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The Impact of Environmental, Social, and Governance Disclosure on Firm Value: Evidence from Energy and Basic Materials Companies in Indonesia

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A B S T R A C T

This study aims to examine the influence of environmental, social, and governance disclosure on company value (PBV and Tobin's Q). While the independent variables are environmental and social, then governance. The population in this study is energy and basic materials sector companies listed on the Indonesia Stock Exchange for the 2017- 2023 period. The sampling method used is the purposive sampling method so that 7 companies were obtained. The total number of data processed in this study is 49 data. The type of data used is secondary in the form of annual financial statements of companies in the energy and basic materials sectors listed on the Indonesia Stock Exchange for the 2017- 2023 period. The data analysis method used in this study is descriptive statistics with a significant level value of 5%. The results of this study show that ESG has an effect on the company's value (PBV and Tobin's Q).

INTRODUCTION

In the era of globalization and increasing awareness of sustainability, companies are no longer expected to focus solely on financial performance but are also required to consider the environmental and social impacts of their operational activities as well as their responsibility to comply with good corporate governance practices. The concept of Environmental, Social, and Governance (ESG) has become increasingly important in global business and investment as a framework for assessing the sustainability and ethical performance of companies in conducting their investments (Amel-Zadeh et al., 2020). The idea of balancing economic growth, environmental protection, and social welfare was initially introduced through the concept of sustainable development by Brundtland (1987) and later developed by

Elkington (1997) through the Triple Bottom Line approach, which emphasizes the balance between people, planet, and profit. In practice, corporate activities may lead to environmental pollution and pose risks to public safety, particularly in resource-intensive industries (Khodijah et al., 2023). Moreover, industrial activities can result in environmental degradation, such as deforestation, indicating environmental decline despite economic growth (Husada & Handayani, 2021). Therefore, companies are increasingly required to consider the broader impacts of their operations to enhance firm value sustainably.

In Indonesia, the implementation of ESG principles has shown significant progress, particularly from 2017 to 2023, as evidenced by various regulatory initiatives and policy frameworks encouraging companies to integrate ESG aspects into their operations. The Financial Services Authority (Otoritas Jasa Keuangan/OJK) issued Regulation No. 51/POJK.03/2017 concerning the implementation of sustainable finance for financial institutions, issuers, and public companies, which has been gradually enforced since 2019 (OJK, 2017). This regulation obliges public companies to prepare and disclose sustainability reports that encompass ESG aspects. In addition, Indonesia has developed a green taxonomy framework through Indonesia EMAS (Macroeconomic and Financial Sector Stability) with long-term targets for 2030 and 2050 as part of the national strategy to achieve sustainable development goals and mitigate climate change. In terms of disclosure practices, many companies adopt the Global Reporting Initiative (GRI) standards, which have been established since 1997 as a globally recognized sustainability reporting framework. GRI supports companies in reporting their environmental, social, and governance impacts in a structured and transparent manner through collaboration with various stakeholders.

Firm value represents investors' perceptions of a company's performance and future prospects, which are generally reflected in stock prices. Enhancing firm value is crucial because it directly relates to shareholder wealth. According to Alkalah (2020), firm value reflects investors' assessments of managerial success, which is commonly associated with stock price performance. A stable and increasing stock price provides a positive signal to investors and encourages capital inflows, making it essential for firms to identify and manage factors that influence firm value (Wijaya & Anastasia, 2022). In this context, ESG practices are increasingly viewed as strategic tools for enhancing investor confidence, particularly when companies demonstrate a strong commitment to sustainable and responsible business practices.

One of the key factors influencing firm value is the performance of ESG disclosure. ESG-based investment emphasizes the importance of managing environmental risks, fulfilling social responsibilities, and implementing sound corporate governance (Fauzan et al., 2024). Effective environmental disclosure

enables companies to achieve operational sustainability and improve risk management, which may lead to better financial performance. Social disclosure influences corporate reputation and legitimacy, while good governance disclosure, such as transparent management systems and adherence to legal and ethical standards, enhances investor trust. Previous studies suggest that companies that consistently implement and disclose ESG practices tend to experience positive effects on firm value (Pasanea, 2021).

