



รางวัลงานวิจัยดีเด่นด้านตลาดทุน

SET Research Scholarship 2023

“Sustainability Index and Cost of debt: Evidence from ASEAN market”

By

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Problem Statement (1/2)

Sustainable Finance¹ refers to the process of considering Environmental, Social, and Governance (ESG) factors when making investment decisions, leading to increased longer-term investments into sustainable economic activities and projects (Boffo,2020).

80% **pwc**

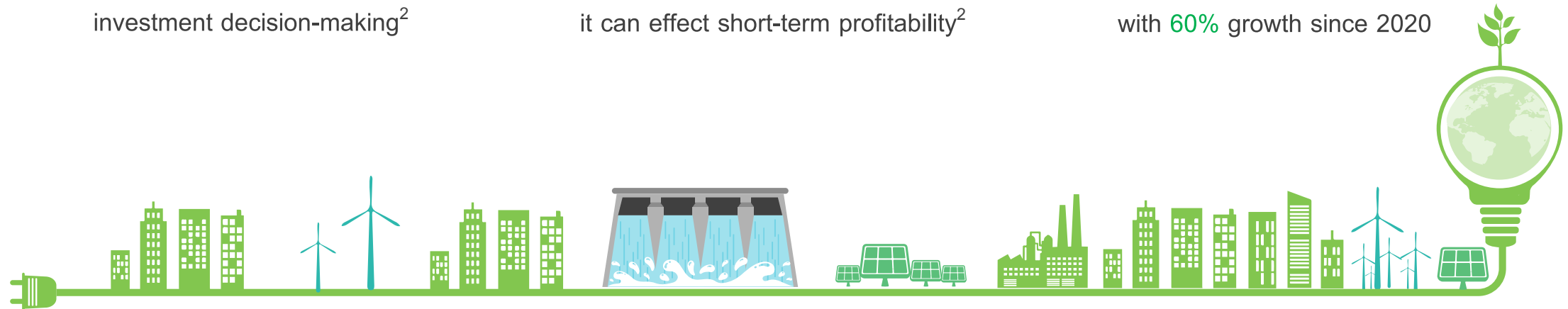
ESG risk are an important factors in investment decision-making²

75% **pwc**

Firms should address ESG issue, even if it can effect short-term profitability²

\$30 **MORNINGSTAR**[®]
trillion in 2021

Global sustainable funds' asset , with **60%** growth since 2020



1) The term sustainability finance, CSR and ESG are used interchangeably in this study

2) PwC research, conducted in Sep.2021, surveyed 325 investors globally, the majority of whom were self-identified active asset manager making investment for long term.

Problem Statement (2/2)

ASEAN Green, Social and Sustainability (GSS) bond & loan market **continued to expand**

- With record issuance of GSS debt totaling **USD24 bn** in **2021** compared to USD13.6 in 2020, **up 76.5%**
- Singapore maintained its position as regional leader, followed by Thailand, Indonesia and Malaysia.

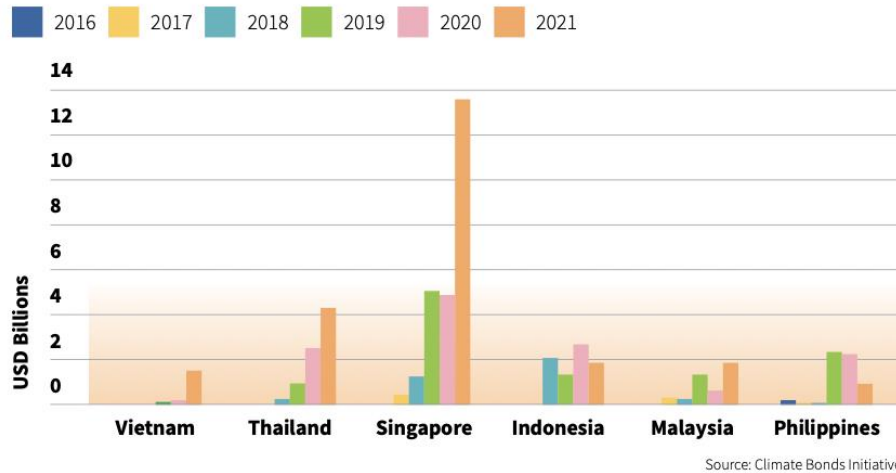


Figure 1: Annual GSS issuance from ASEAN-6 countries

Remark : GSS issuance include both government and corporate entities

Problem Statement

ESG Conscious

The relationship remain
unexplored

Why ESG & Cost of debt

Risk Mitigation & Creditworthiness

Provide valuable insights into firm's risk profile

Regulatory & Stakeholder Pressure

Advocate for sustainable business practices

Long-Term Viability

Enhance long term financial stability

Purpose of study

Does a higher ESG score, lead to lower cost of debt, and what extent do specific ESG dimensions impact ...?

Purpose of study

To investigate the relationship between sustainability performance and cost of debt in ASEAN market by using ESG scores as a proxy of sustainability performance

Significant of research

For corporate finance literature

- To understand the role of ESG investment can enhance, decrease, or neutralize the value of the firms

For entrepreneur

- To highlight and encourage the importance of sustainability practice disclosure

For regulators

- For further sustainability development for policy maker in ASEAN market

Sample Size



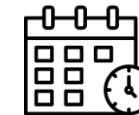
6 Countries

Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam



1,586 observations

Collected from 438 firms



10 Years

(2011 – 2020)

REFINITIV®
DATASTREAM

Data were collected from a reliable source

Remark: Brunei, Cambodia, Myanmar and Lao PDR have been excluded from this study because of data unavailability.

