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Exploring credit-based coercive pressure and environmental performance in emerging markets: A path to greater environmental disclosure

Explorando la presión coercitiva basada en el crédito y el desempeño ambiental en los mercados emergente: un camino hacia una mayor divulgación ambiental

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Abstract

The purpose of this research is to examine the relationship between creditor pressure and environmental disclosure as well as to improve a complete understanding of the effect of mediation on environmental performance. This research used a company sample listed in developing countries in Asia from 2010-2022. Two models were developed and tested using unbalance data panel with three approach regression common effect models (CEM), fixed effect models (FeM), and random effect models (REM). The results showed that coercive pressure increases environmental disclosure. The research found good environmental performance practices could be a medium between coercive pressure and environmental disclosure. This research contributes to the CSR literature study and coercive pressure. Our findings highlight the role of market sophistication and company motivation in performing environmental performance and disclosure. This study expands on existing research. Our findings concluded that the competent monitoring and information processing capabilities of creditors can be used as a governance mechanism to maintain the legitimacy of stakeholders.

JEL Code: Q56, O16, G34
Keywords: coercive pressure; environmental performance; environmental disclosure

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Resumen

El propósito de esta investigación es examinar la relación entre la presión de los acreedores y la divulgación ambiental, así como mejorar la comprensión integral del efecto de la mediación sobre el desempeño ambiental. Esta investigación utilizó una muestra de empresas que cotizan en países en desarrollo de Asia durante el período 2010-2022. Se desarrollaron y probaron dos modelos utilizando datos de panel desbalanceados con tres enfoques de regresión: modelos de efectos comunes (CEM), modelos de efectos fijos (FEM) y modelos de efectos aleatorios (REM). Los resultados muestran que la presión coercitiva incrementa la divulgación ambiental. La investigación encontró que las buenas prácticas de desempeño ambiental pueden actuar como un mecanismo de mediación entre la presión coercitiva y la divulgación ambiental. Este estudio contribuye a la literatura sobre RSC y presión coercitiva. Nuestros hallazgos resaltan el papel de la sofisticación del mercado y la motivación empresarial en la implementación del desempeño y la divulgación ambiental. Este estudio amplía la investigación existente. Concluimos que las capacidades competentes de monitoreo y procesamiento de la información de los acreedores pueden utilizarse como un mecanismo de gobernanza para mantener la legitimidad frente a los grupos de interés.

Código JEL: Q56, O16, G34
Palabras clave: presión coercitiva; desempeño ambiental; divulgación ambiental

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Introduction

Environmental disclosure (ED) has become a major concern for academics, researchers, policymakers, and regulators over the past decades (Jiang et al., 2021). This is an evident in companies concerned with environmental impact. The increase in global greenhouse gas emissions poses serious threats to the environment, economy, and human life (Sun et al., 2020). In response, various international and national organizations have developed initiatives, policies, and practices to combat climate change (Baboukardos et al., 2021; Gaganis et al., 2021). Among the most prominent are the Kyoto Protocol of 1997 and the Paris Agreement of 2015, two important international agreements aimed at reducing greenhouse gas emissions and increasing resilience to climate change (Luo & Tang, 2021). At the national level, several countries such as Denmark, Malaysia, China, Brazil, South Africa, and Spain have implemented mandatory climate standards, indicating a global shift in their regulatory frameworks (Simpson et al., 2022). In Bangladesh, the Securities and Exchange Commission has introduced regulations and guidelines, including Corporate Governance Guidelines (CGC), highlighting the growing importance of regulatory perspectives in developing countries (Brooks & Oikonomou, 2018).

Examining the influence of creditor pressure on environmental disclosure can be justified by using the theory of coercive isomorphism in the context of institutional theory. As explained by Dimaggio & Powell, (1983), pressure on companies to adapt to disclosure practices can come from three different isomorphic sources, namely coercive, mimetic, and normative. Coercive isomorphism occurs when organizations are pressured by influential stakeholders to disclose certain information, such as

environmental disclosure. Creditors, as one of the stakeholders with significant influence, can exert coercive pressure on companies because companies need resources from them. In this case, creditors can force companies to adopt more transparent environmental disclosure practices as a condition of financing or credit policies.

Coercive isomorphism is divided into formal and informal pressures (Dimaggio & Powell, 1983; Martínez-Ferrero & García-Sánchez, 2017). Formal pressures come from regulators such as governments that impose regulations and laws that companies must comply with. In contrast, informal pressures can come from stakeholders such as creditors and shareholders who, although they do not have regulatory power, have great influence due to the company's dependence on the resources they provide (Ben-Amar et al., 2023).

In the context of developing countries, coercive pressure from creditors on environmental disclosure has been documented in several previous studies. For example, Amran & Haniffa, (2011) found that Malaysian companies that rely heavily on government contracts face coercive pressure to disclose more sustainability information. (Cahaya et al., 2012) also found that state-owned companies listed in Indonesia face coercive pressure to disclose CSR information related to employment. Therefore, the use of the concept of coercive isomorphism from creditors in this study is considered appropriate. Furthermore Joseph et al., (2023) stated that there is isomorphic pressure to support ethical values to curb or reduce corruption and bribery.

