas Refinitiv. Thus, after excluding the sector of financial institutions and real estate and excluding Vietnam, there are a total of 2,620 companies with no ESG disclosure, thus ending with 116 companies that have ESG disclosure covering the range of 7 to 11 years. Thirdly, both the financial constraint indices, KZ and WW, are added with their minimum value to become non-negative. Fourthly, one year is the leading factor in both firm performance ROA and ROE. Fifthly, a time frame of nine years was selected, excluding both the Global Financial Crisis of 2008 and the COVID-19 outbreak, to limit the structural breaks in the analysis. Sixthly, the sample size data is winsorized at 5% to correct the distortions in the database. Lastly, the sample studies contain broad variables, including firm characteristics and financial variables. Thus, it allows more mechanisms to be tested in the models.

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Std. dev.	Min.	Max.
ROA	1,076	0.079	0.066	-0.010	0.261
ROE	1,031	0.170	0.168	-0.018	0.737
KZ	1,079	3.968	0.077	3.741	4.054
KZ*ESG	1,025	17.132	2.127	11.633	20.232
KZ*ENV	1,025	14.664	5.604	0.000	20.354
KZ*Social	1,025	17.039	2.721	10.104	20.767
KZ*GOV	1,025	17.566	2.167	11.766	20.676
WW	908	1.204	0.015	1.181	1.237
WW*ESG	855	5.242	0.641	3.672	6.175
WW*ENV	855	4.514	1.653	0.000	6.212
WW*Social	855	5.239	0.818	3.189	6.338
WW*GOV	855	5.352	0.652	3.714	6.310
ESG	1,026	4.319	0.536	3.109	4.991
E-score	1,026	3.693	1.412	0.000	5.021
S-score	1,026	4.296	0.686	2.700	5.123
G-score	1,026	4.429	0.549	3.145	5.100
Marketcap	1,074	22.851	0.918	20.965	24.408
Profit	1,080	0.335	0.179	0.077	0.690
Workingcap	1,038	1.799	1.070	0.563	4.490

Note: The table reports the summary statistics (Mean, standard deviation denoted as Std. dev., minimum value denoted as min, maximum value denoted as Max.) of all variables. Study observations range from 2009 to 2019. All variables are taken from the Thomas Refinitiv database. All variables are winsorized at the 5% and 95% levels.

Source: Thomas Refinitiv (2023).

Table 2 shows descriptive statistics for all variables in ASEAN from 2011 to 2019 before examining the regression results. In this average firm growth in ASEAN over the past nine years, the ROA and ROE are measured in the first year, which shows 7.9% and 17.0%, respectively. The positive value shows that firms perform better in gaining profits, while negative values indicate the opposite. Financial constraint indexes KZ and WW show mean values of 3.968 and 1.204 with standard deviations of 0.077 and 0.015, respectively, indicating that the differences in the degree of financial constraint in each firm from the mean value are small and low as a whole.

The KZ index focuses on endogenous considerations while the WW index focuses on both endogenous and exogenous considerations. The higher the KZ and WW indices, the higher the corporate financing constraint. Both the KZ and WW indices are subtracted from their minimum value to become non-negative. ESG score in ASEAN shows a mean of 4.319%. The higher the ESG score, the better the firm's social responsibility performance. The mean value of the G-score is higher suggesting that ASEAN firms are rated better on governance parameters as compared to the E-score and S-score. ASEAN firms undergo a gain in profit with a range of 7.7% to 69.0% indicating quite good profitability during the sample years. The market capitalization and working capital have been, on average, 22.852% and 1.799%, respectively.

In ASEAN-5, Table 3 shows a rough estimate of pairwise correlation coefficients that look at how each pair of indicators is related to each other for all types of businesses, except for financial institutions and real estate. All dependent variables have a one-year lead. Firstly, it is shown that the log KZ and WW index have a significant negative correlation with ROA and ROE. The highest correlation coefficient of the KZ index on firm performance proxies is ROA (-0.610), indicating that the log KZ index is associated with 0.3721% of the variance in ROA ($R^2 = (-0.610)^2 = 0.3721$). An alternative measurement of financial constraint, the WW index also shows its highest correlation with ROA (-0.1016), 0.0103% of the variance in ROA. Secondly, all correlation coefficients are mostly statistically significant at the 1% level. A useful association between variables is thus obtained. However, there are some limitations to the coefficients, such as capturing only linear relationships, not implying causality, and the possibility of spurious regression. Thus, the subsequent analysis uses a regression model to analyze the impact of financial constraints on firm performance.

4. EMPIRICAL RESULTS

Table 4 shows the direct impact of ESG on firm performance of different alternative firms ROA and ROE using the Fixed Effect Model to be consistent with the baseline model of ESG as the moderating role in Table 5. The result in Table 4 is consistent when the result is run with the Random Effect (RE) Model. There is no significant relationship between ESG and firm performance in Table 4 columns (1) and (6). However, when ESG is broken down into E-score, S-score, and G-score, there is a 5% significant relationship between E-score and firm performance. Thus, the result shows that the E-score is a cost rather than an investment for the firm. There is no significant relationship between the S-score and G-score on firm performance at a 5% level of significance.

Tables 5 and 6 report the results obtained by estimating a static model through FE regression after the Hausman test is run, where the alternative hypothesis that the preferred model is FE is supported. The Fixed Effect model is reported here as it gives estimates that are of the same sign and similar. The financial constraints, KZ index (Table 5) and WW index (Table 6) is presented in separate tables to explore the impact of different alternative firm performances of ROA and ROE. Both Tables 5 and 6 shows that financial constraints have a negative impact on firm performance, regardless of the measurement of financial constraints.