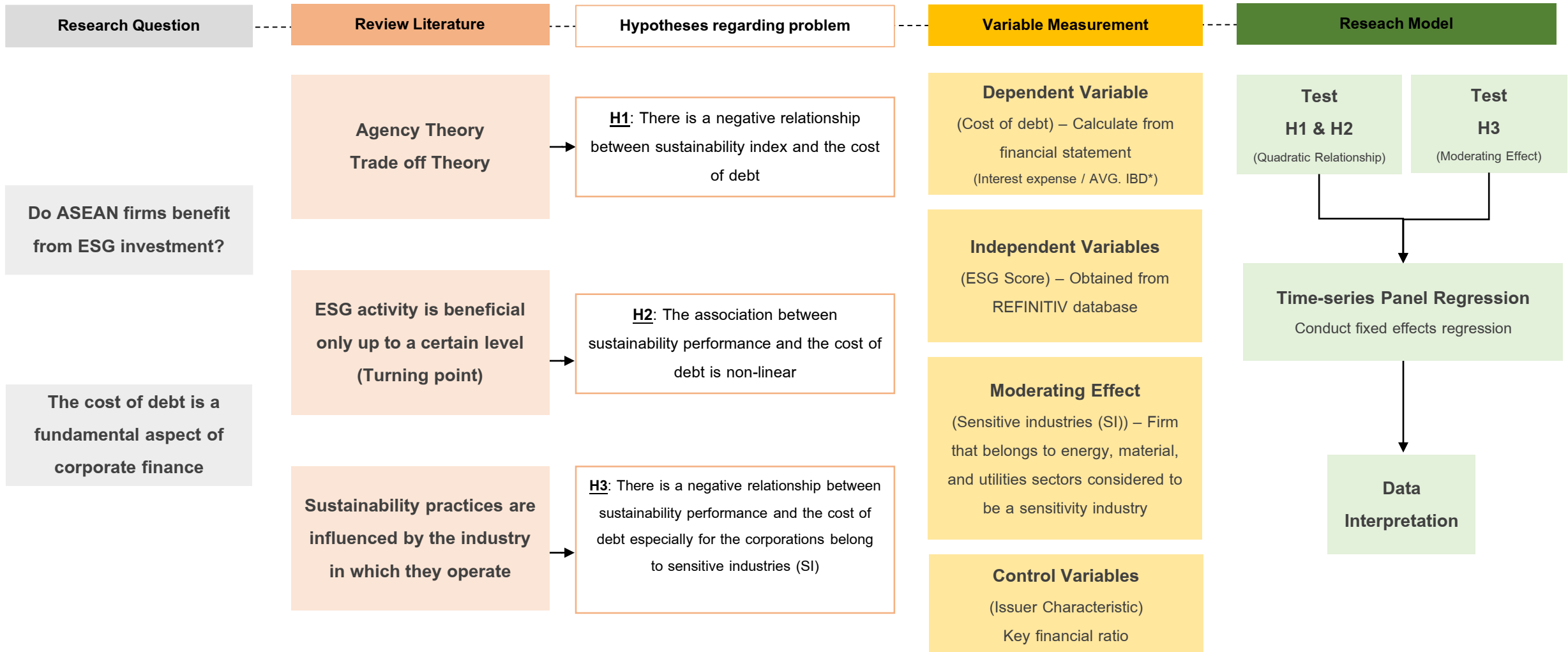


Figure 2 : Research Design Framework

Notation : *Interest Bearing Debt (IBD)

Remark: For additional information on variable measurement, please refer to the appendix on page 14

Expected Relationship & Sampling Method

Independent Variable



- Firm with high sustainability practice rewarded lower cost of debt

Moderating Effect



- Sensitive industries (SI) require firms to adhere to higher standards due to their potential environmental harm

Control Variable

Firm Size



- Large firms have more resources for financing and bargaining power than small firms

Interest Coverage



- High interest coverage ratio refer the higher ability to repay debt

Leverage



- Lower leverage level obtain the lower interest rate since the lender perceive the better solvency

ROA



- High ROA expected better financial position than firms with lower ROA

- This paper utilizes an unbalanced panel sampling process

Description	Number of firms	Number of firms years
<u>Procedure 1</u> : Actively listed firms in ASEAN from 6 countries (2011 - 2020)	3,740	37,400
<u>Procedure 2</u> : Non-financial firm Less: Bank, Financial Service, and Life Insurance sectors	(657)	(6,570)
<u>Procedure 3</u> : ESG and financial availability Less: Missing Data	(2,640)	(29,212)
Pre-Sample	443	1,618
Less: Outliner sample from winsorized process (at 1st and 99th percentiles)	(5)	(32)
Final Sample	438	1,586

Table 1 : Sample Selection Procedures

Remark: The arrow indicate the expected relationship

Empirical Results (1/2)

Variable	Exp. Sign	Model 1 (E)	Model 2 (E, E ²)	Model 3 (S)	Model 4 (S, S ²)	Model 5 (G)	Model 6 (G, G ²)	Model 7 (ESG)	Model 8 (ESG, ESG ²)
E	-	-0.00376 <i>(0.00407)</i>	0.00502 <i>(0.00974)</i>						
E ²	+		-0.000104 <i>(0.000105)</i>						
S	-			-0.00332 <i>(0.00458)</i>	-0.00460 <i>(0.0115)</i>				
S ²	+				0.000001 <i>(0.000108)</i>				
G	-					-0.00694* <i>(0.00367)</i>	-0.00842 <i>(0.0136)</i>		
G ²	+						0.0000140 <i>(0.000124)</i>		
ESG	-							-0.00983* <i>(0.00574)</i>	0.0115 <i>(0.0153)</i>
ESG ²	+								-0.000231 <i>(0.000154)</i>
Firm_Size	-	-0.699*** <i>(0.202)</i>	-0.708*** <i>(0.202)</i>	-0.710*** <i>(0.201)</i>	-0.711*** <i>(0.201)</i>	-0.746*** <i>(0.198)</i>	-0.746*** <i>(0.198)</i>	-0.676*** <i>(0.201)</i>	-0.682*** <i>(0.201)</i>
Leverage	+	0.0444** <i>(0.0176)</i>	0.0438** <i>(0.0176)</i>	0.0452** <i>(0.0176)</i>	0.0453** <i>(0.0176)</i>	0.0454*** <i>(0.0175)</i>	0.0455*** <i>(0.0175)</i>	0.0435** <i>(0.0176)</i>	0.0418** <i>(0.0176)</i>
Int_Cov	-	-0.000588*** <i>(0.000142)</i>	-0.000580*** <i>(0.000142)</i>	-0.000596*** <i>(0.000141)</i>	-0.000596*** <i>(0.000142)</i>	-0.000581*** <i>(0.000141)</i>	-0.000582*** <i>(0.000142)</i>	-0.000586*** <i>(0.000141)</i>	-0.000573*** <i>(0.000142)</i>
ROA	-	0.0253*** <i>(0.00841)</i>	0.0252*** <i>(0.00842)</i>	0.0253*** <i>(0.00842)</i>	0.0253*** <i>(0.00842)</i>	0.0254*** <i>(0.00840)</i>	0.0254*** <i>(0.00841)</i>	0.0257*** <i>(0.00841)</i>	0.0253*** <i>(0.00841)</i>
Constant		14.87*** <i>(2.935)</i>	14.89*** <i>(2.935)</i>	15.06*** <i>(2.916)</i>	15.09*** <i>(2.930)</i>	15.78*** <i>(2.892)</i>	15.81*** <i>(2.910)</i>	14.78*** <i>(2.904)</i>	14.45*** <i>(2.911)</i>
Observations		1,586	1,586	1,586	1,586	1,586	1,586	1,586	1,586
R-squared		0.080	0.080	0.079	0.079	0.082	0.082	0.081	0.083
Firm Fixed Effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of id		438	438	438	438	438	438	438	438

The numbers refer to the estimated coefficient where *** p<0.01, ** p<0.05, * p<0.1, while standard errors in parentheses and italic.

