



The Moderating Role of Policy Intervention on the Relationship of Environment, Social, and Governance (ESG) and Cost of Equity Capital: A Study in Basic Materials Companies in Asia

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Abstract

Environment, Social, and Governance (ESG) disclosure is a non-financial disclosure that is expected to enhance firms' transparency, ease estimation of risk, hence lower cost of equity (CoE). However prior studies show mixed results. Using Institutional theory, this paper argues that sustainability policy intervention could have a different effect. However, this framework expects that the more ESG disclosure, the higher firms' cost of equity (CoE) due to shareholders' perception of mindless ESG plan. The policy intervention examined is government regulation of mandatory sustainability practices. This study uses a sample of 98 basic materials sector companies in eleven Asia countries with 5 years study period from 2017-2021 as a research sample. Using panel-data regression analysis, this study finds that there is a positive relationship between ESG scores and CoE. Moreover, the government policy strengthens such a relationship. Therefore, consistent with coercive mechanism in institutional theory, we conclude that mandatory sustainability disclosure in the Asian Basic material sector companies increases firms' CoE and the existence of mandatory regulation strengthens such a relationship.

Keywords: Basic material industry, Cost of Equity, ESG disclosure, Institutional theory, Sustainable policy intervention.

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1. Introduction

There have been many studies that provide evidence of the inverse relationship between voluntary disclosure and cost of equity (CoE). However, the empirical evidence is mixed. Recently, Eugstar (2022) has shown that, statistically, the relationship between sustainability voluntary disclosure and CoE disappears after controlling endogeneity and heterogeneity issues.

Sustainability report has been the source of measuring the disclosure of firms' Environmental, Social and Governance (ESG) activities. Many researchers claim that implementing ESG practices increases firms' value and looks appealing to investors who have specific investment objectives (e.g., Mohammad & Wasiuzzaman, 2021; Shakil, 2021). As one of the firms' disclosures, ESG is also often discussed in relation to cost of capital (e.g., Tarulli et.al, 2022; Gjergji, 2021; Johnson, 2020). Those studies found an inverse relationship between the ESG disclosure level and cost of capital. However, despite the prevalent result of ESG on cost of capital, the results are mixed depending on the firm size (Gjergji, 202), ownership (Elili, 2020), firm's life cycle (Novaes and Almeida, 2020), and other factors.

The traditional view of firms' ESG activities is that such investments are costly and should be avoided wherever feasible (Sharfman & Fernando, 2008). Gillan et al. (2021) say that although ESG creates value for firms, most firms have to spend a lot of expenses on advertising to advertise their sustainability program to stakeholders. Sustainability activities may be considered adverse spending since they are not yet mainstream among shareholders and managers (Chams et al., 2021; Cornell, 2020).

Across the globe, sustainability reports are mostly in voluntary mode. However, there have been few local government regulations to mandate specific industries reporting their ESG activities. Prasad et al. (2022) examine the moderating role of policy intervention on the relationship between Indian firms' Corporate Social Responsibility (CSR) disclosures and cost of capital and find that government policy negatively affects the CSR disclosures and cost of capital relationship.

This study specifically examines the ESG of basic materials sector companies in Asia. Materials-sector companies are involved in activities such as mining, producing refined metals, and manufacturing chemicals. The complexity and diversity of the materials industry are very related to ESG risks (Azmi et al., 2021; Cornell, 2020). Asia is one of the continents that has a high ESG risk. Pan (2021) found that ASEAN countries have higher ESG risk compared to other regions in the world due to higher exposure to ESG risk industries (e.g mining, oil and gas). Moreover, the awareness of being sustainable is not yet well acknowledged in society. Therefore, some government intervention via regulations is expected to boost the awareness of the importance of firms' sustainability.

While there have been many studies on the effect of ESG on the cost of capital in Asia countries (e.g., Nass, 2021; Ng et al., 2020), to the authors' knowledge, only one study that examines the effect of policy intervention on a firm's sustainability and financial performance (Prasad et al., 2022). To some extent, this study differs from Prasad et al (2020) since this study focuses on basic materials firms in Asia. The sector is regarded as an ESG-sensitive sector; therefore, the existence of mandatory regulations has become more important in firms' CoEs. Using institutional theory as a lens, this study argues that

firms' adoption of ESG practices in most developing countries could be due to compliance with government regulations. Nevertheless, more information disclosed leads to reduced information asymmetry, hence lower firms' CoE. Therefore, the intervention policy might be seen as an effective moderator to gauge the effect of ESG practices on CoEs.