Table 3. Correlation matrix.

Variables	ROA	ROE	KZ	KZ*ESG	KZ*ESG	KZ*SOCIAL	KZ*GOV	ESG	E-score	S-score	G-score	Marketcap	Profit	Workingcap
ROA	1													
ROE	0.696***	1												
KZ	-0.610***	-0.543***	1											
KZ*ESG	-0.091***	0.011	0.090***	1										
KZ*ENV	-0.111***	-0.031	0.111***	0.795***	1									
KZ*social	-0.049	0.041	0.074**	0.918***	0.733***	1								
KZ*GOV	-0.086***	-0.010	0.037	0.665***	0.354***	0.437***	1							
ESG	0.012	0.106***	-0.073**	0.987***	0.780***	0.908***	0.658***	1						
E-score	-0.079**	0.001	0.061*	0.793***	0.999***	0.732***	0.353***	0.786***	1					
S-score	0.031	0.117***	-0.053*	0.907***	0.721***	0.992***	0.432***	0.917***	0.727***	1				
G-score	0.015	0.082**	-0.124***	0.647***	0.336***	0.423***	0.987***	0.668***	0.344***	0.439***	1			
Marketcap	0.181***	0.174***	-0.137***	0.156***	0.204***	0.141***	0.136***	0.177***	0.212***	0.159***	0.156***	1		
Profit	0.259***	0.212***	-0.244***	-0.106***	-0.236***	-0.121***	0.043	-0.060*	-0.220***	-0.086***	0.088***	-0.027	1	
Workingcap	0.114***	-0.148***	-0.197***	-0.171***	-0.123***	-0.173***	-0.101***	-0.144***	-0.116***	-0.151***	-0.072**	0.008	0.048	1
Variables	ROA	ROE	WW	WW*ESG	WW*ESG	WW*SOCIAL	WW*GOV	ESG	E-score	S-score	G-score	Marketcap	Profit	Workingcap
ROA	1													
ROE	0.696***	1												
WW	-0.106***	-0.064**	1											
WW*ESG	-0.011	0.077**	0.060*	1										
WW*ENV	-0.073**	-0.018	-0.098***	0.770***	1									
WW*social	0.022	0.100***	0.064*	0.922***	0.711***	1								
WW*GOV	-0.046	0.039	0.080**	0.693***	0.353***	0.483***	1							
ESG	0.011	0.106***	-0.04	0.995***	0.780***	0.917***	0.684***	1						
E-score	-0.079**	0.001	-0.131***	0.767***	0.999***	0.707***	0.349***	0.786***	1					
S-score	0.031	0.117***	-0.015	0.919***	0.719***	0.997***	0.477***	0.917***	0.727***	1				
G-score	0.015	0.08**	-0.021	0.688***	0.363***	0.478***	0.995***	0.668***	0.344***	0.439***	1			
Marketcap	0.181***	0.174***	-0.642***	0.063*	0.150***	0.076**	0.027	0.177***	0.212***	0.159***	0.156***	1		
Profit	0.259***	0.212***	0.04	-0.041	-0.212***	-0.051	0.077**	-0.060*	-0.220***	-0.086***	0.088***	-0.027	1	
Workingcap	0.114***	-0.148***	-0.042	-0.123***	-0.080**	-0.126***	-0.096***	-0.144***	-0.116***	-0.151***	-0.072**	0.008	0.048	1

Note: Pairwise correlation presents the relationship between financial constraint indexes, the KZ and WW index with different measures of performance in all sectors except financial institutions and real estate sectors. In the models, the dependent variable of firm performance is measured as ROA and ROE. This study controls log market capitalisation, gross profit margin, and working capital. Parentheses *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively.

Source: Thomas Refinitiv (2023).

Table 4. Fixed effect estimations -impact of ESG and its breakdown on ASEAN firm performance.

Variables	(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE
ESG	-0.005 (0.005)				0.005 (0.012)			
E-score		-0.004** (0.002)				-0.009** (0.004)		
S-score			-0.001 (0.004)				0.007 (0.009)	
G-score				-0.0101* (0.005)				-0.001 (0.012)
Marketcap	0.009** (0.005)	0.009* (0.005)	0.009** (0.005)	0.013*** (0.003)	0.036*** (0.010)	0.034*** (0.010)	0.036*** (0.010)	0.036*** (0.010)
Gross profit	0.160*** (0.026)	0.156*** (0.026)	0.162*** (0.026)	0.116*** (0.018)	0.177*** (0.056)	0.159*** (0.056)	0.180*** (0.056)	0.174*** (0.056)
Workingcap	0.005* (0.003)	0.005* (0.003)	0.005* (0.003)	0.006** (0.002)	0.004 (0.006)	0.003 (0.006)	0.005 (0.006)	0.004 (0.006)
Constant	-0.171 (0.108)	-0.169 (0.103)	-0.197* (0.106)	-0.224*** (0.076)	-0.742*** (0.237)	-0.633*** (0.226)	-0.767*** (0.234)	-0.710*** (0.231)
Observations	984	984	984	984	948	948	948	948
R-squared	0.075	0.080	0.075	0.074	0.041	0.047	0.042	0.041
Number of ids	116	116	116	116	116	116	116	116
Hausman test	6.350 (0.174)	6.590 (0.160)	6.730 (0.151)	5.950 (0.203)	9.210 (0.056)	8.580 (0.073)	9.970 (0.041)	8.350 (0.079)
Variance inflation factor	1.030	1.060	1.030	1.020	1.020	1.060	1.020	1.020
Serial correlation	20.625 (0.000)	20.145 (0.000)	20.34 (0.000)	19.95 (0.000)	11.548 (0.001)	11.654 (0.0009)	10.971 (0.0012)	11.232 (0.0011)
Heteroscedasticity	1.30*10 ^{^5} (0.000)	39,746.17 (0.000)	1.50*10 ^{^5} (0.000)	27,516.97 (0.000)	2.30*10 ^{^5} (0.000)	1.40*10 ^{^5} (0.000)	1.70*10 ^{^5} (0.000)	2.10*10 ^{^5} (0.000)