The energy and basic materials sectors were selected as the focus of this study because they are considered to pose higher risks to environmental degradation, social issues, and governance challenges compared to other sectors. Companies operating in these sectors are often subject to greater public and regulatory scrutiny regarding sustainability practices. Firms such as PT Adaro Energy Tbk, PT Aneka Tambang (Persero) Tbk, PT Bukit Asam Tbk, PT Bumi Resources Tbk, PT Indo Tambangraya Megah Tbk, PT Timah Tbk, and PT Vale Indonesia Tbk consistently published ESG reports from 2017 to 2023, providing a robust empirical basis for analyzing long-term ESG disclosure trends and their implications for firm value (Febrianti & Rahmayanti, 2023). The variation in ESG scores across these companies indicates differing levels of ESG implementation that may influence market valuation.

Firm value in this study is measured using Price to Book Value (PBV) and Tobin's Q, which are widely used indicators in corporate finance research. PBV reflects the comparison between a firm's market value and its book value, while Tobin's Q compares the market value of a firm with the replacement cost of its assets (Yofhi Septian Panglipurningrum & Novita Dwi Andriani, 2020). The observed fluctuations in PBV and Tobin's Q among energy and basic materials companies during the 2017–2023 period suggest unstable market perceptions, raising questions about the potential role of ESG disclosure in shaping firm value.

This study is further motivated by inconsistencies in prior empirical findings regarding the relationship between ESG disclosure and firm value. Several studies report a positive effect of ESG disclosure on firm value (Brooks & Oikonomou, 2018; Aboud & Diab, 2018; Pranesti et al., 2022), whereas others find that only specific ESG dimensions, such as social or governance aspects, have a significant impact, while environmental aspects do not (Syahnita, 2021; Aydoğmuş et al., 2022; Leony et al., 2024). Conversely, some studies conclude that ESG disclosure does not significantly affect firm value (Purba et al., 2022; Hermanda & Wijaya, 2020; Durlista & Wahyudi, 2023). Meanwhile, Abban & Hasan (2021) document a positive relationship between ESG disclosure and financial performance in global mining companies but do not directly examine its effect on firm value, thereby leaving a research gap. These mixed findings indicate the need for further empirical

investigation, particularly in environmentally sensitive industries within emerging markets such as Indonesia.

Based on the above discussion, this study aims to examine the effect of Environmental, Social, and Governance (ESG) disclosure on firm value in energy and basic materials companies listed on the Indonesia Stock Exchange during the 2017–2023 period. This research is expected to contribute to the ESG literature by providing empirical evidence from an emerging market context and to offer practical insights for investors, regulators, and corporate management in promoting sustainable value creation.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The relationship between Environmental, Social, and Governance (ESG) disclosure and firm value can be explained through the Theory of the Firm and the Resource-Based View (RBV). According to the Theory of the Firm proposed by Coase (1937), firms are established to maximize profit and shareholder value by minimizing transaction costs. From this perspective, corporate strategies that reduce uncertainty and information asymmetry such as transparent ESG disclosure are expected to enhance investor confidence and market valuation. ESG disclosure provides relevant non-financial information that helps investors assess corporate risk, long-term sustainability, and managerial quality, thereby contributing to higher firm value. Complementing this view, the Resource-Based View developed by Wernerfelt (1984) and Barney (1991) argues that firms achieve sustainable competitive advantage through valuable, rare, inimitable, and non-substitutable resources, including intangible assets such as corporate reputation, legitimacy, and stakeholder trust. ESG practices and disclosures can be regarded as strategic intangible resources that strengthen corporate image, improve stakeholder relationships, and enhance long-term competitiveness, which ultimately lead to increased firm value.

Firm value reflects investors' perceptions of a company's performance and future prospects and is commonly measured using market-based indicators such as Price to Book Value (PBV) and Tobin's Q (Alkalah, 2020; Segoro & Sriludia, 2021; Arief et al., 2020). PBV indicates how the market values a firm relative to its book value, while Tobin's Q compares a firm's market value with the replacement cost of its assets, capturing investors' expectations of future growth. Environmental disclosure, which includes information on resource utilization, emissions, waste management, and environmental innovation, signals corporate responsibility toward environmental sustainability and risk management (Khoirunisa Wahida & Hoirul Uyun, 2023). Transparent environmental disclosure provides positive signals to investors and may increase firm value by reducing environmental risk and enhancing corporate reputation (Lutfi, 2023). Empirical evidence shows mixed results; some

studies find a positive relationship between environmental disclosure and firm value (Aboud & Diab, 2018; Melinda & Wardhani, 2020), while others report insignificant effects (Hariyanto & Ghozali, 2024). However, studies using Tobin's Q suggest that environmental performance and disclosure play a significant role in improving market valuation (Wu et al., 2022; Dwi Jayanti et al., 2024; Zhang et al., 2020).