Interestingly, this study finds that, overall, ESG disclosure is positively related with CoE of Asian Basic Material firms. Furthermore, the insertion of policy intervention strengthens the relationship. However, further analysis shows that the inverse relationship between ESG disclosures and CoE is found in developed countries, and it is insignificant in developing countries. The implication of the findings is that policy intervention to mandate ESG practices in Asian basic materials firms is necessary in developing countries.

2. Literature Review

There have been numerous studies of the sustainability report content (ESG) and its effect on firms' performance. In most countries, sustainability reports are still a voluntary disclosure. Therefore, based on the voluntary disclosure theory, firms that publish sustainability reports increase firms' transparency, reduce information asymmetry, lower cost of capital, hence increase the firm value. However, the empirical evidence of sustainability report is mixed. Gillian et al (2021) classify many prior studies into three groups of evidence.

Firstly, the positive evidence finds that greater ESG leads to higher firm value. Theoretically, the positive evidence is explained by value creation as a motive of managers to conduct ESG initiatives that, in turn, increase the firm value for shareholder wealth (Gillian et al, 2021). Using a sample of firms in heavy pollution in China, Wendai et al (2022) also find the positive evidence for environmental disclosure, specifically, on firms' cost of equity reduction.

The negative evidence group find that increasing in ESG disclosure increases the expenses and reduces the firms' value (e.g., Di Giuli & Kostovetsky, 2014; Buchanan et al., 2018). The former argues that it is the result of agency problems whose decision benefiting stakeholders at firms' direct expense. Meanwhile the latter suggests that the negative evidence is influenced by the equilibrium between conflict-resolution and overinvestment effects. Hence, it can be concluded that agency problem exists. Lastly, the neutral evidence group, basically, finds that the CSR (ESG) initiatives exists for firms non-financial benefits, such as awareness, reputation, but not for financial performance.

Buhmann (2005) stated that in developed countries, sustainable practices are somewhat voluntary. As it is voluntary, the ESG disclosure increases firms' transparency, then reduces risk estimation, hence lowers firms' CoE. This was supported by Eliwa et al. (2019); Chava (2014); El Goul et al. (2011), which found that CoEs across countries can be reduced with the implementation and disclosure of CSR activities. However, conducting cross-country comparison, Breuer et al. (2018) find contradicting results of the relationship depending on the investor protection strength in observed countries. In strong investor protection country, the CSR disclosure reduces firms' CoE, while it increases firms' CoE in poor investor protection.

According to Schrodgers Investment Management North America Inc. (2018), in developing countries, applying ESG activities is still regarded as less important. This is due to investors in Asia still viewing sustainability practices as a negative effect because of the differences in beliefs regarding social practices such as culture, norms, religion, and a difference in the institutional environment. Therefore, in some countries, there has been regulatory enforcement of ESG practices (Prasad et al., 2022). After moderating the ESG activities through policy intervention, Prasad et al. (2022) find that higher CSR performance increases firms' CoE. The authors argue that policy intervention in ESG activities in a developing country (India) increases firms' CoE due to managers and boards of directors prioritizing meeting social expectations instead of shareholders' interests demanding an added return.

While Prasad et al. (2022) use signaling theory to explain their findings, this study argues that institutional theory is a better theory to explain the phenomena. In the context of sustainability, institutional theory explains that ESG activities implementation is a voluntary behavior of companies. The constituents of the field include the organization's social context, the scope of its activities, and it is the network of social relationships (Narayan et al., 2012). The institutional field tends to bring uniformity in business practice through three mechanisms: coercive, mimetic, and normative. Specifically, this study will take coercive mechanisms, which refer to pressure techniques that aim to bring business practice in line with societal expectations. As ESG practices become mandatory, the institution creates pressure aiming to bring business practices in line with social expectations. Broadly, the institutional drives managers behavior by aligning the agent's beliefs with societal norms, with the alignment being caused by either internalization of norms or external pressure.

The institutional perspective allows for the focus on the role of conformity, and regulatory and social pressures in driving organizational actions (Westphal et al., 1997), which will affect how corporations make decisions regarding their investment to adopt the regulation. It is this that can provide insights into the development and investment of ESG implementation among companies and their role in achieving conformity.