- A** • The increase in transparency about internal processes and governance entities enhance value creation for firms and boost financing confidence (Ramirez et al.,2022)
- Debtholders prioritize the reliability and trustworthiness of the management team over environmental concerns or employee factors in lending decision.
- B** • Debtholders integrate sustainability performance of borrowing firms in their risk profile evaluation and lending decision.
- The impact of the environmental and social dimension on their evaluation may be offset by the relationship between governance and the overall ESG pillar.
- C** • Risk Perception : An abnormality or temporary success of ROA
- Information Asymmetry: Higher ROA may not be readily available or fully understood by debtholder

Variable	Exp. Sign	Model 9 (E*IS)	Model 10 (S*IS)	Model 11 (G*IS)	Model 12 (ESG*IS)
E	-	-0.000791 (0.00441)			
S	-		0.000948 (0.00497)		
G	-			-0.00650 (0.00437)	
ESG	-				-0.00471 (0.00631)
E_IS	-	-0.0120* (0.00687)			
S_IS	-		-0.0163** (0.00744)		
G_IS	-			-0.00145 (0.00779)	
ESG_IS	-				-0.0174* (0.00903)
Firm_Size	-	-0.720*** (0.202)	-0.722*** (0.201)	-0.748*** (0.198)	-0.703*** (0.201)
Leverage	+	0.0439** (0.0176)	0.0452** (0.0175)	0.0452** (0.0175)	0.0426** (0.0176)
Int_Cov	-	-0.000596*** (0.000142)	-0.000598*** (0.000141)	-0.000582*** (0.000142)	-0.000593*** (0.000141)
ROA	-	0.0261*** (0.00842)	0.0258*** (0.00841)	0.0255*** (0.00843)	0.0267*** (0.00842)
Constant		15.18*** (2.938)	15.24*** (2.913)	15.80*** (2.898)	15.15*** (2.907)
Observations		1,586	1,586	1,586	1,586
R-squared		0.082	0.083	0.082	0.084
Firm Fixed Effect		Yes	Yes	Yes	Yes
Year Fixed Effect		Yes	Yes	Yes	Yes
Number of id		438	438	438	438

The numbers refer to the estimated coefficient where *** p<0.01, ** p<0.05, * p<0.1, while standard errors in parentheses and italic.

- This study finds that the negative relationship between sustainability index and the cost of debt is more pronounced for those firms operating in environmentally sensitive industries.
- These results are consistent with Richardson and Welker (2001) and Deegan and Gordon (1996) who finds that the firm that belong to sensitive industry disclose their socio-environmental practice more consistently as a way to legitimizing their operations, due to their industries have biggest socio-environmental impact.



Conclusions

Higher ESG score, Lower cost of debt

- Each 1-unit increase in sustainability index, reduces the cost of debt by approximately 0.01%

The Governance Pillar : A Key driver for lower cost of debt

- Debtholders prioritize the reliability and trustworthiness of the management team

Industry Context Matters (Moderating Effect)

- Sustainability index and the cost of debt is more pronounced for those firms operating in environmentally sensitive



Recommendations

For Entrepreneur



Enhance ESG Disclosure

- Firms should enhance ESG disclosure to build investor trust and potentially lower debt costs

Materiality & Relevance

- Tailor ESG focus to a company's unique context, as ESG priorities vary, e.g., tech vs. mining.
- ESG decisions require balancing short-term costs with long-term gains.



For Policymakers & Regulators

Strengthen ESG Report standards & Incentivize Sustainable Practices

- Implement standardized ESG reporting to reduce information asymmetry for investors and lenders
- To foster sustainable finance, employ a “Carrot & Stick” approach: offering “Tax Incentive” (the carrot) to encourage banks to engage in green asset, while simultaneously implementing “Disincentives” (the stick), such as fines and sanctions to deter greenwashing.



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Sustainability performance and Cost of debt

Eliwa et al. (2021)



Firms with low ESG scores are seen as riskier due to potential liabilities related to ESG factors, which raise the likelihood of default.

Yang et al. (2021)



ESG disclosure significantly reduce bond credit spread in the secondary market since ESG disclosure can reduce non-systematic risks and improve financial situation.

Raimo et al. (2021)



Firm with higher level of transparency in the dissemination of ESG information benefit from third party financial resources at better condition.

Gonçalves et al. (2022)



Better ESG performance is associated with lower cost of equity, but positive regarding the cost of debt since debtors perceived ESG overinvestment.



Magnanelli et al. (2017)



CSR activities is a costly diversion of firm resources, and manager overinvest in CSR to gain private benefits at the expense of shareholder's need.



Nazir et al. (2022)



Top global tech. leaders bear a higher cost of capital as investors perceived ESG as additional financial burden



H1: There is a negative relationship between sustainability index and the cost of debt

The relationship between sustainability performance and Cost of debt

Gerged et al. (2021)



ESG activity is beneficial only up to a certain level (turning point), then increase in sustainability performance is likely to increase cost of capital.

