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Towards Environmental Disclosure Based on Corporate Governance

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Abstract: This study examines the effect of Corporate Governance (CG) on Economic Performance (EP) and CG on environmental disclosure (ED). Besides, it examines the mediating role of Economic performance (EcP) on CG and ED; and Environmental performance (EnP) on EcP and ED. This research used secondary data from Bloomberg with a purposive sampling method to obtain 2084 Asian public companies from 2006 to 2020. This research used multiple linear regression methods for data analysis. The results showed that CG and EcP had an effect on ED. EcP could not mediate the relationship between CG and ED. Besides, there was no moderating role of EcP in the relationship between EcP and ED. This study suggests that CG and EcP are important for improving ED. Furthermore, stakeholders need to pay attention to CG, EcP, EnP, and ED regarding business assessment. This study provides empirical evidence about the mediating role of EnP in the relationship between EcP and ED in public companies in Asia Pacific. There was still little research that discusses the relationship between environmental, social, and governance issues of an organization and its financial profitability. As far as our search from previous studies, this is the first study that examines the effect of corporate environmental, social, and governance practices on financial performance in the context of developing countries.

Keywords: corporate governance, economic performance, environmental disclosure, environmental performance.

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INTRODUCTION

Environmental disclosure is a critical issue. Baldini et al. (2018) stated that companies have received pressure to make environmental, social, and governance disclosures in recent years. Velte (2020) explained that corporate governance is the dominant determinant in the contemporary literature. Therefore, the decision to provide or not to provide certain information is likely to depend on various factors, including corporate governance characteristics (Odoemelam & Okafor, 2018). Das et al. (2021) argued that corporate governance characteristics contribute to increasing environmental disclosure in developing countries. Lack of transparency and disclosure is often regarded as one of the main causes of recent corporate scandals and governance failures, which adversely affect public confidence in the reliability of corporate reporting (García Sánchez et al., 2011).

Li et al. (2016) reviewed the relevant literature in corporate governance and identified two ways in which corporate governance mechanisms can affect companies' economic performance. To maintain and protect a healthy business environment, governments worldwide have stepped up efforts to implement corporate governance mechanisms. Good corporate governance is very important to encourage economic growth and improve social welfare by actively participating in environmental activities. Some studies do not show the influence of non-executive directors on the board and the company's economic performance (Azeez, 2015). Darko et al. (2016) did not find a relationship between CG and financial performance. Meanwhile, Naushad & Malik (2015) found a negative and significant effect of CG on economic performance and Aslam & Haron (2020) that found a positive relationship with performance. Furthermore, Yekini et al. (2015) found a positive relationship between independent directors and the level of environmental disclosure, while Alnabsha et al. (2018) showed a negative relationship and Alhazaimeh et al. (2014) showed insignificant results. However, some studies do not indicate an increase in the company's economic performance due to directors outside the board. Armstrong et al. (2014) demonstrated a significant relationship between the composition of the board and the economic performance of the company.

Companies are currently facing the challenge of reducing GHG emissions as an effort to mitigate climate change, and the impact of GHG emissions and climate change on their business activities. This encourages managers to focus more on environmental issues and evaluate environmental performance. Companies with high environmental performance will report more environmental disclosures. Companies with high environmental performance are determined to protect investors and other stakeholders by providing good information through environmental disclosure. The debate in academic circles continues to spread up regarding the relationship between CSR (Corporate Social Responsibility) and FP (Financial Performance). Studies investigating the correlation between CSR and FP have produced varied findings, creating disagreement in the conclusions drawn (Bruna & Lahouel, 2022). In fact, previous research found varying results, including positive findings (Rodriguez-Fernandez, 2016) and negative findings (Peng & Yang, 2014). This discrepancy can be explained by the recognition of the potential of CSR as a predictor and outcome of financial performance (Hakimi et al., 2023). These inconsistent empirical results actually create challenges for the basic understanding of the causal relationship between CSR and FP. Therefore, it is important to investigate whether financial performance motivates companies to engage in environmental practices.