The recognition of environmental reporting suggests that companies can benefit from engaging in environmental disclosure. Empirical studies show that companies with more extensive environmental reporting and less political connections tend to experience lower debt costs after the mandate is implemented. The quality of environmental disclosure, coupled with external assurance, strengthens access to finance (García-Sánchez et al., 2019). Comprehensive disclosure increases credibility and transparency, as well as the company's chances of accessing external financial resources. Luque-Vílchez, (2017) revealed that environmental assurance in US companies is correlated with a decrease in the cost of equity and an increase in analyst forecast accuracy. This supports the idea that sustainability assurance reduces information asymmetry (Simnett et al., 2009) and increases stakeholder trust (Cuadrado-Ballesteros, Martínez-Ferrero, et al., 2017). (Carey et al., 2021) also found that reduced information asymmetry reduces capital constraints and debt costs of US companies.

Examining the influence of creditor pressure on environmental disclosure in the context of developing countries has strong justification based on several important factors. First, developing countries often face significant challenges in terms of access to debt and high debt costs. Limited capital availability, underdeveloped financial systems, and weak institutional environments exacerbate these difficulties (Rahma et al., 2022). Economic instability, political instability, and currency fluctuations add

to the risks perceived by creditors, which in turn lead to higher interest rates charged to companies operating in emerging markets (Ifada & Indriastuti, 2021).

Figure 1 shows the average financial leverage of firms in developing countries between 2013 and 2021, reflecting significant reliance on external financing. High leverage indicates that firms often rely on debt to support their operations and growth. This reliance makes firms vulnerable to coercive pressures, especially from creditors who may require environmental standards as a condition of loans. Creditors, including banks, often require firms to comply with environmental regulations to reduce credit risk. Therefore, this pressure may encourage firms to improve their environmental performance in order to maintain access to finance.

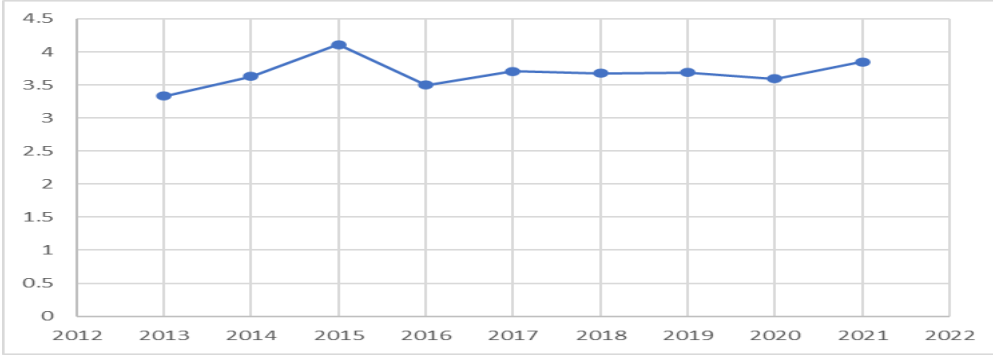

Figure 1. Average financial leverage of developing country companies in 2013 - 2021

In addition, weaknesses in legal protection and high levels of corruption increase the risk of default, reduce investor confidence, and lead to high borrowing costs (Ifada et al., 2024). These factors hinder corporate growth and expansion despite developing countries having high growth potential. Thus, examining how more transparent environmental disclosure through CSR reporting can help company better access to external financing is highly relevant. Environmental disclosure can reduce the risk perceived by creditors, strengthen their trust, and ultimately lower the cost of debt.

Second, there is growing interest in the impact of CSR reporting on corporate financial results. With the increasing attention to sustainability, CSR reporting has become increasingly important to creditors and other stakeholders. Creditors, as providers of funds, are interested in how corporate sustainability practices affect their risk and reliability in meeting financial obligations. External assurance and the adoption of better CSR reporting standards, such as the Global Reporting Initiative (GRI), provide creditors with certainty about the quality and transparency of corporate CSR disclosures. Although companies incur additional costs to obtain external assurance and comply with reporting standards, this

study aims to explore whether the benefits to creditors, such as better access to debt and lower cost of debt, justify these costs.

This study expands the literature by analyzing whether credit given by creditors for corporate activities can encourage management to improve environmental performance. The researchers argue that environmental responsibility is revealed when companies are under pressure from the environmental community. This study also examines whether the environmental performance carried out is real or merely symbolic, and how the market responds to incentives from environmental performance, especially in developing countries. According to Ifada & Saleh, (2022), Ifada et al., (2024) not much is known about the effects of country-level factors on disclosure incentives.

Our study contributes by expanding the CSR reporting literature. While Carey et al., (2021), Ifada, (2023), Raimo et al., (2020), and Zouari-Hadiji & Chouaibi, (2021) have explored the positive relationship between CSR reporting and financial performance, there remains limited understanding of its impact within developing countries characterized by weak governance and regulatory frameworks. This study aims to address this gap by examining how CSR reporting can enhance credibility, transparency, and risk mitigation in such contexts.