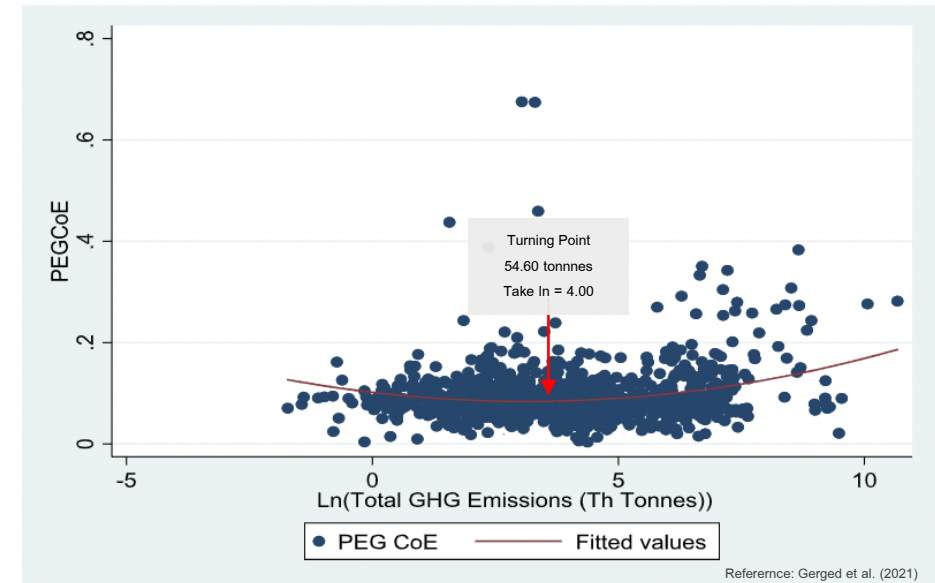
Azmi et al. (2021)



Investment in ESG activities beyond at some point could be destroy the firm value since the high-NPV activities may be exhausted.

“These mixed result of examining the sustainability practice and the cost of debt in various setting motivated our consideration to take consideration...”

Figure 1 : Scatter plot between the cost of capital and green house gas (GHG) emission: the potential of U-shape relationship



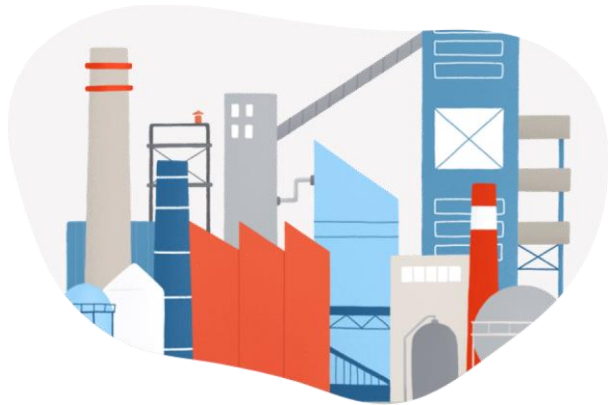
This implies that in the early stage, any increase in the level of GHG disclosure lead to lower cost of capital up to certain level known as the turning point and then any increase in GHGD is likely to increase the COC.

H2: The association between sustainability performance and the cost of debt is non-linear

Thanks to for the scatter plot above from : Gerged, A. M., Matthews, L., & Elhaddad, M. (2021). Mandatory disclosure, greenhouse gas emissions and the cost of equity capital: UK evidence of a U-shaped relationship.

Sustainability performance and Moderating effect of industry sensitive (IS)

“Institutional theory states that the firms’ sustainability practice are affected by the organizational field such as industry on which it operates” (Gracia & Siregar, 2021)



Reverte (2012)



For Spanish firms operating in environmentally sensitive industries, there is a stronger negative relationship between CSR reporting quality and the cost of capital.

Yoon et al., (2018)



Firms in sensitive industries, such as energy, materials, and utilities, face stricter sustainability standards from stakeholders due to their potential environmental harm.

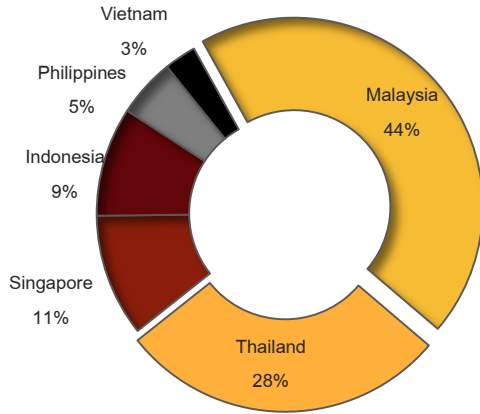
H3: There is a negative relationship between sustainability performance and the cost of debt especially for the corporations belong to sensitive industries (IS)

Variable measurement

Category	Variables	Symbol	Measurement	Prior Study	Source
Dependent Variable	Cost of debt	CoD	Interest expense divided by its average of interest-bearing debt including loans, bonds, convertible bond, and both long-term and short-term debt	Francis et al. (2005)	Datastream and Thomson
Independent Variable	Sustainability index	ESG	ESG combined score provide a rounded and comprehensive evaluation of the company's ESG performance based on the reported information in the ESG pillar.	Apergis et al. (2022); Ghouma et al. (2018)	Reuters Eikon
		E	Weighted average rating of company based on the reported environmental information.		
		S	Weighted average rating of company based on the reported social information.		
		G	Weighted average rating of company based on the reported governance information.		
Moderating Effect	Industry Sensitive	IS	The firm that belongs to energy, material, and utilities sectors considered to be a sensitivity industry as dummy variable 1 is sensitivity industry, and 0 otherwise	Yoon et al. (2018)	
Control Variable	Issuer Characteristic	Firm_Size	The natural logarithm of total asset.	Hasan, Hoi, Wu, and Zhang (2017)	
		Leverage	The ratio of total debt to total equity in year t	Erragragui (2018)	
		Int_Cov	Total operating income divided by interest expense		
		ROA	Net income – bottom line + ((interest expense on debt-interest capitalized)* (1-tax rate)))) / average of last years and current year's total asset *100	Arena (2018)	

Descriptive statistic (1/2)

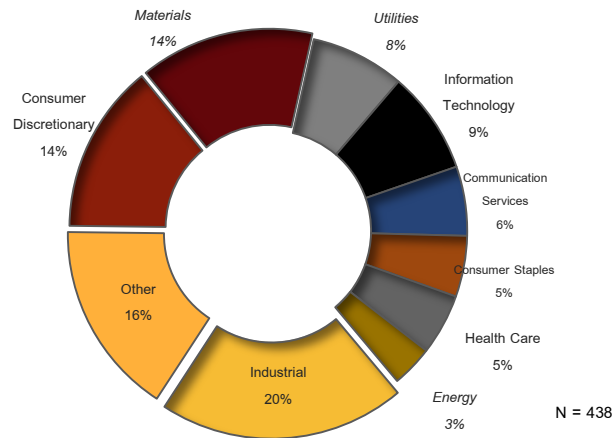
Figure 2: Countries Breakdown



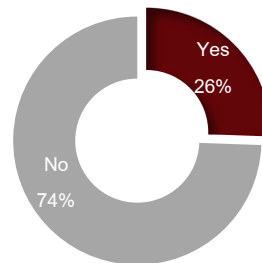
N = 438

- Among the countries represented, Malaysia accounts for the largest share at 44%, followed by Thailand, Singapore, and Indonesia.