Note: The Fixed Effect Model examines the relationship between two different financial constraint indices, namely the KZ and WW indices, and two different performance-oriented measures: ROE, and ROA. This analysis is conducted across all sectors, excluding financial institutions and the real estate sector, with firm age as a moderating variable between financial constraint and firm performances. This study controls market capitalization, gross profit margin, and working capital. Standard errors are in parentheses. ***, **, * denote p-values of 0.01, 0.05, and 0.10, respectively.

Source: Own calculations using data from Thomas Refinitiv (2023).

Due to poor track records and insufficient cash flows, lower performance is the result of more financial constraints. They do not acquire the requisite level of bank loan money; they have little choice but to scale down their investment projects in line with the funding available to them. Second, organizations with limited resources must turn off business opportunities, which restricts the firm's ability to grow (Du & Nguyen, 2022). Financial constraint is therefore a prerequisite for maintaining business operations, as seen by the significant negative link between financial constraint and firm performance.

The result in Table 4 shows there is no direct relationship between ESG and its breakdown at the 5% level, except for the negative impact of the E-score on firm performance. But Tables 5 and 6 show interesting findings. When considering the moderating role ESG plays in the relationship between financial constraint and firm growth, this study shows that ESG acts as the positive moderating variable, and weakens the negative impact of financial constraint on firm performance at a 1% level of significance. In Table 5, column (2), for a unit increase in ESG, the strength of the negative impact of financial constraints on ROA is weakened by the size of the interaction term ($-1.806+0.392=-1.414$). to put it another way, the coefficient on the interaction term of financial constraint and ROA shows that the negative effect of the financial constraint KZ index on ROA gets weaker with each unit increase in ESG, going down by 0.392%. On the other hand, in column (7), when the firm performance index is changed to ROE, a unit increase in ESG, the negative impact of the KZ index on ROE weakened by 0.602%. Thus, the positive moderating role of ESG shows consistent findings. To further check whether the interpretation in Table 5 is warranted, another financial constraint proxy, the WW index, is explored as shown in Table 5. The result has consistent findings with Table 5 column (2), whereby, with a unit increase in ESG, the negative impact of financial constraint on WW index on ROA decreases by 0.851% at a 1% level of significance. When ROE is used as a firm performance proxy, interaction WW*ESG however is not significant, but the positive sign shows consistent results with earlier findings.

To find out which sub-pillar in ESG affects the most in the aforementioned relationship, ESG has further gathered at the sub-pillar level: i) Environmental (E-score) ii) Social (S-score) iii) Government (G-score). By employing the Fixed Effect model, the social pillar has the greatest magnitude in affecting both ROA and ROE. All ESG breakdown pillar scores as moderating variables are positively significant at 1% level except KZ*GOV, but the positive sign is still consistent (column 10). This shows that the capabilities of the E-score, S-score, and G-score play a role in diminishing the negative impact of financial constraints on firm performance. S-score as the positive moderator is the most driving influence on the aforementioned relationship (columns 4 and 9), with the negative impact of the KZ index on ROA and ROE weaker by 0.285% and 0.538%, respectively. E-score shows a significant moderating variable at a 1% level, which shows the need for managers to implement environmentally responsible activities. 'Greening' results in financial gain. The interaction of the overall ESG score and KZ index is confirmed to weaken the impact of financial constraints on firm performance. On the other hand, as shown in Table 6, when ESG interacts with another financial constraint proxy, the WW index, the coefficient of the interaction WW*SOCIAL in column (4) shows 0.743%, indicating that for each unit increase in SOCIAL, the negative impact of the WW index on ROA weaker by 0.743% ($-3.415+0.743=-2.672$). The result also documents the S-score as having the largest magnitude as compared to the rest of the ESG sub-pillar. Overall, the results shown in Tables 5 and 6 support the value creation school's claim that ESG is an investment rather than a cost, which weakens the negative impact of financial constraints on firm performance.

Regarding control variables, market capitalization shows consistent results when both financial constraint proxies KZ and WW index are used. This shows that ASEAN firms can take advantage of larger scale and better management to achieve better firm performance. Profitability shows the strongest effect on firm performance compared to other control variables in both Tables 5 and 6. There is profit-led growth shown in ASEAN firms from the said period on ROA and ROE at 1%. A higher profit margin allows them to invest more and eventually grow more. Working capital shows a negative relationship with firm performance. Less working capital without

incurring too much liquidity risk can lead to more effective management, which enables a company to meet its business obligations and have more funds available for long-term undertakings.