Therefore, this study can provide important insights for companies in emerging markets on how environmental disclosure and CSR reporting can contribute to increased access to funding and reduced borrowing costs, especially amidst weak institutional environments (Ifada et al., 2024).

Literature review

Creditor pressure, environmental performance, and environmental disclosure

Stakeholders play a strategic role in corporate environmental disclosure, as evidenced by a number of studies. Freedman & Jaggi, (2005**)** concluded that the ratification of the Kyoto Protocol encouraged companies to be more transparent in disclosing environmental information. Aligning with this, Reid & Toffel, (2009) found that stakeholder pressure significantly affects environmental disclosure. Liesen et al., (2015) also emphasized that stakeholder pressure greatly determines the reporting of corporate greenhouse gas emissions. Although companies have to deal with various stakeholder groups, they tend to pay more attention to demands from groups that have greater influence, given the limited resources they have. Previous studies also acknowledge that stakeholder groups such as customers, suppliers, employees, regulators, shareholders, and creditors can have a significant influence on corporate social and environmental disclosure (Liesen et al., 2015). Based on this, this study aims to investigate how internal

stakeholders, such as shareholders and employees, and external stakeholders, such as customers, suppliers, regulators, and creditors, affect corporate environmental disclosure.

Creditor pressure and environmental disclosure

Creditors are external stakeholders who have a significant influence on a company's operational decisions. As providers of funds, creditors demand that companies prioritize financial obligations, such as interest payments, and avoid activities that can increase financial burdens. Environmental activities, including environmental disclosure, often require significant investments, such as the implementation of environmentally friendly technologies and the cost of preparing environmental reports. As a result, creditors can encourage companies to avoid environmental activities that are considered to be burdensome to the company's finances.

Luo & Tang, (2014) found that companies with high debt levels tend to disclose less environmental information. This view is supported by Chithambo et al., (2020), who stated that creditors have a negative influence on environmental disclosure, with companies under creditor pressure tending to reduce environmental disclosure. Tingbani et al., (2020) dan Shen et al., (2020) further confirmed that companies with large debt burdens provide less information related to greenhouse gas emissions, which is part of environmental disclosure.

Previous studies have shown a relationship between leverage and performance and environmental disclosure. Pressure from creditors encourages companies to disclose environmental and governance information (Hamrouni et al., 2017). Cormier & Magnan, (2015) also found that environmental performance, especially related to carbon, affects the company's debt structure. Creditor pressure can improve environmental performance through environmental risk reporting, as supported by (Thompson & Cowton, 2004). Research Ahmadi & Bouri, (2017) and Ifada & Jaffar, (2023) show that good environmental performance has a positive impact on environmental disclosure, increasing the company's access to debt financing (Hamrouni et al., 2019).

Other literature reveals that leverage has the potential to improve environmental reporting and performance, where creditors play an important role in driving improvements in social and environmental performance (Hamrouni et al., 2019; Yang et al., 2018). This offers opportunities for further research on the effects of leverage and creditor pressure on environmental disclosure, although previous research results are often inconsistent (Ahmadi & Bouri, 2017; Ansong & Nisar, 2017; Calza et al., 2017).

Hypothesis development

Creditor pressure and environmental performance

Capital structure and company strategy are related to each other so that funding decisions in a company are consistent with long-term strategies (Zhang & Chen, 2017). It is important for companies to convey the environmental performance to external parties, including creditors. The Equator Principles require the Bank to use financial leverage to promote projects that will play a positive role in reducing emissions (Wang et al., 2019). Naser et al. (2006) stated that creditors have a strong position to push the companies in order to take certain actions. Related to this research, creditors can push the companies to have good environmental performance. (Hamrouni et al., 2019) mentioned that the manager will show the social and environmental performance of the company to the fund providers including creditors. In addition, Zhang and Chen, (2017) argued that an increase in environmental performance will indeed cause additional financial burdens in the short term, but this has an impact on long-term interests and give benefits. In other words, environmental performance has an effect on the funding decisions of creditors.

Companies that have debt will maintain environmental performance to meet the expectations of credit providers. In other words, creditors have a positive effect on the company's environmental performance. Based on the theoretical framework and previous studies, the following hypotheses are proposed:

H1: Creditor pressure has an effect on environmental performance

Environmental performance and environmental disclosure

By using a study of legitimacy theory, companies that have good environmental performance will make environmental disclosures to the public. The company does this as an effort to gain legitimacy and maintain good relations with the community. By doing so, the community will be more accepting of the company's existence. Companies that have high environmental performance will inform extensive environmental disclosure to obtain legitimacy from the community so that it is in line with the legitimacy theory (Deegan & Warren, 2003). Environmental performance is a material for management's consideration in disclosing its environmental performance. Companies that have good environmental performance will make higher and substantive environmental disclosures to stakeholders. Furthermore, Freedman and Jaggi, (2005) obtained research findings that companies with broader voluntary environmental disclosure will get market reactions according to their environmental performance.