Figure 3: Sectors Breakdown



N = 438

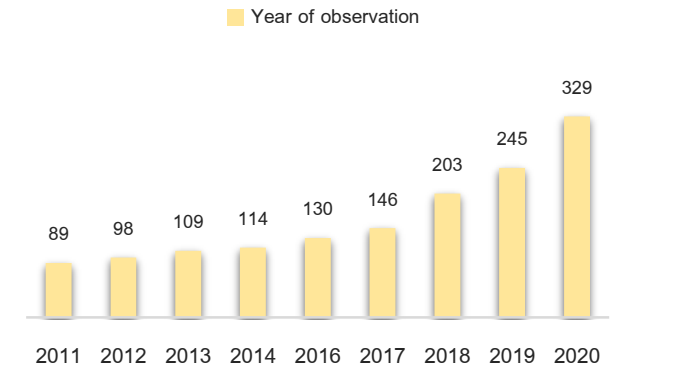


N = 438

Sector Sensitivities

Remark: Sensitivity industries encompass sectors such as Materials, Utilities, and Energy

Figure 4: Year Breakdown



N = 1,586

- The increase in observations over time is attributed to the growing sustainability activities in ASEAN countries.

Descriptive statistic (2/2)

Variable	N	Mean	Std. Dev.	Min	Max	Units
COD	1,586	4.483%	2.297%	0.587%	17.079%	%
E	1,586	39.295	23.470	0.120	97.350	Point
E ²	1,586	2094.531	2056.122	0.014	9477.022	Point
S	1,586	50.035	21.656	1.950	97.340	Point
S ²	1,586	2972.149	2200.041	3.803	9475.076	Point
G	1,586	49.290	21.281	1.790	97.110	Point
G ²	1,586	2882.085	2158.079	3.204	9430.352	Point
ESG	1,586	46.745	17.982	5.140	92.080	Point
ESG ²	1,586	2508.229	1726.364	26.420	8478.726	Point
Firm_Size	1,586	14.809	1.464	10.083	18.427	USD
Leverage	1,586	1.654	2.920	-18.496	48.115	Times
Int_Cov	1,586	69.642	685.348	-187.767	22,166.000	Times
ROA	1,586	7.785%	9.128%	-39.060%	84.040%	%