Social disclosure refers to corporate reporting on labor practices, employee welfare, community engagement, and customer relations, reflecting corporate accountability toward stakeholders. Effective social disclosure enhances corporate legitimacy and strengthens relationships with internal and external stakeholders, which may positively influence investor perceptions and firm value (Rika Widianita, 2023). Prior studies provide inconsistent findings; Leony et al. (2024) and Ruth et al. (2023) find a positive effect of social disclosure on firm value, whereas Mahfuzhah (2021) and Kartika et al. (2023) report insignificant or context-dependent effects. Sadiq et al. (2020) argue that social and ESG disclosure can mitigate negative ESG outcomes and enhance positive performance effects, suggesting its potential role in value creation.

Governance disclosure relates to transparency in corporate governance structures, board effectiveness, executive accountability, risk management, and stakeholder engagement. Strong governance disclosure reduces agency problems and information asymmetry, thereby increasing investor trust and market confidence. Firms with transparent governance practices are perceived as more capable of efficiently allocating resources and protecting shareholder interests, which contributes to higher firm value (Heriansyah, 2024). Empirical studies largely support this argument, showing a positive relationship between governance disclosure and firm value (Aydoğmuş et al., 2022; Pinuji, 2022; Handono, 2022; Christy & Sofie, 2023), although some studies report insignificant effects in specific contexts (Mudzakir & Pangestuti, 2023). Overall, the literature suggests that ESG disclosure plays an important role in shaping firm value, although the magnitude and significance of its effects may vary across ESG dimensions and measurement approaches.

Based on the theoretical perspectives and empirical evidence discussed in the literature review, this study formulates the following research hypotheses to examine the effect of Environmental, Social, and Governance (ESG) disclosure on firm value in energy and basic materials companies.

- H1: Environmental disclosure has a significant effect on firm value as measured by Price to Book Value (PBV).
- H2: Social disclosure has a significant effect on firm value as measured by Price to Book Value (PBV).

- H3: Governance disclosure has a significant effect on firm value as measured by Price to Book Value (PBV).
- H4: Environmental disclosure has a significant effect on firm value as measured by Tobin's Q.
- H5: Social disclosure has a significant effect on firm value as measured by Tobin's Q.
- H6: Governance disclosure has a significant effect on firm value as measured by Tobin's Q.

RESEARCH METHODS

This study employs a quantitative explanatory research design to examine the effect of Environmental, Social, and Governance (ESG) disclosure on firm value. The research focuses on energy and basic materials companies listed on the Indonesia Stock Exchange (IDX) during the 2017–2023 period, as these sectors are characterized by high environmental and social risk exposure. Secondary data were obtained from publicly available sources, including annual reports, sustainability reports, ESG disclosures, and official IDX publications. The population comprises all firms in the energy and basic materials sectors, and the sample was selected using purposive sampling based on data availability and consistent ESG reporting throughout the observation period, resulting in seven sample firms.

Firm value is measured using Price to Book Value (PBV) and Tobin's Q to capture market-based valuation. ESG disclosure is operationalized through environmental, social, and governance disclosure indices based on the Global Reporting Initiative (GRI) standards. Environmental disclosure is measured as the proportion of environmental indicators disclosed relative to total GRI environmental indicators, while social and governance disclosures are measured using similar index-based approaches. Data analysis was conducted using SPSS version 27. Descriptive statistics and classical assumption tests were performed prior to hypothesis testing. Panel data regression analysis was then employed to examine the effect of ESG disclosure on firm value. Hypotheses were tested using F-tests and t-tests at a 5% significance level, and model explanatory power was assessed using the coefficient of determination (R^2).

ANALYSIS AND DISCUSSION

1. Overview of the Research Objects

To ensure the relevance and consistency of ESG disclosure analysis, this study applies a purposive sampling approach. The focus is placed on firms operating in the Energy (oil, gas, and coal) and Basic Materials sectors due to their intensive

use of natural resources, significant environmental footprints, and high exposure to social and governance issues. These characteristics make ESG disclosure particularly material for assessing firm value within these industries. The sample selection process begins with all firms listed on the Indonesia Stock Exchange (IDX) within the two sectors during the 2017–2023 period that reported ESG-related information. Subsequently, only firms that consistently disclosed ESG reports for seven consecutive years were retained to ensure data comparability and longitudinal consistency. The detailed results of the sample selection process and the final list of firms included in the study are presented in Table 4.1.