Giannarakis et al., (2017) explained that environmental performance has a positive effect on environmental disclosure. Based on the theoretical framework and previous studies, the following hypotheses are proposed:

H2: Environmental performance has positive effect on environmental disclosure

Creditor pressure, environmental disclosure, and the mediating role of environmental performance

Coercive pressure in a business context can stem from both financial and non-financial sources, particularly from external stakeholders. Among these, creditors represent a key source of coercive pressure, as highlighted by Cahaya et al., (2012), who noted that demands for reporting and disclosure often originate from financing institutions. Chava, (2014) emphasized that creditors may choose to withhold lending to firms with inadequate environmental disclosure, driven either by concerns over social responsibility or the potential risks associated with lender liability and reputational damage.

Yang et al., (2018) further argued that social and environmental disclosures play a critical role in informing external users such as investors and lenders about a firm's sustainability practices, thereby influencing their financial decisions. When companies, especially those operating in environmentally sensitive industries, provide transparent environmental disclosure, it can reduce lenders' uncertainty and affirm that sustainability initiatives are aligned with business goals rather than resource misallocation (Hamrouni et al, 2019). Supporting this, Thompson & Cowton, (2004) highlighted that environmental risks are increasingly integrated into lenders' credit evaluation processes.

Firms that are not financially self-sufficient rely heavily on external funding for continuity and growth, and as such, are more likely to respond to creditor expectations by disclosing environmental information. The pressure exerted by creditors thus functions as a coercive mechanism encouraging companies to improve their environmental performance and reporting practices (Naser et al., 2006) . Empirical findings by Hamrouni et al. (2019) support this relationship, showing a positive association between leverage, often used as a proxy for creditor pressure, and ESG disclosures. Given that ESG performance is increasingly relevant to all firms (Ihbal et al., 2024). This means that creditors are sensitive to ESG disclosure because it includes non-financial information that is relevant for company risk assessments. Based on the theoretical framework and previous studies, the following hypotheses are proposed:

H3: Creditor pressure has positive effect on environmental disclosure

H4: Environmental performance mediates the relationship between coercive pressure with environmental disclosure.

Research methodology

This study adopts a quantitative, explanatory research design utilizing unbalanced panel data analysis to examine the effect of coercive pressure from creditors on corporate environmental disclosure. Environmental performance functions as a mediating variable. The data comprises publicly listed companies from ten emerging markets in Asia over the period 2010 to 2022.

Definition and measurement of variables

This study employs a set of key variables to examine the influence of coercive institutional pressure on corporate environmental disclosure, with particular attention to the mediating role of environmental performance. The variables include a dependent variable (Environmental Disclosure), an independent variable (Coercive Pressure), and a mediating variable (Environmental Performance). Each variable is defined conceptually and measured using well-established indicators in line with previous literature. Table 1 summarizes the operational definitions and measurement approaches for each variable used in the empirical analysis.

Table 1
Operational Definitions of Variables

Variable	Role in the Study	Definition and Measurement	Reference
Environmental Disclosure (ED)	Dependent Variable	Measured using Bloomberg's Environmental Disclosure Score, which reflects the extent and transparency of a company's environmental reporting. The score is weighted by commonly disclosed items such as greenhouse gas (GHG) emissions, normalized on a 0–100 scale, and adjusted by industry.	(Bernardi & Stark, 2018; Hassan & Romilly, 2018)
Coercive Pressure (CP)	Independent Variable	Proxied by financial leverage, calculated as the ratio of total debt to total assets. Higher leverage indicates greater external pressure from creditors, which may influence a company's environmental disclosure behavior.	(Cahaya et al., 2012)
Environmental Performance (EP)	Mediating Variable	Assessed using a standardized index that includes environmental performance indicators related to air, water, waste, and energy. The	(Walls et al., 2008)

	index reflects the actual environmental outcomes of corporate operations.

Control variables include firm size (SIZE) measured as the natural logarithm of total assets, industry classification (ID) included as a dummy variable, environmental cost (EC), and financial performance (PERFORM) proxied by return on assets.

The empirical analysis involves two core regression models:

Model 1:

$$EP\_it = \beta_0 + \beta_1 CP\_it + \beta_2 SIZE\_it + \beta_3 ID\_it + \beta_4 EC\_it + \varepsilon_1\_it$$

Model 2:

$$ED\_it = \alpha_0 + \alpha_1 CP\_it + \alpha_2 EP\_it + \alpha_3 SIZE\_it + \alpha_4 ID\_it + \alpha_5 EC\_it + \varepsilon_2\_it$$

Where: *EP_it* represents the environmental performance of firm *i* in year *t*, and *ED_it* refers to its environmental disclosure. *CP_it* captures coercive pressure from creditors, while *SIZE_it* indicates firm size. *ID_it* is an independent director, *EC_it* denotes environmental cost incurred by the firm. The model includes intercepts (β_0, α_0), regression coefficients (β, α), and error terms (ε_1_it, ε_2_it) to capture the influence of unobserved factors. Here, *i* refers to the firm, and *t* denotes the year of observation.

Three panel data estimation methods were employed: Pooled Least Squares (PLS), Fixed Effects Model (FEM), and Random Effects Model (REM). Model selection was guided by the Chow test and Hausman test, which supported the use of FEM as the most appropriate specification for this dataset, allowing control over time-invariant firm-specific characteristics.