In Tables 5 and 6, the relationship between financial constraints and firm performance depends on the ESG. In Table 5, models (2) and (7) have higher financial constraints and lower firm performances if ESG is at its minimum level. The marginal effect at the ESG minimum level has a detrimental effect on firm performance, which is greater than the mean and maximum levels. As ESG decreases, its marginal effect becomes stronger. This implies that when ESG is low (for example, at the minimum level), each additional unit of financial constraint causes 0.587% and 1.04% losses in ROA and ROE, respectively. In other words, ESG, at its minimum level, still acts as a moderating role despite having a lesser benefit (for example, -0.587 versus the direct impact of -1.806). Thus, a higher ESG is better than a low ESG. The results are consistent with Table 6, S with financial constraints as WW index.

4.1. Robustness Check

4.1.1. Estimation with Random Effect Model

To further re-estimate the reliability and stability of Fixed Effect results with the alternative setting of financial constraints in Tables 5 and 6, the Random Effect Model is carried out as robustness checking. The results show strong robustness in Tables 7 and 8, regardless of the methodology. Financial constraints, KZ index (Table 7) and WW index (Table 8) have a negative relationship with firm performance. The coefficients of the interaction KZ*ESG in Table 7 columns (2) and (7) and interaction WW*ESG in Table 8 column (2) indicate ESG remains a positive moderator in alleviating financial constraints on firm performance. This result indicates that firms should pay attention to ESG as an investment rather than a cost to weaken the impact of financial constraints on firm performance. ESG can help the firm form intangible assets and obtain a sustainable competitive advantage. The random effect model also corroborates the main findings and supports that the S-score is the most prominent and statistically validated, even for both different financial constraint proxies. This result recognizes the importance of the social image of the firms to pave the way for the future development of the firms by gaining the trust of the government and the stakeholders in alleviating financial constraints and firm performance. Overall, this analysis is consistent with previous findings that ESG has a positive moderating role, that weakens the negative relationship between financial constraints on firm performance. Regarding control variables, market capitalization, gross profit, and working capital show consistent results between both the fixed effect and random effect models.

4.1.2. Estimation with Country-Level

Table 9 represents a country-level analysis of ESG's role in the ASEAN region. In terms of country analysis, it is observed that Thailand has the highest interaction coefficients KZ*ESG and WW*ESG of 0.891 and 3.687, respectively, at a 1% level of significance on ROA. This finding shows that Thailand leads the ASEAN region in terms of ESG as a positive moderating role in weakening the negative relationship of financial constraints on firm growth. Specifically, the interaction between KZ*ESG and WW*ESG indicates that a one percent increase in ESG is associated with 0.891 and 3.687, respectively weakened by the size of the interaction term. The rest of the countries show consistent results of positive ESG moderating roles in weakening the relationship between financial constraints and firm performance. When evaluating firm performance using ROE, Malaysia experienced the highest interaction term KZ*ESG of -1.433 at a 5% level of significance, while Thailand placed the second highest at 1.319 at a 1% significant level. However, Thailand continues to remain the strongest interaction term, with a WW*ESG of 7.868 on ROE. This suggests that Thailand is more likely to invest in ESG to weaken the negative impact of financial constraints on firm performance. This is consistent with Thailand being ranked first in ASEAN Sustainable Development Goals (Sustainable Development Report, 2019).

Table 5. Fixed effect estimations -impact of financial constraint KZ index on ASEAN firm performance.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
KZ	-0.115*** (0.040)	-1.806*** (0.258)				-0.366*** (0.089)	-2.912*** (0.615)			
KZ*ESG		0.392*** (0.060)					0.602*** (0.142)			
KZ			-0.466*** (0.072)					-0.793*** (0.166)		
KZ*ENV			0.106*** (0.019)					0.153*** (0.042)		
KZ				-1.352*** (0.188)					-2.640*** (0.443)	
KZ*Social				0.285*** (0.043)					0.538*** (0.101)	
KZ					-0.903*** (0.230)					-0.735 (0.543)
KZ*GOV					0.175*** (0.052)					0.0932 (0.122)
ESG		-1.559*** (0.239)					-2.984*** (0.564)			
E-score			-0.423*** (0.074)					-0.615*** (0.167)		
S-score				-1.129*** (0.172)					-2.123*** (0.402)	
G-score					-0.702*** (0.208)					-0.369 (0.483)
Marketcap	0.007 (0.004)	0.006 (0.005)	0.005 (0.005)	0.005 (0.005)	0.007 (0.005)	0.033*** (0.010)	0.030*** (0.010)	0.028*** (0.010)	0.028*** (0.010)	0.031*** (0.010)
Gross profit	0.140*** (0.025)	0.147*** (0.026)	0.138*** (0.026)	0.138*** (0.026)	0.147*** (0.027)	0.102* (0.056)	0.133** (0.058)	0.113** (0.057)	0.118** (0.057)	0.125** (0.058)
Workingcap	0.006** (0.003)	0.005 (0.003)	0.005* (0.003)	0.005* (0.003)	0.004 (0.003)	-0.001 (0.006)	0.002 (0.006)	0.002 (0.006)	0.003 (0.006)	0.001 (0.006)
Constant	0.323 (0.201)	7.070*** (1.033)	1.764*** (0.317)	5.279*** (0.764)	3.480*** (0.920)	0.841* (0.448)	10.97*** (2.466)	2.662*** (0.725)	9.921*** (1.799)	2.335 (2.166)
Observations	1,028	984	984	984	984	989	948	948	948	948
R-squared	0.084	0.13	0.124	0.13	0.102	0.06	0.075	0.073	0.087	0.055
Number of ids	116	116	116	116	116	116	116	116	116	116