Table 4.1 Sample Selection and List of Firms

No.	Sample Selection Criteria	Number of Firms / Company Code
1	Energy (Oil, Gas, and Coal) and Basic Materials sector companies listed on the Indonesia Stock Exchange (IDX) that published ESG reports during the observation period	186 firms
2	Companies that consistently published ESG reports consecutively from 2017 to 2023	7 firms
	Company Name	
1	ADRO – PT Adaro Energy Tbk	
2	ANTM – PT Aneka Tambang (Persero) Tbk	
3	PTBA – PT Bukit Asam Tbk	
4	BUMI – PT Bumi Resources Tbk	
5	ITMG – PT Indo Tambangraya Megah Tbk	
6	TINS – PT Timah Tbk	
7	INCO – PT Vale Indonesia Tbk	

As shown in Table 4.1, from a total of 186 firms operating in the Energy and Basic Materials sectors during the observation period, only seven companies met the criterion of consistently publishing ESG reports from 2017 to 2023. This finding highlights that sustained ESG disclosure remains relatively limited among firms in resource-intensive industries in Indonesia. The final sample consists of PT Adaro Energy Tbk (ADRO), PT Aneka Tambang (Persero) Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT Bumi Resources Tbk (BUMI), PT Indo Tambangraya Megah Tbk (ITMG), PT Timah Tbk (TINS), and PT Vale Indonesia Tbk (INCO). These firms represent major players in the national energy and raw materials sectors and are characterized by substantial environmental and social impacts. The limited number of firms with consistent ESG reporting underscores the importance of this study in providing empirical evidence on how sustained ESG disclosure influences firm value in emerging markets, particularly within environmentally sensitive industries.

2. ESG Disclosure Trends and Firm Value Performance

Environmental, social, and governance (ESG) disclosure constitutes a multidimensional representation of corporate sustainability practices, particularly relevant for firms operating in resource-intensive industries. To capture the evolution and consistency of sustainability reporting, this study evaluates ESG disclosure using

separate environmental, social, and governance scores derived from firms' ESG reports over the 2017–2023 period. The combined ESG disclosure scores for all sampled firms are summarized in Table 4.2.

Table 4.2 Combined ESG Disclosure Scores of Energy and Basic Materials Firms (2017–2023)

No	Firm Code	Year	Environmental Score (E)	Social Score (S)	Governance Score (G)
1	ADRO	2017	0.18	0.13	0.27
2	ADRO	2018	0.36	0.33	0.55
3	ADRO	2019	0.72	0.86	1.00
4	ADRO	2020	0.29	0.33	0.23
5	ADRO	2021	0.50	0.64	0.95
6	ADRO	2022	0.19	0.15	0.00
7	ADRO	2023	0.77	0.75	1.00
8	ANTM	2017	0.59	0.61	0.14
9	ANTM	2018	0.52	0.61	0.14
10	ANTM	2019	0.52	0.70	0.14
11	ANTM	2020	0.52	0.61	0.14
12	ANTM	2021	0.56	0.93	0.23
13	ANTM	2022	0.83	0.28	0.31
14	ANTM	2023	0.90	1.00	1.00
15	PTBA	2017	0.12	0.19	0.09
16	PTBA	2018	0.50	0.68	0.41
17	PTBA	2019	0.63	0.62	1.00
18	PTBA	2020	0.50	0.50	0.41
19	PTBA	2021	1.00	1.00	0.95
20	PTBA	2022	0.53	0.23	0.23
21	PTBA	2023	0.90	1.00	1.00
22	BUMI	2017	0.18	0.21	0.32
23	BUMI	2018	0.37	0.60	1.00
24	BUMI	2019	0.25	0.58	0.55
25	BUMI	2020	0.30	0.30	1.00
26	BUMI	2021	0.66	0.87	0.55
27	BUMI	2022	0.42	0.23	0.46
28	BUMI	2023	0.77	0.81	1.00
29	ITMG	2017	0.18	0.27	1.00
30	ITMG	2018	0.31	0.25	0.09
31	ITMG	2019	0.75	0.25	0.09
32	ITMG	2020	0.50	0.94	1.00
33	ITMG	2021	1.00	0.93	0.64
34	ITMG	2022	0.47	0.56	0.46
35	ITMG	2023	0.84	0.53	1.00
36	TINS	2017	0.41	0.50	0.23
37	TINS	2018	0.48	0.69	0.23
38	TINS	2019	0.64	0.69	1.00
39	TINS	2020	0.41	0.68	1.00
40	TINS	2021	0.41	0.68	0.18
41	TINS	2022	0.19	0.33	0.14
42	TINS	2023	1.00	1.00	1.00
43	INCO	2017	0.29	0.33	0.00
44	INCO	2018	0.64	0.94	1.00
45	INCO	2019	0.52	0.94	0.00
46	INCO	2020	0.64	0.90	1.00
47	INCO	2021	0.96	0.90	0.68
48	INCO	2022	0.56	0.67	0.92
49	INCO	2023	1.00	1.00	1.00

Source: Processed ESG data from company reports, 2024.