To validate the regression models, classical assumption tests were conducted. No multicollinearity issues were detected (all VIF values < 5). The Breusch-Godfrey test indicated no autocorrelation, and the ARCH test confirmed the absence of heteroskedasticity (p-values > 0.05). These results confirm the robustness of the regression specification.

Mediation analysis was conducted following Baron and Kenny's three-step procedure (Baron & Kenny, 1986; Musonda & Gambo, 2020). First, CP significantly influenced ED; second, CP had a significant effect on EP; and third, EP significantly influenced ED when controlling for CP. These findings confirm that environmental performance partially mediates the relationship between creditor pressure and environmental disclosure.

To assess the contextual relevance of creditor pressure on environmental management, the study further categorized firms based on market sophistication. Market sophistication was defined using criteria related to Worldwide Governance Indicators (Kaufmann et al., 2007)

The sample was categorized into two groups based on market sophistication. The first group, referred to as High Market Sophistication, encompasses countries with well-developed institutional frameworks, mature capital markets, and robust regulatory environments. These countries typically exhibit strong legal enforcement, comprehensive investor protection mechanisms, and established disclosure practices, contributing to greater market efficiency and investor confidence. The second group, termed Low Market Sophistication, includes countries that face challenges such as weaker legal enforcement, limited investor protection, and less established disclosure practices. These factors can hinder market development and reduce transparency, potentially increasing investment risk. This classification aligns with frameworks used by organizations like MSCI and S&P Dow Jones Indices, which assess market maturity based on criteria such as economic development, market size and liquidity, and market accessibility..

Separate regression analyses were conducted for each group. Results revealed that coercive pressure positively influenced environmental performance and disclosure only in the high market sophistication group. In contrast, this relationship was statistically insignificant among firms in low market sophistication settings. These findings underscore the importance of institutional quality as a moderating factor and suggest that the effectiveness of creditor-driven environmental governance is conditional on the strength of market infrastructure.

Result and discussion

Table 2 explains the Sample Selection Process. The sample selection method uses purposive sampling with the criteria that it is a public company from an emerging market in Asia that has leverage, and Environmental Performance data. The total population of public companies from emerging markets in Asia that have Environmental Disclosure Score data from 2010 - 2022 is 512 companies. The data is taken from the Bloomberg database. Of the 512 data, 4 companies do not have leverage data, and 16 companies do not have Environmental Performance data. Therefore, the research sample that shows companies with complete data is 492 companies.

Table 2
Sample Selection Process

Selection Criteria	# Obs.
Observations of publicly listed companies from an emerging market in Asia that have EDS data from 2010 – 2022	512
Observations that do not have leverage data (4) and EP data (16)	-20
Observations with complete data	492

Table 3 presents Table 3 presents the proportion of sample data (2010 - 2022) by country of origin of a total of 492 companies. The least number of companies come from Sri Lanka and the Philippines, where each country only has two companies in the sample of this study. Meanwhile, the country of origin of the largest company, reaching 56.3% of the total sample, is China.

Table 3
Countries in the Sample Companies and Frequency of Data (2010 – 2022)

No	Country	#Obs	Percent
1	China	277	56.3
2	Hong Kong	16	3.3
3	Indonesia	63	12.8
4	India	56	11.4
5	Malaysia	28	5.7
6	Pakistan	9	1.8
7	Philippines	2	0.4
8	Sri Lanka	2	0.4
9	Thailand	31	6.3
10	Taiwan	8	1.6
Total		492	100

Table 4 presents the descriptive statistics of the variables before and after transformation. In Panel A (Untransformed), the mean value of coercive pressure (CP) is 2.470 with a standard deviation of 1.542, ranging from 1.120 to 15.120. Environmental performance (EP) has a relatively high mean of 0.782, indicating generally strong environmental practices across firms, with a standard deviation of 0.210. Environmental disclosure (ED) shows a wide spread, with a mean of 27.595 and a maximum of 67.440, suggesting substantial variation in disclosure levels. Company performance (PERFORM) exhibits considerable dispersion as well, with values ranging from -37.300 to 73.070. The number of independent directors (ID) has a mean of 3.900, while environmental cost (EC) shows extreme variability, with a maximum of 1550.000 and a standard deviation of 176.608.

Panel B (Transformed) reports the log- or scale-adjusted values. CP is reduced to a mean of 0.347 with a tighter spread (SD = 0.181). ED's transformed mean is 1.356, also reflecting a normalized distribution (SD = 0.288). Company size (SIZE), measured as the natural logarithm of total assets, shows a mean of 10.590. Performance (PERFORM) and environmental cost (EC) are also more normalized after transformation, with means of 1.643 and 1.058, respectively. Notably, EP and ID remain untransformed as their distributions likely did not require adjustment. Overall, the transformation effectively reduced skewness and outlier effects, ensuring more reliable input for subsequent regression analysis.