Feng et al. (2013) acknowledged that not much is known about the processes underlying the relationship between green practices and economic performance. The effect of disclosure on economic performance has been studied and the results are varied. For example, Tabash (2019). However, Nobanee & Ellili (2016) found that disclosure has a significant and negative relationship with economic performance. While Elgattani & Hussainey (2020) showed that disclosure of the Accounting and Audit Organization for Islamic Financial Institutions does not affect performance as measured by ROA (Return on Assets).

The content of this paper is strongly influenced by legitimacy theory. This theoretical concept states that companies must be responsible and accountable to society. They need to meet the expectations of investors and the general public (Gregory et al., 2016). To gain the support and trust of the greater community, companies need to meet the various needs of society and thus act as legitimate corporate citizens (Deegan, 2019). More specifically, a strategic legitimacy approach was used to focus on positive environmental disclosures to conduct this research. This is under the fact that strategic legitimacy emphasizes companies' intentions and motivations to gain social support as they use resources and efforts to gain social recognition (Comyns, 2016). This theory argues that companies need to have good environmental performance and disclosure practices to manage the social impacts of their business activities and prevent conflicts with society (Ifada, 2022). These corporate stakeholders note positive environmental activities in their annual reports as a method of communicating with various social groups, and they are very reluctant to disclose negative information, perhaps because their reputation could be harmed."

Research by Ifada & Jaffar (2023) shows that more systematic environmental management may positively impact company performance than implementing simple environmental management practices. Therefore, taking various environmental management practices and examining their relationship with economic performance become essential for companies. This makes companies incorporate environmental issues into strategic decisions, reduce environmental pollution and achieve sustainable economic growth. Green innovation is expected to be an essential factor in achieving environmental and economic performance because of its dual role in reducing environmental burdens and encouraging economic and technological modernization (Weng et al. 2015) . On the other hand, stakeholder expectations of observing disclosure can initiate improvements in carbon-related performance (Qian & Schaltegger, 2017).

This study makes several noteworthy contributions to the existing literature. *Firstly*, it explores the impact of the Emission Bloomberg GHG score on economic performance and environmental disclosure over a substantial period from 2006 to 2020, marking the first such investigation. *Secondly*, it systematically analyzes data from Asia Pacific emerging market companies, including Independent Board data, ROA, ROE, GHG Emissions, and Bloomberg ESG Scores, providing a crucial perspective. *Thirdly*, it assesses economic performance using two key dimensions: ROE and ROA. Furthermore, this study introduces moderating variables, specifically environmental performance, to evaluate whether it strengthens the relationship between carbon emissions disclosure and firm value. Lastly, the findings have broad implications for scholars, corporate stakeholders, decision-makers, regulators, and policymakers, emphasizing the significance of environmental performance as a moderating variable. The following section presents a literature review and development hypothesis, followed by research design and research findings. The last section concludes this research.