Using a lens of Institutional theory and based on Prasad et al. (2022) this study argues that in most Asian countries, ESG activities are not well-planned to be synergized with stakeholders' interests (e.g., shareholders, governments, suppliers, etc), but managers focus only to conform to legal and social pressures in disclosing ESG. By doing so, the ESG disclosure does not help shareholders in risk estimation. Even more, it increases the agency costs, hence increases firms' CoE.

H1: ESG performance is positively associated with a higher cost of equity.

Additionally, regulators are increasingly interested in sustainability practices, thus, they start to make a sustainable policy to rule the sustainability practices of firms (Prasad et al., 2022). The policy intervention becomes the moderating variable in this study since one of the main issues in this argument regarding the implementation of ESG and the relation to the expectation of stakeholders and the cost of equity can also be moderated by the regulation (Prasad et al., 2022). With the current situation in Asia where most countries

are still emerging countries, a mandatory sustainable policy might become a burden and raise the cost of equity. This study examines the relationship between ESG performance and the cost of equity with the intervention of mandatory sustainability regulations that encourage ESG practices. A study by Saeed & Zamir (2021) also stated that sustainable practices might burden the company with dividend payments and lead to an increase in the risk perspective of equity investors, and higher COE. Therefore, the authors assume that mandatory ESG practices might affect the increase of COE and the hypothesis is formulated as follows,

H2: Policy intervention strengthens the positive association between ESG performance and higher cost of equity.

3. Research Method

The research sample is drawn from all public firms in the Basic Materials Sector in Asia that issued sustainability reports over the period 2017-2021. The research examines 3287 companies from 30 countries in Asia over 5 years collected from Thomson Reuters Database. After excluding the companies with incomplete data, this study obtained the total number of a total sample of 98 companies from 11 countries from year 2017 to 2021, thus 490 firm years observations.

According to Prasad et al., (2022), the cost of capital is a function of cost of debt and cost of equity. This research specifically examines firms' cost of equity (CoE) as the dependent variable. The calculation of cost of equity adopts Nass (2021) estimation who uses the capital asset pricing model, where R_f is the risk-free return on investment, β is the estimate annual slope, and $(R_m - R_f)$ is the average of annual market risk premium. The CoE is calculated using the equation (1). All data is collected from Thomson Reuters Database.

$$CoE_{i,t} = R_{f,t} + \beta_{i,t} * (R_{m,t} - R_{f,t}) \quad (1)$$

The main independent variable in this study is the lagged ESG score that is collected from Thomson Reuters Database. Then, the policy intervention (POL) is taken in a dummy of binary value, where 1 is assigned for countries that have policy intervention, and 0 otherwise. The data was collected from each country's regulation website through a search from Thomson Reuters Practical Law website (Table 1)

Table 1. Sustainability Policy in Sample Country

Region	Country	Sustainability Law
Southeast Asia	Indonesia	ISO 26000 SDGs, Financial Services Authority Regulation No. 29/POJK.05/2020 (include ESG)
	Malaysia	<i>Environmental Quality Act of 1974, Companies Act 2016</i>
	Thailand	Not applicable
Eastern Asia	China	China's anti-corruption legislation (G), Environmental Protection Law (E)

	South Korea	Article 35 of the Constitution provides for the Framework Act on Environmental Policy (FAEP)
	Japan	Not applicable
	Hong Kong	Cap 311 (APCO), Cap 358 (WPCO), Cap 354 (WDO), Cap 400, Cap 466 (DSO)
	Taiwan	Not applicable
Western Asia	Turkey	Not applicable
	Saudi Arabia	Environmental, Social & Governance Law Saudi Arabia 2022
South Asia	India	Companies Act 2013 (Mandatory CSR spending)

Source: <https://uk.practicallaw.thomsonreuters.com>

To control the effect of other factors that potentially influence Coe, this study includes variables firm size (SIZE), market-to-book ratio (MTBV), and leverage (LEV). SIZE is estimated by normal log of market capitalization. MTBV is employed to estimate the market risk and LEV is used to proxy the firms' operational risks.