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
Hausman test	80.09 (0.000)	110.68 (0.000)	96.64 (0.000)	109.15 (0.000)	80.67 (0.000)	48.07 (0.000)	81.27 (0.000)	75.67 (0.000)	90.33 (0.000)	56.89 (0.000)
Variance inflation factor	1.06	1013.67	637.83	858.45	1020.9	1.07	1155.5	657.78	914.86	1214.27
Serial correlation	18.473 (0.000)	18.124 (0.000)	17.831 (0.000)	18.997 (0.000)	19.751 (0.000)	16.897 (0.000)	10.716 (0.001)	11.226 (0.0011)	10.66 (0.0014)	11.349 (0.001)
Heteroscedasticity	7.14*10 ⁴ (0.000)	3.28*10 ⁴ (0.000)	21,249.9 (0.000)	53,848.43 (0.000)	18,895.17 (0.000)	2.92*10 ⁴ (0.000)	6.30*10 ⁰⁵ (0.000)	1.20*10 ⁰⁵ (0.000)	1.30*10 ⁰⁶ (0.000)	1.10*10 ⁰⁵ (0.000)
Marginal effect										
Mean		-0.113 [-0.354]	-0.008 [-0.026]	-0.121 [-0.379]	-0.147 [-0.461]		-0.312 [-0.423]	-0.132 [-0.179]	-0.046 [-0.028]	-0.332 [-0.450]
Minimum		-0.587*** [-4.017]	-0.136 [-0.580]	-0.466*** [-3.187]	-0.359** [-2.455]		-1.040*** [-3.060]	-0.317 [-0.582]	-1.291 [-1.115]	-0.445 [-1.310]
Maximum		0.150 [0.852]	0.063* [0.172]	0.070 [0.398]	-0.030 [-0.168]		0.092 [0.225]	-0.029 [-0.035]	0.646 [0.526]	-0.270 [-0.659]

Note: Standard errors are in parentheses. Asterisks *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively. [-] denotes t-statistics and figures in parentheses are p-values.

Table 6. Fixed effect estimations -impact of financial constraint WW index on ASEAN firm performance.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
WW	-0.267 (0.172)	-3.877*** (1.244)				-0.365 (0.402)	-3.35 (3.006)			
WW*ESG		0.851*** (0.286)					0.764 (0.687)			
WW			-1.338*** (0.399)					-1.21 (0.955)		
WW*ENV			0.332*** (0.103)					0.38 (0.245)		
WW				-3.415*** (0.914)					-4.494** (2.218)	
WW*Social				0.743*** (0.209)					1.030** (0.505)	
WW					-1.445 (1.290)					2.143 (3.060)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
WW*GOV					0.276 (0.287)					-0.483 (0.677)
ESG		-1.031*** (0.344)					-0.918 (0.826)			
E-score			-0.406*** (0.125)					-0.47 (0.296)		
S-score				-0.897*** (0.252)					-1.236** (0.607)	
G-score					-0.346 (0.346)					0.576 (0.815)
Marketcap	0.012** (0.005)	0.015*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	0.043*** (0.011)	0.044*** (0.012)	0.043*** (0.012)	0.044*** (0.012)	0.042*** (0.012)
Gross profit	0.142*** (0.027)	0.147*** (0.029)	0.141*** (0.029)	0.144*** (0.029)	0.147*** (0.029)	0.079 (0.063)	0.101 (0.066)	0.0808 (0.065)	0.0994 (0.066)	0.0937 (0.066)
Workingcap	0.009*** (0.003)	0.007** (0.003)	0.006* (0.003)	0.006** (0.003)	0.007** (0.003)	0.009 (0.007)	0.011 (0.007)	0.008 (0.007)	0.010 (0.007)	0.010 (0.007)
Constant	0.0695 (0.261)	4.382*** (1.497)	1.327*** (0.505)	3.811*** (1.107)	1.496 (1.551)	-0.41 (0.607)	3.138 (3.613)	0.637 (1.196)	4.501* (2.682)	-3.399 (3.679)
Observations	864	821	821	821	821	833	793	793	793	793
R-squared	0.094	0.106	0.111	0.109	0.102	0.043	0.043	0.052	0.047	0.042
Number of ids	113	113	113	113	113	113	113	113	113	113
Hausman test	9.32 (0.054)	18.49 (0.005)	18.64 (0.005)	20.55 (0.002)	13.39 (0.037)	25.27 (0.000)	30.38 (0.000)	34.42 (0.000)	26.89 (0.000)	24.64 (0.000)
vif	1.37	2481.4	2439.96	2481.71	2493.86	1.35	2600.44	2443.51	2539.33	2619.44
Serial correlation	17.672 (0.000)	28.947 (0.000)	27.92 (0.000)	30.51 (0.000)	26.993 (0.000)	14.902 (0.000)	9.221 (0.003)	9.611 (0.0026)	9.17 (0.0032)	9.714 (0.0024)
Heteroscedasticity	8.50*10 ³² (0.000)	5.87*10 ⁰⁴ (0.000)	29,596.54 (0.000)	1.90*10 ⁰⁵ (0.000)	9,612.79 (0.000)	3.04*10 ⁰⁴ (0.000)	7.57*10 ⁰⁴ (0.000)	79,963.43 (0.000)	52,574.37 (0.000)	86,211.24 (0.000)
Marginal effect										
Mean		-0.202 [-0.394]	0.096 [0.187]	-0.206 [-0.403]	-0.253 [-0.494]		-0.051 [-0.031]	0.431 [0.262]	-0.253 [-0.494]	0.057 [0.035]
Minimum		-1.231*** [-2.919]	-0.306 [-0.662]	-1.105*** [-2.620]	-0.587 [-1.391]		-0.975 [-0.841]	-0.028 [-0.021]	-0.587 [-1.391]	0.641 [0.553]
Maximum		0.370 [0.853]	0.319 [0.586]	0.293 [0.676]	-0.068 [-0.156]		0.463 [0.377]	0.686 [0.381]	-0.068 [-0.156]	-0.267 [-0.218]

Note: Standard errors are in parentheses. Asterisks *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively. [] denotes t-statistics and figures in parentheses are p-values.