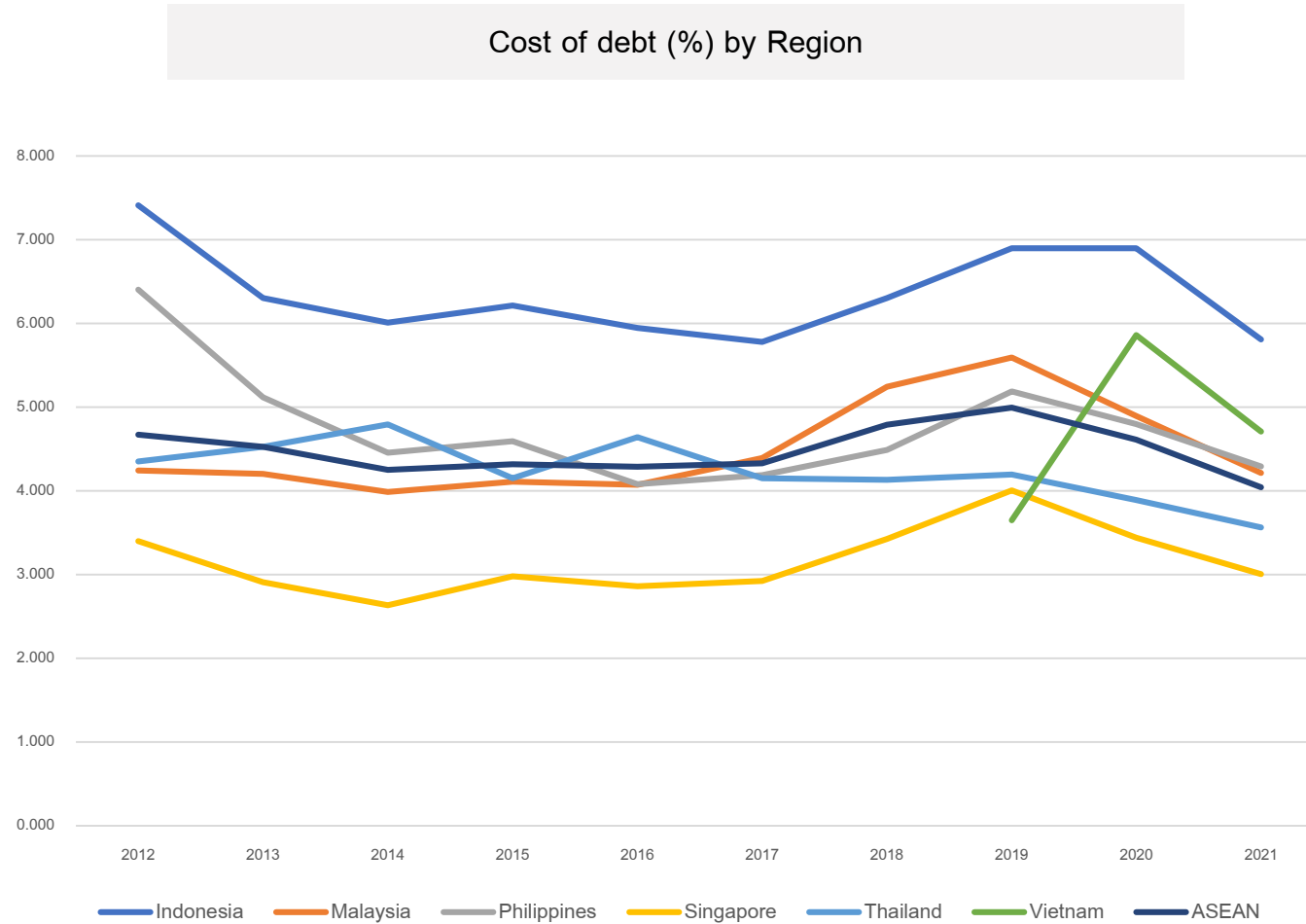
Correlation Matrix

Variable	COD	E	E ²	S	S ²	G	G ²	ESG	ESG ²	Firm_Size	Leverage	Int_Cov	ROA
COD	1												
E	0.017	1											
E ²	0.022	0.962*	1										
S	0.104*	0.723*	0.685*	1									
S ²	0.116*	0.717*	0.709*	0.973*	1								
G	0.043*	0.263*	0.249*	0.359*	0.346*	1							
G ²	0.039	0.259*	0.246*	0.338*	0.331*	0.975*	1						
ESG	0.083*	0.836*	0.799*	0.906*	0.883*	0.620*	0.599*	1					
ESG ²	0.085*	0.831*	0.833*	0.879*	0.894*	0.602*	0.599*	0.977*	1				
Firm_Size	-0.020	0.342*	0.305*	0.181*	0.180*	0.074*	0.091*	0.244*	0.244*	1			
Leverage	0.026	0.024	0.017	0.026	0.017	-0.028	-0.027	0.022	0.015	0.100*	1		
Int_Cov	0.100*	-0.023	-0.015	0.001	-0.001	0.025	0.025	-0.002	-0.003	-0.119*	-0.042*	1	
ROA	0.085*	0.024	0.049*	0.075*	0.089*	0.048*	0.035	0.072*	0.088*	-0.209*	-0.022	0.208*	1

Remark: *Significant at 10%

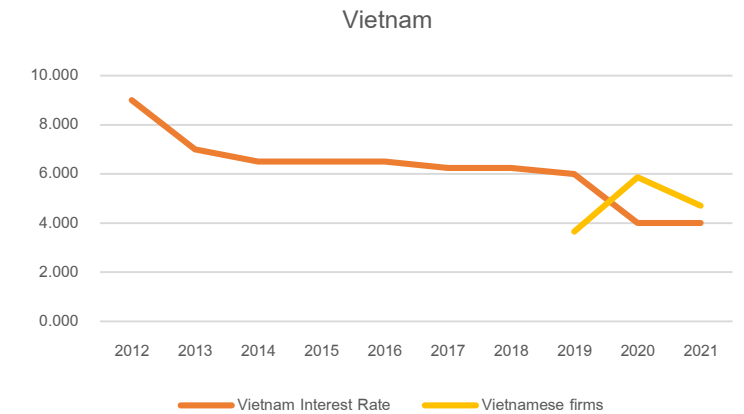
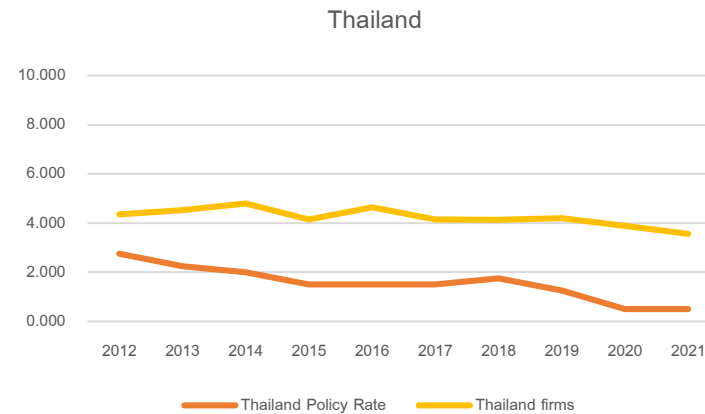
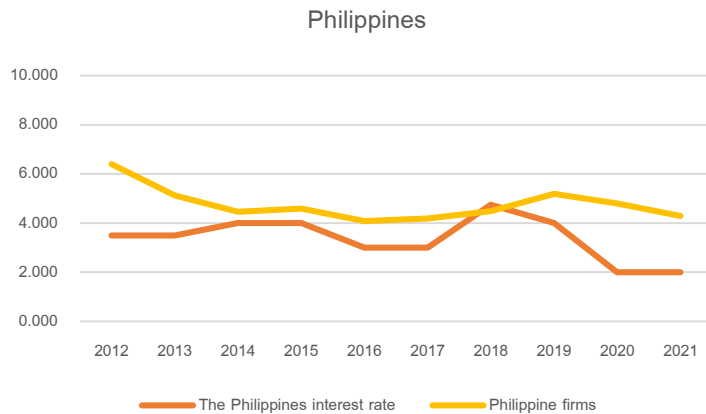
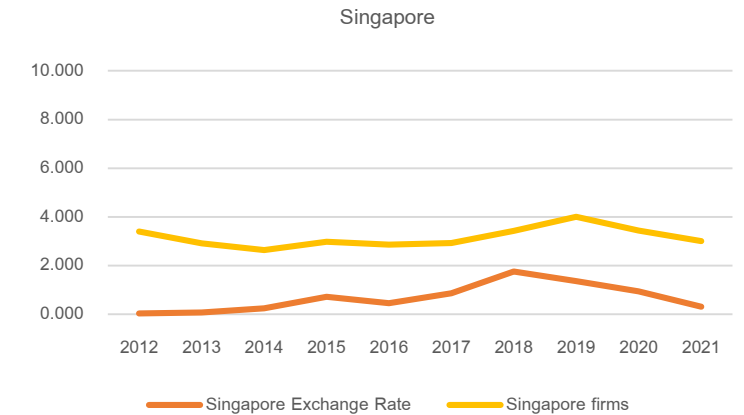
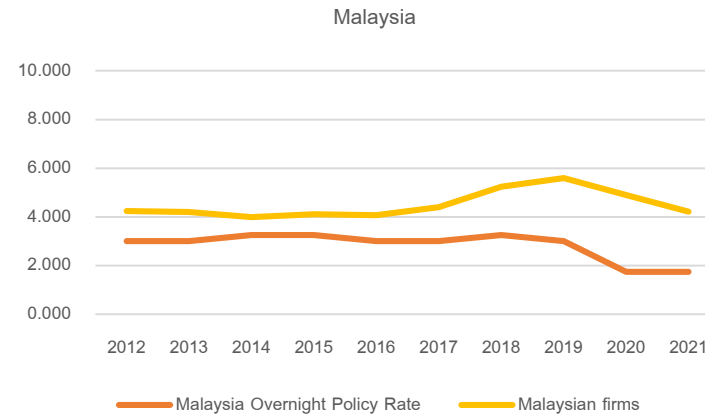
In a univariate setting the cost of debt shows positive correlated with social pillar, governance pillar and ESG pillar, as well as the interest coverage ratio and ROA. Although there will be correlation among variable, the author has also tested for multicollinearity in our model using VIF, and the results suggests that our model do not suffer from multicollinearity, where the value of VIF is less than 5 (Daoud, 2017).