The hypotheses will be tested using the research model in equation 2 and 3 and analyzed using the panel-data regression.

$$CoE_{i,t} = \alpha_0 + \beta_1 ESG_{i,t-1} + \beta_2 SIZE_{i,t} + \beta_3 MTBV_{i,t} + \beta_4 LEV_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$CoE_{i,t} = \alpha_0 + \beta_1 ESG_{i,t-1} + \beta_2 POL_{i,t} + \beta_3 POL * ESG_{i,t-1} + \beta_4 SIZE_{i,t} + \beta_5 MTBV_{i,t} + \beta_6 LEV_{i,t} + \varepsilon_{i,t} \quad (3)$$

4. Results and Discussions

Table 2 presents the descriptive statistics for the dependent, independent, moderating, and control variables. Overall, all the variables have an acceptable range of variation, and the means have a normal value of consistency, indicating that the distributions are normal. On average the companies in the sample have a mean of 50.36 percent for the ESG score, respectively, for the study period which means that most of the samples in the study have a high ESG score performance. Furthermore, the ESG variables as well as the control variables show a relatively high standard deviation. This might indicate that the performance regarding ESG between companies as well as countries in the samples differs a lot and may be due to the pandemic situation where some firms might experience some losses.

Table 2. Descriptive statistics of all samples.

Variable	Obs	Mean	Std. Dev.	Min	Max
CoE	490	0.094	0.039	0.005	0.245
ESG	490	50.364	17.291	6.516	84.907
POL	490	0.283	0.451	0.000	1.000
POL*ESG	490	14.869	25.287	0.000	84.907
SIZE	490	22.963	0.960	20.435	25.177
LEV	490	0.595	0.433	0.000	2.306
MTBV	490	1.334	0.796	0.423	3.437

Table 3. The mean and Standard Deviation of ESG score of each country sample.

Country	Number of Countries	Mean of ESG	StdDev of ESG
<i>China</i>	9	41,48	11,92
Hong Kong	4	29,79	8,55
<i>India</i>	11	59,00	11,6
<i>Indonesia</i>	4	61,71	13,23
Japan	44	50,36	16,45
S. Korea	11	47,09	24,41
<i>Malaysia</i>	1	42,6	6,18
<i>Saudi Arabia</i>	1	61,57	5,00
Taiwan	8	51,29	12,55
<i>Thailand</i>	3	71,4	5,67
<i>Turkey</i>	2	42,08	15,01

Table 3 presents the mean and standard deviation of ESG score in each country sample. The Asian countries (in italic), on average, show higher ESG scores than developed countries. This is an unsurprising result due to policy interventions that mandate ESG disclosures in most emerging countries.

The correlation analysis is run, although is not reported in this article. The matrix shows that ESG, POL and the interactive term POL*ESG have positive and significant correlation coefficients with CoE. It gives indications that ESG has a positive effect on CoE, and the relationship is not linier.

Next is the result of panel-data regression analysis based on equation 2 and 3 (see Table 4).

Table 4. Panel-Data Regression analysis of ESG on CoE

Variables	CoE		CoE	
	Coef.	P value	Coef.	P value
ESG	0.001**	0.040	-0.000	0.759
Policy			0.006	0.547
ESG*Pol			0.001***	0.007*
SIZE	-0.000	0.572	-0.000	0.856
LEV	0.019***	0.001	0.016**	0.017
MTBV	0.007***	0.003*	0.000	0.883
cons	0.086*	0.066	0.087	0.259
Year fixed effect	Yes		Yes	
Company fixed effect	Yes		Yes	
Prob > F	0.002		0.000	
R-squared	0.068		0.328	
Number of obs	490		490	

Notes: *significant at $\alpha = 10\%$; ** at $\alpha = 5\%$; *** at $\alpha = 1\%$

The regression results above show the effects of ESG on CoE, where column 1 reports the regression for hypothesis 1 and column 2 reports the effect of policy intervention on CoE for hypothesis 2. Column 1 shows that the research model is valid. The White t-test shows that there is a positive relationship between ESG and CoE. It implies that the higher ESG disclosure scores increase firms' CoE. Although the economic effect of ESG disclosure is negligible (0.001), nevertheless it is significant. An explanation for the mechanism behind this relationship is because Asian investors still consider ESG or sustainable related activities as mindless spending and sustainability itself is not yet become the concern of the market. Based on the institutional theory, the ESG activities and investments are conducted by firms as part of conformity to the regulation, rather than as part of firms' sustainability goals. Therefore, such activities are portrait as expenses, more taxes, bigger fiscal deficits, and, eventually, higher prices (Marcos Bertini & Amadeus, 2021). Hence, hypothesis 1 was accepted.

Column 2 shows that after including POL and its interactive term (POL*ESG), the significance relationship between ESG and CoE disappears. POL, itself, shows an insignificant effect on CoE. However, the interactive term shows a robust result. The positive coefficient of interactive term implies that the existence of policy intervention in a country strengthens the ESG and CoE relationship. Hence, H2 is also accepted.