METHODS

This research combines four key variables: environmental disclosure (dependent variable), corporate governance (independent variable) and economic performance (mediating variable), and environmental performance (moderating variable). Corporate Governance is measured through the independent board of commissioners (BC) which symbolizes accountability (Zubeltzu-Jaka et al., 2020). Economic performance disclosed in annual financial reports is assessed based on profitability as measured by return on assets and return on equity (Shaikh, 2021). Environmental performance is measured by greenhouse gas (GHG) emissions data collected from Bloomberg, primarily through “Total GHG Emissions”. This metric describes the extent to which companies implement measures to reduce greenhouse gas emissions in their operations and is sourced directly from company filings, reports, and publicly available data through Bloomberg’s rigorous documentation process, ensuring data validity and traceability (Adhikary et al., 2020). Environmental disclosure, which is a voluntary or regulatory requirement to share information about a company’s environmental practices and activities, is assessed using the Bloomberg environmental disclosure score. This comprehensive score, as used in various academic studies (Bernardi & Stark, 2018; Hassan & Romilly, 2018), consists of 60 different environmental data points, covering aspects such as energy consumption, emissions, waste data, initiatives and policies environment (Qiu et al., 2016). This research follows an explanatory research approach, which initially selected public companies in Asia Pacific based on data availability in the Bloomberg database. The final sample consists of unbalanced panel data from 2084 companies in emerging market capital markets for 14 years (2006–2020). This study used panel data analysis, combining time series and cross-sectional observations. Unbalanced panel data is used because it combines time series data and cross-sectional data with varying numbers of observations for cross-sectional units. To ensure strong and unbiased results, this study carried out various tests, including panel data tests, normality, multicollinearity, autocorrelation, and heteroscedasticity. Panel data analysis includes three models: Common Effect, which simplifies the data by ignoring space and time elements; Fixed Effect, which considers the individuality of each company while maintaining a constant slope coefficient; and Random Effect, which is used to include error terms, thereby increasing efficiency. The Breusch-Pagan Lagrange Multiplier test determines the choice between random effects and OLS regression. Mediation testing follows the three-step process by Baron & Kenny (1986) that assessed the impact of corporate governance on environmental disclosure, economic performance, and the interaction of the two.

RESULTS AND DISCUSSION

Table 1 shows that the data consists of two sets: original data (untransformed) and data that has undergone transformation (transformed). These data relate to variables that may be related to environmental performance and environmental disclosure in a corporate context. In the original data, the four variables include Independent Director, ROE, ROA, Environmental Performance, and Environmental Disclosure. Transformations have been applied to the data, changing the original distribution, especially on the ROE, ROA and Environmental Performance variable. These transformations can be carried out to overcome abnormalities in data distribution and make them more suitable for statistical analysis or modeling (Ifada & Saleh, 2022).

Table 1 Descriptive Statistics

Untransformed					
	ID	**ROE**	**ROA**	**EP**	**ED**
Mean	44.76	0.15	0.10	145.87	36.27
Median	42.86	0.12	0.04	39.88	36.43
Std. Deviation	12.67	0.25	0.48	221.50	11.15
Minimum	0.11	−1.29	−0.49	0.11	2.33
Maximum	90.91	3.14	9.00	999.34	72.09
Transformed					
	ID	**ROE**	**ROA**	**EP**	**ED**
Mean	44.76	−2.15	−3.19	3.62	36.27
Median	42.86	−2.05	−3.10	3.69	36.43
Std. Deviation	12.67	0.99	1.23	1.91	11.15
Minimum	0.11	−7.60	−9.21	−2.21	2.33
Maximum	90.91	1.15	2.20	6.91	72.09

This study conducted a multicollinearity test using correlation analysis and collinearity statistics. Multicollinearity problem occurs when the correlation between independent variables is more than 0.8 (Cooper & Schindler, 2014). Based on Table 2 regarding the correlation matrix, the results showed that the correlation coefficient between the independent variables is below 0.8. Since the correlation is less than 0.8, it can be concluded that there is no severe multicollinearity problem. Therefore, all variables were retained for further analysis.

Table 2 Pearson Correlation Test

	ID	ROE	ROA	EP	ED
ID	1				
ROE	0.035	1			
ROA	.060**	0.791**	1	0.041	
EP	0.006	0.054*	0.041	1	−0.031
ED	0.096**	0.023	0.067**	-0.031	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

This study used multiple regression analysis to assess the effect of board independence, return on equity, return on assets, and environmental performance in moderating return on equity and return on assets on environmental disclosure.