Table 7. Robustness test: Random effect estimations -impact of financial constraint KZ index on ASEAN firm performance.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
KZ	-0.343*** (0.029)	-0.903*** (0.212)				-0.602*** (0.079)	-1.598*** (0.583)			
KZ*ESG		0.115** (0.048)					0.223* (0.133)			
KZ			-0.518*** (0.057)					-0.796*** (0.154)		
KZ*ENV			0.036** (0.015)					0.055 (0.039)		
KZ				-0.797*** (0.155)					-1.825*** (0.420)	
KZ*Social				0.091*** (0.035)					0.275*** (0.095)	
KZ					-0.731*** (0.199)					-0.438 (0.523)
KZ*GOV					0.072 (0.044)					-0.041 (0.116)
ESG		-0.459** (0.190)					-0.878* (0.526)			
E-score			-0.145** (0.058)					-0.224 (0.154)		
S-score				-0.362*** (0.138)					-1.079*** (0.376)	
G-score					-0.294* (0.175)					0.164 (0.461)
Marketcap	0.008*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.023*** (0.007)	0.020*** (0.007)	0.021*** (0.007)	0.020*** (0.007)	0.020*** (0.008)
Gross profit	0.065*** (0.013)	0.049*** (0.013)	0.047*** (0.013)	0.050*** (0.013)	0.050*** (0.013)	0.101** (0.041)	0.106** (0.042)	0.091** (0.042)	0.105** (0.042)	0.099** (0.042)
Workingcap	0.002 (0.002)	0.000 (0.002)	0.000 (0.002)	0.001 (0.002)	0.000 (0.002)	-0.012** (0.005)	-0.013** (0.005)	-0.014** (0.005)	-0.012** (0.005)	-0.013** (0.005)
Constant	1.240*** (0.138)	3.455*** (0.843)	1.908*** (0.236)	3.021*** (0.617)	2.794*** (0.794)	2.029*** (0.381)	6.002*** (2.327)	2.865*** (0.651)	6.895*** (1.689)	1.432 (2.090)
Observations	1028.	984	984	984	984	989	948	948	948	948
Number of ids	116	116	116	116	116	116	116	116	116	116

Note: Standard errors are in parentheses. Asterisks *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively.

Table 8. Robustness test: Random effect estimations-impact of financial constraintWWindex on ASEAN firm performance.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ROA	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE	ROE
WW	-0.223 (0.167)	-2.809** (1.179)				-0.047 (0.393)	-1.514 (2.904)			
WW*ESG		0.613** (0.271)					0.409 (0.663)			
WW			-1.117*** (0.385)					-0.817 (0.932)		
WW*ENV			0.277*** (0.099)					0.338 (0.239)		
WW				-2.863*** (0.887)					-4.098* (2.174)	
WW*Social				0.625*** (0.203)					1.001** (0.494)	
WW					-0.406 (1.192)					4.779* (2.892)
WW*GOV					0.054 (0.265)					-1.007 (0.640)
ESG		-0.745** (0.326)					-0.492 (0.798)			
E-score			-0.339*** (0.120)					-0.419 (0.288)		
S-score				-0.755*** (0.244)					-1.200** (0.594)	
G-score					-0.078 (0.319)					1.207 (0.771)
Marketcap	0.012*** (0.004)	0.015*** (0.004)	0.015*** (0.004)	0.015*** (0.004)	0.014*** (0.004)	0.034*** (0.009)	0.034*** (0.010)	0.036*** (0.010)	0.035*** (0.010)	0.033*** (0.010)
Gross profit	0.106*** (0.019)	0.101*** (0.019)	0.0941*** (0.019)	0.100*** (0.019)	0.103*** (0.019)	0.136*** (0.047)	0.147*** (0.048)	0.124*** (0.048)	0.147*** (0.048)	0.140*** (0.048)
Workingcap	0.008*** (0.003)	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)	-4.92*10^05 (0.006)	0.001 (0.006)	-0.001 (0.006)	0.001 (0.006)	0.0002 (0.006)
Constant	0.0228 (0.250)	3.108** (1.420)	1.052** (0.484)	3.154*** (1.072)	0.251 (1.438)	-0.591 (0.589)	1.161 (3.495)	0.331 (1.165)	4.232 (2.624)	-6.361* (3.487)
Observations	864	821	821	821	821	833	793	793	793	793
Number of ids	113	113	113	113	113	113	113	113	113	113

Note: Standard errors are in parentheses. Asterisks *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively.

Table 9. Robustness test: Country level estimations -impact of financial constraint index on ASEAN firm performance.