Appendix - Empirical Results (4/5)



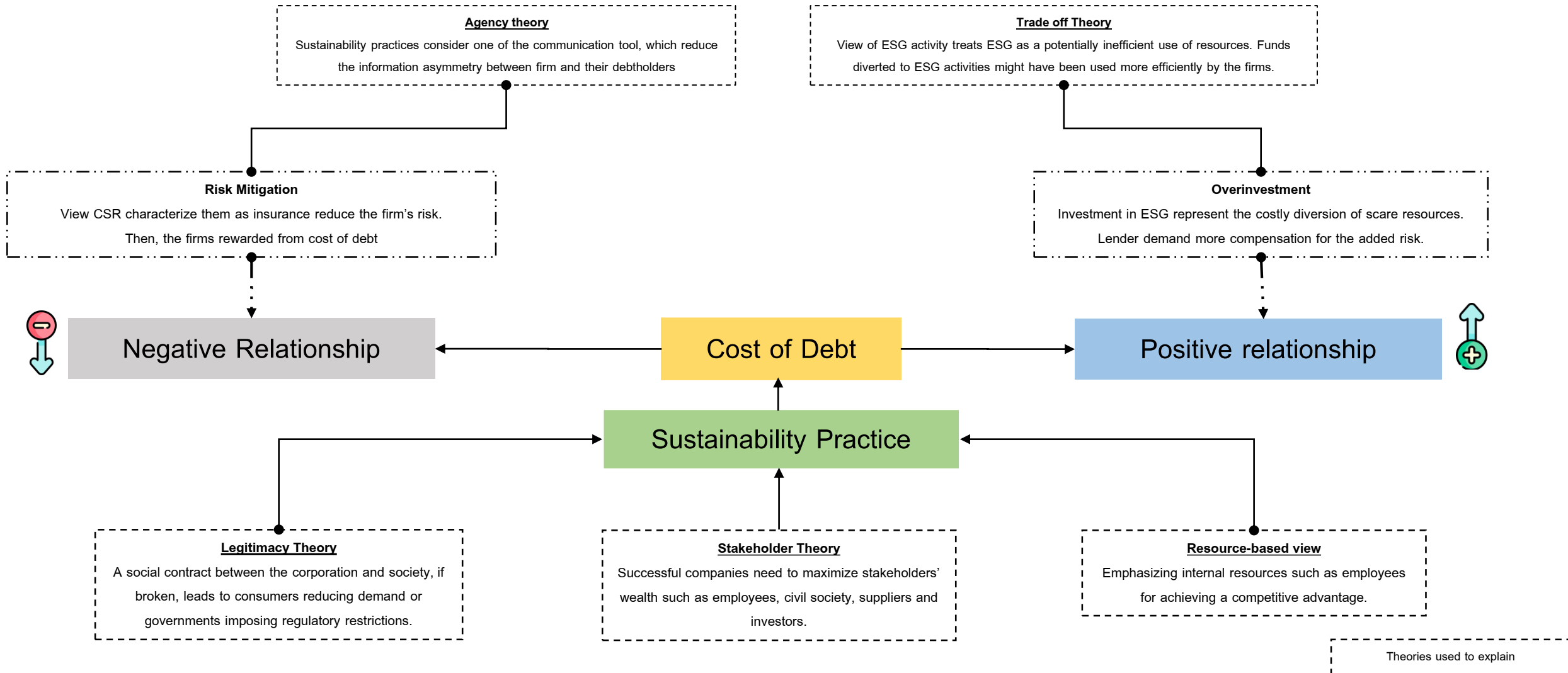
Appendix - Empirical Results (5/5)

Cost of debt (%) by Countries



- Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2004). Board characteristics, accounting report integrity, and the cost of debt. *Journal of accounting and economics*, 37(3), 315-342.
- Apergis, N., Poufinas, T., & Antonopoulos, A. (2022). ESG scores and cost of debt. *Energy Economics*, 112, 106186.
- Arena, M. P. (2018). Corporate litigation and debt. *Journal of Banking & Finance*, 87, 202-215. doi:<https://doi.org/10.1016/j.jbankfin.2017.10.005>
- Azmi, W., Hassan, M. K., Houston, R., & Karim, M. S. (2021). ESG activities and banking performance: International evidence from emerging economies. *Journal of International Financial Markets, Institutions and Money*, 70, 101277.
- Boffo, R., and R. Patalano, OECD Paris. (2020). ESG Investing: Practices, Progress and Challenges. doi:www.oecd.org/finance/ESG-Investing-Practices-Progress-and-Challenges.pdf
- Borisova, G., Fotak, V., Holland, K., & Megginson, W. L. (2015). Government ownership and the cost of debt: Evidence from government investments in publicly traded firms. *Journal of Financial Economics*, 118(1), 168-191. doi:<https://doi.org/10.1016/j.jfineco.2015.06.011>
- Brammer, S., & Millington, A. (2008). Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic management journal*, 29(12), 1325-1343.
- Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance research letters*, 38, 101716.
- Daoud, J. I. (2017). *Multicollinearity and regression analysis*. Paper presented at the Journal of Physics: Conference Series.
- Deegan, C. (2002). Introduction. *Accounting, Auditing & Accountability Journal*, 15(3), 282-311. doi:10.1108/09513570210435852
- Deegan, C., & Gordon, B. (1996). A Study of the Environmental Disclosure Practices of Australian Corporations. *Accounting and Business Research*, 26(3), 187-199. doi:10.1080/00014788.1996.9729510
- Derrien, F., Kecskés, A., & Mansi, S. A. (2016). Information asymmetry, the cost of debt, and credit events: Evidence from quasi-random analyst disappearances. *Journal of Corporate Finance*, 39, 295-311. doi:<https://doi.org/10.1016/j.jcorpfin.2016.05.002>
- Dremptic, 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. doi:10.1007/s10551-019-04164-1
- Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, Social and Governance (ESG) Scores and Financial Performance of Multinationals: Moderating Effects of Geographic International Diversification and Financial Slack. *Journal of business ethics*, 168(2), 315-334. doi:10.1007/s10551-019-04177-w
- Eliwa, Y., Aboud, A., & Saleh, A. (2021). ESG practices and the cost of debt: Evidence from EU countries. *Critical Perspectives on Accounting*, 79, 102097.
- Erragragui, E. (2018). Do creditors price firms' environmental, social and governance risks? *Research in International Business and Finance*, 45, 197-207.
- Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics*, 39(2), 295-327.
- Freeman, R. E., & McVea, J. (2005). A stakeholder approach to strategic management. *The Blackwell handbook of strategic management*, 183-201.
- Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of cleaner production*, 150, 135-147.
- Garst, J., Maas, K., & Suijs, J. (2022). Materiality Assessment Is an Art, Not a Science: Selecting ESG Topics for Sustainability Reports. *California Management Review*, 0(0), 00081256221120692. doi:10.1177/00081256221120692
- Gerged, A. M., Matthews, L., & Elhaddad, M. (2021). Mandatory disclosure, greenhouse gas emissions and the cost of equity capital: UK evidence of a U-shaped relationship. *Business Strategy and the Environment*, 30(2), 908-930.
- Ghouma, H., Ben-Nasr, H., & Yan, R. (2018). Corporate governance and cost of debt financing: Empirical evidence from Canada. *The Quarterly Review of Economics and Finance*, 67, 138-148. doi:10.1016/j.qref.2017.06.004
- Gonçalves, T. C., Dias, J., & Barros, V. (2022). Sustainability Performance and the Cost of Capital. *International Journal of Financial Studies*, 10(3), 63.
- Gracia, O., & Siregar, S. V. (2021). Sustainability practices and the cost of debt: Evidence from ASEAN countries. *Journal of Cleaner Production*, 300, 126942.
- Graham, J. R., Li, S., & Qiu, J. (2008). Corporate misreporting and bank loan contracting. *Journal of Financial Economics*, 89(1), 44-61.
- Han, J.-J., Kim, H. J., & Yu, J. (2016). Empirical study on relationship between corporate social responsibility and financial performance in Korea. *Asian Journal of Sustainability and Social Responsibility*, 1(1), 61-76. doi:10.1186/s41180-016-0002-3
- Hasan, I., Hoi, C. K., Wu, Q., & Zhang, H. (2017). *Social Capital and Debt Contracting: Evidence from Bank Loans and Public Bonds*. Paper presented at the Journal of financial and quantitative analysis.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 1251-1271.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jones, T. M. (1995). Instrumental stakeholder theory: A synthesis of ethics and economics. *Academy of management review*, 20(2), 404-437.
- Kilian, T., & Hennigs, N. (2014). Corporate social responsibility and environmental reporting in controversial industries. *European Business Review*, 26(1), 79-101. doi:10.1108/EBR-04-2013-0080
- Kling, G., Volz, U., Murinde, V., & Ayas, S. (2021). The impact of climate vulnerability on firms' cost of capital and access to finance. *World Development*, 137, 105131. doi:<https://doi.org/10.1016/j.worlddev.2020.105131>