Table 3 Multiple Regression Analysis Results

Dependent var. ED	**Model 1** **Pooled OLS Model**	**Model 2** **Fixed Effect Model**	**Model 3** **Random Effect Model**
C	36.331***	26.851***	27.927***
ID	0.081***	0.064***	0.057***
ROE	−2.920***	0.413	−0.164
ROA	2.955***	−1.812***	−0.914
EP	−0.568	0.689**	0.466*
ROEXEP	0.556***	0.306*	0.278*
ROAXEP	−0.505***	−0.134	−0.141
CDUM			
R^2	0.020	0.773	0.023
R^2 adjusted	0.017	0.697	0.020
F stat	7.100	10.185	8.154
p-value	0.000	0.000	0.000
Hausman test		43.117 ***	
Normality (Jarque – Bera)		0.866	
Heteroscedasticity (Arch)		0.212	
Autocorrelation (D-W)		1.052	

Notes: *, **, and *** denoted at 10%, 5% and 1% significance level

Based on the results of the classical assumption test in Table 3, it shows that the data is normally distributed (Jarque Bera test 0.866, p > 0.10). ARCH test showed that the heteroscedasticity problem was not significant (p = 0, 0.212). Furthermore, the D-W autocorrelation test showed 1,052 results between -2.5 – 2.5 which means free from autocorrelation problem. Table 3 shows the regression results, which is to investigate the relationship between corporate governance and environmental disclosure (ED). The results showed that corporate governance had an effect on environmental disclosure (β = 0.06, p 0.002 < 0.01). Table 3 also showed that economic performance has an effect on environmental disclosure with the ROA indicator (β = -1.812, p 0.004 < 0.01) and has no effect on environmental disclosure with ROE indicator (β = 0.412, p 0.578 > 0.01). Table 3 also shows that environmental performance cannot mediate the relationship between economic performance and environmental disclosure with ROE and ROA indicators. Table 4 will discuss the test results adopted from the testing process by Baron & Kenny (1986).

Table 4 EC mediation test on the relationship between CG and EP

Variables	**ED (Model 2)**	**ROA (Model 3)**	**ROE (Model 3)**	**ED (Model 4)**	**ED (Model 4)**
Constant	33.115***	−2.950***	−2.950***	32.291***	34.556***
ID	0.071***	**−0.005***	**−0.003**		
ROA				−1.250***	
ROE					**−0.799***
R^2	0.762	0.646	0.608	0.768	0.763
Adjusted R^2	0.684	0.530	0.480	0.691	0.685
F-statistic	9.749	5.551	4.719	10.032	9.769
Prob > F	0.000	0.000	0.000	0.000	0.000

Notes: *, **, and *** denoted at 10%, 5% and 1% significance level

In the first step, the independent variable must have a significant effect on the dependent variable. The results presented in Table 4 meet this requirement if the findings show that the independent variable (CG) is significantly related to the dependent variable, ED (β = 0.071, p < 0.01). The second step is to test whether the independent variable has a significant relationship with the mediating variable. Table 4 shows that the independent variable (CG) does not have a significant influence on the mediating variable (EC) with the indicators of ROA (β = −0.005, p < 0.1) or ROE β = −0.003, p > 0.1). Therefore, the requirements for the second step are not met. In the third step, the mediating variable needs to be significantly associated with the dependent variable (ED). Table 4 shows that the mediating variable (EC) has a significant and negative relationship with the dependent variable (ED) for the indicators of ROA (β = −1.250, p < 0.01) and ROE (β = −0.799, p < 0.01). These results confirm that there is no mediating role of EC with the indicators of ROA or ROE in the relationship between CG and ED. This means that economic performance (ROE) does not produce better disclosure. The following subsection discusses the results for each hypothesis of the relationship between board independence, return on equity, return on assets, and environmental disclosure variables. The results also separately present the effect of environmental performance in moderating return on equity and return on assets on environmental disclosure.