Dependent variable: ROA										
Financial constraint: KZ index										
Countries	Indonesia		Singapore		Thailand		Malaysia		Philippines	
KZ	0.102 (0.071)	-2.260*** (0.680)	-0.221** (0.106)	-0.561 (0.600)	-0.390*** (0.100)	-4.275*** (0.811)	-0.106 (0.069)	-1.456*** (0.377)	-0.368*** (0.108)	-1.235** (0.604)
KZ*ESG		0.520*** (0.149)		0.0823 (0.143)		0.891*** (0.187)		0.336*** (0.093)		0.246 (0.152)
ESG		-2.076*** (0.592)		-0.326 (0.565)		-3.545*** (0.746)		-1.332*** (0.368)		-1.004 (0.608)
Marketcap	0.019 (0.012)	0.018 (0.013)	-0.019** (0.008)	-0.018** (0.009)	0.017 (0.012)	0.018 (0.016)	0.011* (0.006)	0.012* (0.007)	-0.007 (0.008)	-0.004 (0.009)
Gross profit	0.190*** (0.060)	0.179*** (0.064)	0.160*** (0.044)	0.167*** (0.047)	0.128 (0.086)	-0.0245 (0.092)	0.0112 (0.047)	0.0288 (0.048)	0.100 (0.061)	0.126* (0.066)
Workingcap	0.008 (0.008)	0.012 (0.008)	-0.010** (0.005)	-0.009* (0.005)	0.016* (0.009)	-0.000 (0.010)	3.77*10 ⁻⁰³ (0.004)	0.006 (0.004)	-0.001 (0.007)	-0.002 (0.008)
Constant	-0.806* (0.429)	8.659*** (2.735)	1.327*** (0.502)	2.65 (2.353)	1.184** (0.526)	16.66*** (3.302)	0.216 (0.330)	5.546*** (1.505)	1.675*** (0.489)	5.123** (2.414)
Observations	243.000	225.000	197	197	160.000	149.000	296.000	291.000	132.000	122.000
R-squared	0.091	0.149	0.127	0.129	0.287	0.397	0.039	0.088	0.131	0.215
Number of ids	27	27	22	22	18	18	34	34	15	15
Financial constraint: WW index										
Countries	Indonesia		Singapore		Thailand		Malaysia		Philippines	
WW	0.131 (0.405)	-3.334 (2.895)	2.869* (1.435)	-11.05 (22.440)	-1.669** (0.681)	-18.07*** (6.061)	-0.289 (0.210)	-2.348* (1.416)	-0.412 (0.390)	-5.874** (2.787)
WW*ESG		0.826 (0.652)		2.909 (4.667)		3.687*** (1.341)		0.482 (0.331)		1.445** (0.708)
ESG		-1.022 (0.789)		-3.484 (5.585)		-4.445*** (1.612)		-0.582 (0.398)		-1.759** (0.849)
Marketcap	0.017 (0.013)	0.021 (0.014)	-0.082 (0.052)	-0.1 (0.062)	0.020* (0.012)	0.027 (0.018)	0.012* (0.006)	0.013* (0.007)	-0.006 (0.009)	0.000 (0.009)
Gross profit	0.183*** (0.060)	0.175*** (0.065)	0.443 (0.706)	0.373 (0.770)	0.226*** (0.084)	0.217** (0.092)	0.0486 (0.042)	0.0404 (0.043)	0.107* (0.064)	0.137** (0.067)
Workingcap	0.007 (0.008)	0.008 (0.008)	-0.091 (0.059)	-0.096 (0.063)	0.021** (0.009)	0.011 (0.011)	0.003 (0.004)	0.004 (0.004)	0.0075 (0.007)	0.005 (0.008)
Constant	-0.504 (0.626)	3.694 (3.526)	-1.515 (2.138)	15.62 (27.610)	1.507* (0.904)	21.16*** (7.346)	0.122 (0.347)	2.574 (1.699)	0.657 (0.530)	7.145** (3.320)
Observations	243.000	225.000	43	43	151.000	141.000	295.000	290.000	132.000	122.000
R-squared	0.082	0.101	0.303	0.319	0.264	0.293	0.063	0.074	0.052	0.187
Number of ids	27	27	20	20	17	17	34	34	15	15
Dependent variable: ROE										
Financial constraint: KZ index										
Countries	Indonesia		Singapore		Thailand		Malaysia		Philippines	