Table 4
Statistic Descriptive

Panel A Untransformed	Mean	Median	Maximum	Minimum	Std. Deviation
CP	2.470	2.120	15.120	1.120	1.542
EP	0.782	0.750	1.000	0.250	0.210
ED	27.595	23.645	67.440	0.780	16.418
PERFORM	7.241	4.550	73.070	-37.300	10.230
ID	3.900	3.000	12.000	0.000	1.710
EC	45.481	4.970	1550.000	0.002	176.608
Panel B					
Transformed					
CP	0.347	0.326	1.180	0.049	0.181
EP	0.782	0.750	1.000	0.250	0.210
ED	1.356	1.374	1.829	-0.108	0.288
SIZE	10.590	9.897	20.378	6.597	2.796
PERFORM	1.643	1.629	2.046	-0.155	0.125
ID	3.900	3.000	12.000	0.000	1.710
EC	1.058	0.901	3.191	-0.442	0.575

Note(s): CP denotes coercive pressure measured by leverage, EP denotes environmental Performance, ED denotes environmental disclosure, PERFORM is company performance measured as return on assets, SIZE is company size measured as the natural logarithm of total assets, ID is Independent Director, EC is Environmental Cost, and CDUM is a country dummy. *, **, and *** indicate significance at 0.1, 0.05, and 0.01 levels, respectively (2-tailed).

Leverage, measured as a percentage of total debt to assets, the Philippines had a minimum average value of 0.185 and a maximum of 0.863 in Sri Lanka, with an overall average of 0.347. Environmental performance, measured by key indicators (air, waste, water, energy), had a minimum average value of 0.625 in the Philippines and a maximum of 0.875 in Sri Lanka, with an overall average of 0.782. Environmental disclosure showed a minimum value of 1.100 in the Philippines, a maximum of 1.604 in Thailand, and an overall average of 1.356.

Classical assumption test

Multicollinearity analysis shows no problems because all correlation values between independent variables are below 0.80. The VIF test also shows no serious collinearity with values below 5. The autocorrelation test using Breusch-Godfrey and the heteroscedasticity test using ARCH, both show significant results above 0.05, which means that both models are free from autocorrelation and heteroscedasticity problems. In conclusion, the classical assumptions of regression are met.

Multiple regression analysis

The data analysis process begins by selecting the best model, namely, the Pooled Least Square, Fixed Effect Model, and Random Effect Model. The Chow test is used to compare Pooled Least Square and Fixed Effect Model, followed by the Hausman test for Fixed Effect Model and Random Effect Model. The results of the Hausman test show probability values of 0.0016 and 0.0086 (<0.05), so the Fixed Effect model can be selected for model 2.

Table 5 shows that coercive pressure drives firms to adopt environmentally friendly activities, which has a positive impact on performance (H1 is accepted). Companies increase legitimacy by investing in the environment to meet the expectations of society, investors, and creditors, who consider environmental information important in assessing corporate credibility. The results also show that environmental performance affects environmental disclosure (H2 is accepted).

Table 5
Test Results of Pooled, Fixed Effect, and Random Effect Model

	Pooled		Fixed Effect Model		Random Effect Model	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Variable	Dependent Variable		Dependent Variable		Dependent Variable	
	EP	ED	EP	ED	EP	ED
C	1.010***	-0.856***	1.263***	-0.14	1.034***	-0.483***
CP	0.184***	0.545***	0.135**	0.544***	0.184***	0.570***
EP		0.575***		0.506***		0.528***
LGPERFORM	-0.032	0.767***	-0.114	0.607***	-0.036	0.649***
SIZE	-0.033***	0.023***	-0.045***	0.006	-0.034***	0.013***
ID	0.007	0.026***	0.011	-0.025*	0.007	0.014**
EC	0.076***	-0.033*	0.089***	-0.045**	0.078***	-0.035**
CRUM	YES	YES	YES	YES	YES	YES
R-squared	0.363	0.482	0.562	0.716	0.376	0.517
Adjusted R-squared	0.356	0.476	0.4	0.609	0.369	0.511
F-statistic	55.286	75.321	3.457	6.706	58.52	86.618
Prob(F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000
Hausman Test			19.404	17.192		
			0.0016	0.0086		

In addition, coercive pressure affects environmental disclosure (H3 is accepted). The researchers also separated the sample based on market sophistication to test the relevance of environmental management from creditor pressure, with the results presented in Tables 6 and 7.

Table 6
High Market Sophistication Group

High Sophistication						
	Pooled		Fixed Effect Model		Random Effect Model	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Variable	Dependent Variable		Dependent Variable		Dependent Variable	
	EP	ED	EP	ED	EP	ED
C	1.658***	-1.760***	1.563***	-1.243***	1.656***	-1.632***
CP	0.229***	0.253***	0.192**	0.324***	0.231***	0.291***
EP		0.623***		0.586***		0.592***
PERFORM	-0.395***	1.436***	-0.343*	1.281***	-0.392***	1.402***
SIZE	-0.040***	0.004	-0.045***	-0.001	-0.040***	0.002
ID	0.01	0.050***	0.025	-0.002	0.011**	0.041***
EC	0.051***	-0.080***	0.068***	-0.085***	0.053***	-0.080***
CRUM	YES	YES	YES	YES	YES	YES
R-squared	0.335	0.571	0.533	0.742	0.343	0.587
Adjusted R-squared	0.326	0.19	0.347	0.638	0.334	0.58
F-statistic	37.372	84.568	2.87	7.137	38.698	87.500
Prob(F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000

The research result showed that in the high market sophistication group, coercive pressure significantly affected environmental performance. Different from the low market sophistication group, coercive pressure did not have a relationship with environmental performance. Therefore, the summary of the verification effect of this test showed that market sophistication is a prerequisite for creditors to put pressure on companies to perform environmental performance and a prerequisite for EPs to take on the effect of a mediating role on the relationship of creditor coercive pressure on environmental disclosure.