Appendix - Theoretical Framework



- Lavin, J. F., & Montecinos-Pearce, A. A. (2022). Heterogeneous Firms and Benefits of ESG Disclosure: Cost of Debt Financing in an Emerging Market. *Sustainability*, 14(23), 15760.
- Magnanelli, B. S., & Izzo, M. F. (2017). Corporate social performance and cost of debt: the relationship. *Social Responsibility Journal*.
- Martínez-Ferrero, J., Ruiz-Cano, D., & García-Sánchez, I. M. (2016). The causal link between sustainable disclosure and information asymmetry: The moderating role of the stakeholder protection context. *Corporate Social Responsibility and Environmental Management*, 23(5), 319-332.
- Nguyen, P., & Nguyen, A. (2015). The effect of corporate social responsibility on firm risk. *Social Responsibility Journal*.
- 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.
- Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate Social and Financial Performance: A Meta-Analysis. *Organization Studies*, 24(3), 403-441. doi:10.1177/0170840603024003910
- Prividiantari, A. A. (2023). Board Structure, Corporate Governance, and Cost of Debt In ASEAN-5. In *Board Structure, Corporate Governance, and Cost of Debt In ASEAN-5*.
- Raimo, N., Caragnano, A., Zito, M., Vitolla, F., & Mariani, M. (2021). Extending the benefits of ESG disclosure: The effect on the cost of debt financing. *Corporate Social Responsibility and Environmental Management*, 28(4), 1412-1421.
- Ramirez, A. G., Monsalve, J., González-Ruiz, J. D., Almonacid, P., & Peña, A. (2022). Relationship between the Cost of Capital and Environmental, Social, and Governance Scores: Evidence from Latin America. *Sustainability*, 14(9), 5012. Retrieved from <https://www.mdpi.com/2071-1050/14/9/5012>
- Research, M. M. (2022). Global Sustainable Fund Flows: Q2 2022 in Review.
- Reverte, C. (2012). The Impact of Better Corporate Social Responsibility Disclosure on the Cost of Equity Capital. *Corporate Social Responsibility and Environmental Management*, 19(5), 253-272. doi:<https://doi.org/10.1002/csr.273>
- Richardson, A. J., & Welker, M. (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organizations and Society*, 26(7), 597-616. doi:[https://doi.org/10.1016/S0361-3682\(01\)00025-3](https://doi.org/10.1016/S0361-3682(01)00025-3)
- Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of management Journal*, 40(3), 534-559.
- Sengupta, P. (1998). Corporate disclosure quality and the cost of debt. *Accounting review*, 459-474.
- Stock, J. H., & Watson, M. W. (2003). *Introduction to econometrics* (Vol. 104): Addison Wesley Boston.
- Survey, P. G. I. (2021). The economic realities of ESG. doi:<https://www.pwc.com/gx/en/issues/reinventing-the-future/take-on-tomorrow/download/sbpwc-2021-10-28-Economic-realities-ESG.pdf>
- Weber, O., Scholz, R. W., & Michalik, G. (2010). Incorporating sustainability criteria into credit risk management. *Business strategy and the environment*, 19(1), 39-50.
- Yang, Y., Du, Z., Zhang, Z., Tong, G., & Zhou, R. (2021). Does ESG Disclosure Affect Corporate-Bond Credit Spreads? Evidence from China. *Sustainability*, 13(15), 8500.
- Ye, K., & Zhang, R. (2011). Do Lenders Value Corporate Social Responsibility? Evidence from China. *Journal of Business Ethics*, 104(2), 197-206. doi:10.1007/s10551-011-0898-6
- Yoon, B., Lee, J. H., & Byun, R. (2018). Does ESG Performance Enhance Firm Value? Evidence from Korea. *Sustainability*, 10(10), 3635. Retrieved from <https://www.mdpi.com/2071-1050/10/10/3635>
- Zhu, F. (2014). Corporate governance and the cost of capital: an international study. *International Review of Finance*, 14(3), 393-429.