These findings are aligned with the results from Pra-sad et al., (2022) that found the higher sustainability performance, the higher firms' CoE, and sustainable legislation moderates the relationship between sustainability performance and CoE. Supported with the theory used in this study, institutional theory, with coercive mechanism aims to bring business practice in line with government expectations. Companies in this sector might only do the ESG practices due to being conform to the regulation in order to fulfil the operating permit conditions. The result implies that sustainability regulations do matters in term of

strengthening the effect of ESG disclosure and CoE.

Among the control variables, LEV is the only consistent variable that significantly affects the CoE. This result might be due to an increase in firm risk will lead to a higher cost of equity (Nass, 2021; A. C. Ng & Rezaee, 2015). Meanwhile, the MTBV is only relevant without policy intervention. Its significance disappears once the government implement such a mandatory regulation.

From eleven sample Asian countries, the development of capital market varies. Therefore, further analysis is conducted by separating the capital market of the sample's countries, namely, developed and developing markets. The results are presented in table 5. The first column shows the sample firms from developed markets. Contrary to the hypothesis, sample firms from developed markets show an inverse relationship between ESG disclosure and CoE. This is in line with voluntary disclosure theory that states the more information available to the shareholders, the lesser the risk estimation, hence lower CoE.

Table 5. Panel-Data Regression analysis by Market Development

COE	Developed countries		Developing countries	
	Coef.	p-value	Coef.	p-value
ESG	-0.001**	0.033	0.000	0.745
Pol	-0.021	0.675	0.021**	0.028
ESG*Pol	0.001	0.190	-0.000	0.392
SIZE	-0.001	0.752	-0.000	0.803
LEV	0.027*	0.071	0.005*	0.072
MTBV	0.001	0.654	-0.005*	0.051
_cons	0.133	0.326	0.092**	0.045
Year fixed effect	Yes		Yes	
Firm fixed effect	Yes		Yes	
Prob > F	0.0000		0.0000	
R-squared	0.3133		0.0719	
Number of obs	140		350	

Notes: *significant at $\alpha = 10\%$; ** at $\alpha = 5\%$

On contrary, in Asian developing countries, the ESG disclosure insignificantly affects firms' CoE. However, the policy intervention is positively related to CoE, implying that the existence of sustainability regulation increases firms' CoE. This finding is supported by Sharf-man & Fernando (2008) stating state that the traditional view still looked at ESG practices as a cost to the company and should be avoided wherever feasible. Other variables have similar effects as the all-sample results.

5. Conclusion remarks

This study provides several key takeaways and implications for theory and practice. In

terms of key takeaways, this study provides evidence that, based on institutional theory, the higher ESG disclosure increases the Asian Basic material firms' CoE. Furthermore, sustainability policy intervention strengthens the relationship between ESG disclosure and firms' CoE. So, it can be concluded that, on average, mandatory ESG disclosure is not regarded as additional information that helps shareholders to estimate risk.

However, this study also shows that capital market development also matters in terms of the ESG disclosure effect. In the developed market, it is concluded that there is an inverse relationship between ESG disclosure and such firm's CoE, and sustainability policy intervention is irrelevant. On the other hand, sample firms from developing markets show that the ESG disclosure has no effect, but the existence of sustainability policy is seen as merely for conformity purposes, thus does not reduce firm's CoE.

On average, the ESG implementation in the Asian Basic materials sector firms are still motivated by rule compliance only and is uninspiring to socially responsible investors, who likely view such mindless spending and reporting as a liability or risk rather than an asset or a competitive advantage in the market.

As for the managerial implications, this study suggests some insights for firms to embrace ESG implementation not as a mandatory for compliance but considering the value of being sustainable by making sure to assess, control, and manage the environment, social, and governance practices. During the data analysis, the authors find that the sustainability policy still focuses on the environment and social part while only a few countries regulate sustainability in corporate governance hence, this study also wants to give insights into the regulations to add a policy that specifically regulates the corporate governance.

The study has some limitations that should be considered in future research. Further analysis on each component of ESG scores' effect on CoE. The author also suggest to use another sector for future research since it may be worthwhile for future research to explore the impact of ESG on CoE among other sectors, as ESG components may have different impacts on CoE Thus, future research is encouraged to consider the different ways in which ESG components can manifest and how such manifestations impact socially responsible investors' decisions in other sectors.

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