Table 7
Low Market Sophistication Group

Low Sophistication						
	Pooled		Fixed Effect Model		Random Effect Model	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Variable	Dependent Variable		Dependent Variable		Dependent Variable	
	EP	ED	EP	ED	EP	ED
C	1.361***	0.164	1.667***	0.557**	1.364***	0.415
CP	-0.017	0.766***	-0.068	0.702***	-0.017	0.742***
EP		0.195		0.045		0.091
PERFORM	-0.064	0.400***	-0.195**	0.353***	-0.065	0.369***
SIZE	-0.056***	0.013	-0.070***	-0.006	-0.056***	0.001
ID	-0.004	-0.012	0.009	-0.014	-0.004	-0.013
EC	0.201***	0.098**	0.242***	0.156***	0.202***	0.134***
CRUM	YES	YES	YES	YES	YES	YES
R-squared	0.657	0.618	0.755	0.769	0.657	0.654
Adjusted R-squared	0.642	0.597	0.664	0.68	0.642	0.635
F-statistic	41.812	29.174	8.269	8.554	41.803	34.049
Prob(F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000

The researchers were aware that static panel data regression (CEM, FEM, REM) might provide inconsistent or biased results. Therefore, additional tests were conducted for this effect. Dynamic GMM utilizes 1-year lagged independent variable data as an instrumental variable that was run. The results are qualitatively similar.

Table 8
Results of GMM test

Generalized Method of Moments Test		
Variable	Model 1 Dependent EP.	Model 2 Dependent ED.
C		
EP (-1)	0.548	
ED (-1)		-0.141
CP	0.347	0.86
EP		0.29
PERFORM	-0.044	-0.025
SIZE	-0.501	0.488
ID	0.021	-0.048
EC	0.194	-0.001
CRUM	YES	YES
Mean dependent var	0.033	0.008
SE of regression	0.188	0.186
J-statistic	38.923	35.016
Prob (J-statistic)	0.064	0.111
SD dependent var	0.105	0.117
Sum squared resid	8.903	8.705
Instrument rank	33	33

Table 7 shows that the GMM test results have a probability in model 1 and model 2 with a Prob J statistic value of 0.064 > 0.05 and 0.111 > 0.05, which means that the regression model used is valid. Table 8 is also a retest with a reduction of one year of testing, and the results were consistent with previous results that CP affected ED and EP strengthened the relationship between CP and ED.

Table 9
Mediation Test Result

Model	Coef	Result
CP ED	0.544***	Significant
CP EP	0.135***	Significant
EP ED	0.506***	Significant

The mediation analysis was conducted following the procedure proposed by (Baron & Kenny, 1986). This approach involves three steps to establish a mediating effect (Musonda & Gambo, 2020). In

the first step, the independent variable must significantly influence the dependent variable. As shown in Table 9, the independent variable Coercive Pressure (CP) has a significant positive effect on Environmental Disclosure (ED) ($\beta = 0.544$, $p < 0.01$). In the second step, the independent variable must significantly influence the mediating variable. The results indicate that CP significantly affects Environmental Performance (EP) ($\beta = 0.135$, $p < 0.01$), fulfilling the second criterion. In the third step, the mediating variable must significantly affect the dependent variable while controlling for the independent variable. EP has a significant positive relationship with ED ($\beta = 0.506$, $p < 0.01$), even after accounting for CP. These results confirm that EP partially mediates the relationship between CP and ED. Therefore, the mediating role of Environmental Performance is supported, indicating that better environmental performance contributes to improved environmental disclosure. Thus, H4 is accepted.

Discussion

This section presents a comprehensive analysis of the empirical models developed in this study, particularly focusing on the interplay between coercive pressure (CP), environmental performance (EP), and environmental disclosure (ED). The results consistently support the hypothesized relationships, underscoring the relevance of institutional and stakeholder theories.

The regression results reveal that coercive pressure from creditors significantly and positively influences environmental performance. This confirms Hypothesis 1. As shown in Table 5 and validated through fixed and random effects models, coercive pressure is a strong predictor of improved environmental performance. This finding is in line with the theory of coercive isomorphism, which suggests that organizations are compelled to adopt certain practices due to pressure from powerful stakeholders. In this case, creditors exert influence due to their strategic role in financing operations (Dimaggio & Powell, 1983; Martínez-Ferrero & García-Sánchez, 2017). Prior research by Zhang & Chen, (2017) and Wang et al., (2019) further supports the role of financial leverage in motivating companies to enhance their environmental performance.