Table 3 showed that corporate governance had an effect on environmental disclosure. The results of this research are in line with Ifada & Indriastuti (2021) and Yekini et al. (2015) that found a positive relationship between independent directors and the level of environmental disclosure and other voluntary disclosures, while these findings differ from Alnabsha et al. (2018) that shows a negative relationship and Alhazaimeh et al. (2014)

that shows insignificant results. Board composition is one of the leading corporate governance mechanisms because the board of directors is responsible for setting the corporate social agenda, allocating corporate resources, and developing strategies for sustainable business (Jizi, 2017). Jizi (2017) observed that higher board independence can improve the company's corporate image by increasing public awareness. These results confirm the legitimacy theory emphasizes the need for more independent non-executive directors on the board and the need to have directors who do not work all the time on the board to protect the interests of investors (Arayssi & Tabaja, 2020). In the condition where laws and institutions are weak, more independent directors will protect stakeholder interests. The higher the proportion of independent commissioners, the higher the level of environmental disclosure will be. Independent commissioners can direct companies to provide adequate environmental information by establishing corporate sustainability governance rules.

Table 3 also showed that economic performance has a negative effect on environmental disclosure with the ROA indicator and has no effect on environmental disclosure with ROE indicator. The results of this study are in line with research of Atan et al. (2018), Nobanee & Ellili (2016) and Ruan & Liu (2021) that found a negative relationship between ESG activities and company performance and Elgattani & Hussainey (2020) that found that there was no relationship between disclosure and performance as measured by ROA (Return on Assets). The results are inconsistent with the research conducted by Lunawat & Lunawat (2022), Alareeni & Hamdan, (2020) and Mądra-Sawicka & Paliszkiewicz (2020) that shows a positive relationship between ESG and ROA and ROE. These results indicate the company's efforts to meet stakeholder demands for reporting related to environmental performance. According to Acar & Temiz (2020), the higher the company's profitability, the more it can bear the costs of preparing objective environmental disclosures. Majeed et al. (2022) also stated that companies would gain economic benefits in higher stock prices from implementing broader social and environmental disclosures. Recently, companies operate in a highly competitive global economy, therefore, legitimacy is becoming increasingly important and is more difficult to achieve. Consequently, it is necessary for a company to achieve or maintain legitimacy, so the company must act to support the regulation in society to disclose the actions taken. According to Vogt et al. (2017), investors, stakeholders, and financial managers always pay attention to organizational profitability. It is because profitability indicators are meant to assess the results of companies concerning specific parameters that reveal their dimensions in the best way.

Table 3 also shows the regression results that is to investigate the moderating effect of environmental performance on the relationship between economic performance and environmental disclosure. The results showed that environmental performance could not moderate the relationship between economic performance and environmental disclosure with the ROE and ROA indicators. The moderating effect of EP on economic performance on environmental disclosure (ED) may not be significant due to variations in company data. Investors may pay less attention to ROE and ROA in the context of environmental performance. This possibility is also influenced by consumer preferences for environmentally friendly products. Therefore, companies do not always need to link ROA and ROE to environmental performance (Aigbedo, 2021; Vogt, et al., 2017).

Table 4 shows that there is no influence of corporate governance on economic performance. This finding is in line with Darko et al. (2016) that did not find a relationship between CG and performance but is different from Naushad & Malik (2015) that found a negative and significant effect of CG on economic performance, and Mollah et al. (2017); Aslam & Haron (2020); and Alareeni & Hamdan (2020) that shows a positive relationship with performance.

Legitimacy theory also states that organizations may appoint independent board members for symbolic purposes, even though they have no real impact on the organization's decision-making processes. This is known as "window dressing", that independent board members are not given the authority or resources to effectively supervise the management team, their impact on the organization's economic performance will be small or even nonexistent. In the context of ROA and ROE, legitimacy theory suggests that independent boards of directors may have no influence on these metrics if they are unable to effectively monitor and manage the risks facing the organization. For example, if the independent board of commissioners is unable to prevent the management team from carrying out fraudulent accounting practices, this can cause a decrease in ROA and ROE. Likewise, if the independent board of commissioners is unable to prevent the management team from making bad investment decisions, this can also cause a decrease in ROA and ROE.