KZ	-0.0833 (0.174)	-2.676* (1.536)	-0.181 (0.178)	0.166 (1.044)	-0.476*** (0.161)	-6.102*** (1.358)	0.072 (0.309)	-6.248** (2.875)	-0.342* (0.184)	0.406 (1.267)
KZ*ESG		0.621* (0.338)		-0.084 (0.248)		1.319*** (0.314)		1.433** (0.644)		-0.209 (0.317)
ESG		-2.474* (1.338)		0.315 (0.982)		-5.262*** (1.252)		-5.614** (2.559)		0.836 (1.271)
Marketcap	0.109*** (0.030)	0.083*** (0.030)	-0.011 (0.015)	-0.014 (0.016)	0.002 (0.019)	0.001 (0.027)	0.035 (0.025)	0.057** (0.026)	0.012 (0.014)	0.011 (0.016)
Gross profit	-0.295** (0.142)	-0.24 (0.145)	0.152* (0.077)	0.133 (0.081)	0.462*** (0.140)	0.309** (0.156)	0.0341 (0.185)	0.116 (0.189)	0.0389 (0.100)	0.0183 (0.111)
Workingcap	0.006 (0.018)	0.018 (0.018)	-0.018** (0.008)	-0.019** (0.009)	0.006 (0.015)	-0.009 (0.016)	0.006 (0.017)	0.016 (0.017)	-0.005 (0.012)	-0.012 (0.013)
Constant	-1.831* (1.029)	9.044 (6.177)	1.096 (0.861)	-0.13 (4.100)	1.863** (0.839)	24.40*** (5.535)	-0.929 (1.429)	23.30** (11.430)	1.244 (0.844)	-1.699 (5.062)
Observations	236	220	186	186	158	147	283	278	126	117
R-squared	0.074	0.07	0.05	0.056	0.265	0.362	0.011	0.057	0.048	0.064
Number of ids	27	27	22	22	18	18	34	34	15	15
Financial constraint: WW index										
Countries	Indonesia		Singapore		Thailand		Malaysia		Philippines	
WW	-0.64 (0.973)	-4.071 (6.733)	0.399 (2.454)	-60.1 (45.130)	0.207 (1.095)	-35.21*** (9.612)	0.393 (0.911)	11.26* (6.427)	0.326 (0.669)	-8.956* (5.351)
WW*ESG		1.049 (1.511)		13.15 (9.697)		7.868*** (2.131)		-2.594* (1.493)		2.261* (1.315)
ESG		-1.29 (1.830)		-16.29 (11.760)		-9.489*** (2.560)		3.197* (1.796)		-2.718* (1.576)
Marketcap	0.106*** (0.031)	0.088*** (0.031)	-0.125 (0.124)	-0.167 (0.139)	0.011 (0.019)	0.020 (0.028)	0.044 (0.028)	0.052* (0.029)	0.016 (0.014)	0.018 (0.016)
Gross profit	-0.291** (0.141)	-0.247* (0.145)	-0.888 (1.568)	-0.41 (1.558)	0.696*** (0.136)	0.668*** (0.146)	0.058 (0.181)	0.139 (0.182)	0.061 (0.102)	0.037 (0.112)
Workingcap	0.007 (0.018)	0.013 (0.018)	0.022 (0.139)	0.018 (0.145)	0.015 (0.015)	0.003 (0.016)	0.005 (0.017)	0.008 (0.017)	0.002 (0.011)	0.001 (0.013)
Constant	-1.321 (1.504)	3.292 (8.177)	2.732 (4.195)	78.53 (56.080)	-0.552 (1.461)	42.00*** (11.630)	-1.345 (1.499)	-14.95* (7.695)	-0.615 (0.890)	10.51 (6.404)
Observations	236	220	40	40	149	139	282	277	126	117
R-squared	0.075	0.056	0.106	0.254	0.234	0.335	0.016	0.052	0.019	0.046
Number of ids	27	27	20	20	17	17	34	34	15	15

Note: The fixed effect model examines country-level on the relationship between two different financial constraint indices, namely the KZ and WW indices, and three different growth-oriented measures: Asset Growth, ROE, and ROA. This analysis is conducted across all sectors, excluding financial institutions and the real estate sector, with firm age as a moderating variable between financial constraint and firm growth. This study controls market capitalization, gross profit margin, and working capital. Standard errors are in parentheses. *, **, *** denote p-values of 0.10, 0.05, and 0.01, respectively.

Source: Own calculations using data from Thomas Refinitiv (2023).

5. CONCLUSION

This study examines the empirical relationship between ESG as a moderating role between financial constraints and firm-level performance in ASEAN-5 from 2011 to 2019. This research further investigates the three ESG sub-pillars using the KZ and WW indexes, two distinct proxies for financial constraints. The following elements are primarily included in this paper's enlightenment:

First, financial constraints and company performance in ASEAN-5 have a strong negative association at a 1% level of significance. Allocating financial resources effectively boosts business performance, which aims to serve the interests of businesses within ASEAN. Second, while there is no direct correlation between ESG and company performance, the marginal effects show that increases in ESG help alleviate and act as a positive moderator of the impact of financial constraints on firm performance. Out of the three ESG scores—the E, S, and G scores—only the E score exhibits a negative correlation with company success. The E-score is therefore seen as a cost to the company's performance. However, ESG plays a significant moderating role in weakening the negative impact of financial constraints on firm performance. The development of ESG-compliant policies as well as efforts to standardize and unite ESG reporting is important steps toward the creation of more accurate, dependable, and quantitative comparisons. Encouragement for ESG disclosure should be provided consistently. Thus, benchmarking and the regular assessment of companies' ESG performance might help propagate excellent practices. Additionally, managers should be attentive to ESG performance in the production and management processes. Managers should calibrate their political strategy by valuing the negative impact of financial constraints on firm performances in consideration of ESG. A high ESG level is preferable for moderating the negative relationship between financial constraints and firm performance. Third, the differences in the separation of the three ESG pillars—E-score, S-score, and G-governance are studied. Social pillar score is found to be the most prevalent moderator, which weakens the negative relationship between financial constraints and firm performance. Firms should focus more on the allocation in terms of broad-spectrum issues, from workplace safety to human rights, since S-core plays the most significant moderating role. Sustainable investing focuses more on social trends, labour, and politics and is integral to reducing the negative impact of financial constraints on firm performance. Environmental pillar score also acts as a positive moderating factor, which is significant at a 1% level. Given the magnitude of environmental risks for companies, firms also need to be stringent on green standard, which helps drive company morale and trust. Failure of environmental safeguards can prove financially catastrophic, which eventually impacts firm performance. Thus, strong ESG plays a significant role in raising financial resources. If ASEAN is to strengthen the ESG framework, it will help alleviate financial constraints on firm performance globally. Besides, the differential effects related to each ESG sub-pillar should be examined. A dataset limited to ASEAN firms is the main limitation of this study. Future research may build on this finding by using other firm performance proxies and defining the most relevant ESG sub-pillars across different sectors.

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