Consistent with Hypothesis 2, environmental performance has a positive and significant impact on environmental disclosure. Companies with strong environmental performance are more willing to communicate their sustainability efforts to the public. This behavior is aligned with legitimacy theory, which proposes that organizations disclose favorable information to gain societal acceptance and stakeholder support (Deegan & Warren, 2003). Empirical Giannarakis et al., (2017), Iatridis, (2013), and (Freedman & Jaggi, 2005) also confirm that companies with better environmental performance are more likely to voluntarily disclose their efforts to signal legitimacy and manage reputation.

The analysis also demonstrates a direct and statistically significant relationship between coercive pressure and environmental disclosure, which confirms Hypothesis 3. This suggests that firms respond to creditor expectations not only by improving their practices but also by increasing transparency in their reports. These disclosures serve to reduce information asymmetry between firms and creditors. This finding is consistent with Tavakoli et al., (2018), who emphasize that environmental disclosures help lenders assess risk, and with (Chava, 2014), who finds that creditor decisions are sensitive to the quality of sustainability disclosures.

The mediation analysis supports Hypothesis 4 by demonstrating that environmental performance partially mediates the relationship between coercive pressure and environmental disclosure. The three-step procedure by Baron and Kenny confirms that coercive pressure influences both environmental performance and environmental disclosure directly. It also reveals that environmental performance significantly contributes to disclosure, even when controlling for the effect of coercive pressure. These findings are consistent with (Hamrouni et al., 2019), who argue that creditors are more likely to finance companies with robust environmental, social, and governance practices.

To better understand the contextual factors that shape these relationships, the analysis was extended by classifying countries into high and low market sophistication groups. The findings show that in high sophistication markets, coercive pressure significantly affects both environmental performance and disclosure. Furthermore, environmental performance fully mediates the relationship between creditor pressure and disclosure. These results confirm that well-developed financial infrastructure and strong institutional environments enhance the effectiveness of creditor influence. This is consistent with Rahma et al., (2022) and García-Sánchez et al., (2019), who emphasize the role of institutional quality in shaping corporate responses to stakeholder expectations.

In contrast, in low market sophistication countries, coercive pressure influences environmental disclosure directly but does not significantly affect environmental performance. This implies that companies in these contexts may engage in symbolic disclosure practices to meet expectations without implementing substantive environmental improvements. This behavior is often associated with greenwashing, a concern raised by scholars such as Cuadrado-Ballesteros et al., (2017) and Amran & Haniffa, (2011)

To validate these results, a robustness check was conducted using the Generalized Method of Moments (GMM). The GMM analysis confirms the consistency of the findings and demonstrates that the models are not affected by endogeneity or autocorrelation. The J-statistic p-values are above 0.05, indicating the validity of the instruments used and the stability of the estimated relationships over time.

From a practical perspective, this study highlights the potential of creditors as environmental governance agents. In developing countries, where regulatory enforcement is often weak, creditor pressure

can substitute for formal mechanisms by demanding higher environmental standards in exchange for access to capital. These findings suggest that financial institutions should integrate environmental risk assessments into lending frameworks and that policymakers should focus on strengthening market infrastructure to support meaningful environmental reform.

In conclusion, this study contributes to the literature by demonstrating that coercive pressure from creditors can drive both environmental performance and disclosure. The mediating role of performance and the moderating role of market sophistication illustrate the complexity of institutional influence in emerging markets. These insights are particularly relevant for countries seeking to improve sustainability outcomes while addressing the challenges of weak governance and limited regulatory enforcement.

Conclusions

The questions of whether pressure from creditors and the purpose of pressure from creditors can make companies take into account the environmental disclosure practice still produce different results. Meanwhile, research on corporate social responsibility has generated a lot of knowledge. However, it has neglected the evidence of different environmental and social claims such as the high sophistication market environment or the low sophistication market. The researchers examined whether creditors can put pressure on companies to make environmental disclosures with environmental performance as mediation, and examine the relationship with the sophistication of the market in which the company operates.

This research found that pressure from creditors can motivate creditors to make environmental disclosure. On the other hand, companies also try to maximize their environmental performance in order to give a positive signal through environmental disclosure and gain legitimacy. In addition, there is evidence of a strong relationship with market sophistication. The results show that creditor pressure can motivate firms to perform environmental performance only at high levels of market sophistication. Consistent with those results, the environmental performance also has a significant effect on environmental disclosure only at a high level of market sophistication. The researchers found no evidence to support that the CP relationship affects EP and ED at low levels of market sophistication. The company will disclose environmental information if the company's operational activities have a high impact on the environment. From the creditor's point of view, this can be a consideration in which the company should provide capital in the form of debt.

The limitation of this study is that the sample was only limited to 10 countries due to data limitations. Therefore, future research needs to add a sample of countries. Also, it suggests to add samples to the developed country market so that the comparison can be seen. It will help developing country

markets in evaluating the policies they make. Future research can focus more on the implications of selective environmental disclosures such as greenwashing of corporate governance and structural modeling of corporate credit risk. Measurements or databases other than Bloomberg can also be considered to expand the literature.

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