Table 4 also shows that there is no mediating effect of economic performance measured by ROA or ROE on the relationship between corporate governance and environmental performance. This result is possible based on the results of our purposive sampling, the majority of average ROA and ROE from 2006–2020 are still below 30% (See Figure 1). This means that ROA and ROE cannot mediate the relationship between CG and ED.

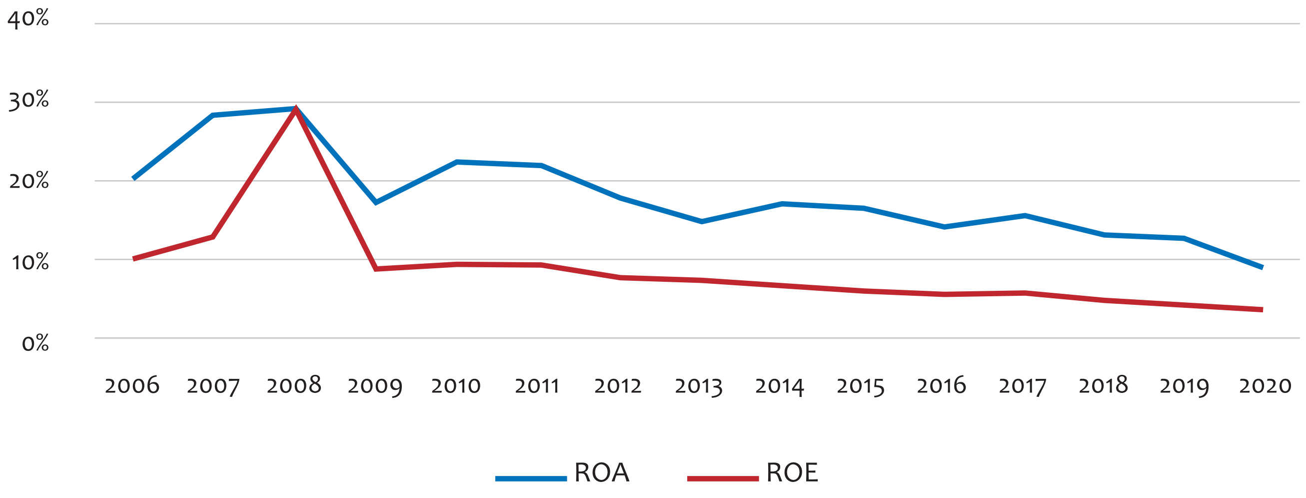

Figure 1 Graph of average ROA and ROE

CONCLUSION

Based on the previous empirical literatures, there is strong positive effect of corporate governance on environmental disclosure; corporate governance on economic performance, and economic performance on environmental disclosure. Meanwhile, environmental management initiatives and company performance have negative results, but companies that carry out environmental management seem to actually benefit. Regarding the moderating influence of environmental performance on the relationship between economic performance and environmental disclosure, this study found that environmental performance had a negative impact on the relationship between economic performance (with ROE as a proxy) and environmental disclosure. Furthermore, environmental performance has no effect on the relationship between economic performance (with ROA as a proxy) and environmental disclosure. Furthermore, management needs to examine the relationships among these variables in their companies for developing environmental strategies. In particular, the moderation linking the variables of economic performance factor with the level of environmental disclosure need to be investigated so that it will increase the level of corporate environmental disclosure. In this way, the company's image will increase, and investors will invest more in the company. This research concludes that corporate governance is important factor to improve economic performance. The empirical results of this study are limited by the availability of data and the depth of one of the characteristics of the board in corporate governance. Corporate governance is one of the factors that influences a company's economic context. Therefore, future researches need to involve macroeconomic policies, competitiveness, and the type of market in which the company operates. Apart from that, it is also necessary to expand the samples of other companies outside Asia Pacific so that the results will be more convincing to apply to emerging market public companies. Furthermore, it needs to also investigate this relationship by adding other factors of corporate governance, economic performance, environmental performance, and environmental disclosure. Last but not least, it is necessary to identify the simultaneous influence of various indicators that support the company in improving its performance.

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