Table 4.2 shows substantial variation in ESG disclosure scores across firms and over time. Environmental disclosure exhibits a generally increasing trend, indicating growing awareness and regulatory pressure related to environmental accountability. Social disclosure also improves over time but demonstrates greater volatility, suggesting sensitivity to economic conditions and operational priorities. Governance disclosure displays the highest degree of fluctuation, reflecting firm-specific governance practices and a tendency to treat governance reporting as a compliance-driven activity rather than a consistently embedded transparency mechanism. Overall, the results indicate that environmental aspects are the most consistently disclosed ESG dimension, while social and governance disclosures remain less stable across the observation period.

Firm value reflects market perceptions of a company's current performance and future growth prospects. In this study, firm value is measured using two widely applied indicators, namely Price to Book Value (PBV) and Tobin's Q, which capture equity-based and market-based valuations, respectively. PBV reflects how the market values a firm relative to its book value, while Tobin's Q indicates whether a firm is valued above or below the replacement cost of its assets. The combined PBV and Tobin's Q values for all sampled firms over the 2017–2023 period are presented in Table 4.3.

Table 4.3 Firm Value Measures (PBV and Tobin's Q) of Energy and Basic Materials Firms (2017–2023)

No	Firm Code	Year	Price to Book Value (PBV)	Tobin's Q
1	ADRO	2017	1.07	1.04
2	ADRO	2018	0.62	0.77
3	ADRO	2019	0.90	0.94
4	ADRO	2020	0.82	0.89
5	ADRO	2021	1.13	1.08
6	ADRO	2022	1.20	1.12
7	ADRO	2023	0.64	0.75
8	ANTM	2017	0.81	0.88
9	ANTM	2018	1.00	1.00
10	ANTM	2019	1.11	1.07
11	ANTM	2020	2.44	1.87
12	ANTM	2021	2.59	2.01
13	ANTM	2022	2.01	1.71
14	ANTM	2023	1.31	1.23
15	PTBA	2017	2.05	1.66
16	PTBA	2018	3.04	2.38
17	PTBA	2019	1.66	1.47
18	PTBA	2020	1.91	1.64
19	PTBA	2021	1.29	1.19
20	PTBA	2022	1.47	1.30
21	PTBA	2023	1.30	1.17
22	BUMI	2017	4.55	1.28
23	BUMI	2018	0.93	0.99
24	BUMI	2019	0.61	0.97
25	BUMI	2020	2.63	1.06
26	BUMI	2021	0.54	0.93

27	BUMI	2022	1.35	0.54
28	BUMI	2023	0.72	0.82
29	ITMG	2017	1.80	1.57
30	ITMG	2018	1.63	1.42
31	ITMG	2019	1.05	1.04
32	ITMG	2020	1.31	1.23
33	ITMG	2021	1.33	1.25
34	ITMG	2022	1.44	1.32
35	ITMG	2023	1.03	1.01
36	TINS	2017	0.08	0.53
37	TINS	2018	0.07	0.63
38	TINS	2019	0.09	0.77
39	TINS	2020	0.18	0.72
40	TINS	2021	0.14	0.63
41	TINS	2022	1.24	1.13
42	TINS	2023	0.77	0.89
43	INCO	2017	1.17	1.14
44	INCO	2018	1.19	1.16
45	INCO	2019	1.34	1.30
46	INCO	2020	1.79	1.68
47	INCO	2021	1.51	1.45
48	INCO	2022	1.92	1.82
49	INCO	2023	1.06	1.05

Source: Processed financial data from Indonesia Stock Exchange (IDX), 2024.

As shown in Table 4.3, firm value varies considerably across firms and years, reflecting differences in market performance and investor perceptions within the Energy and Basic Materials sectors. Several firms, such as PT Aneka Tambang (Persero) Tbk (ANTM) and PT Bukit Asam Tbk (PTBA), exhibit relatively high PBV and Tobin's Q values in certain years, indicating strong market confidence and growth expectations. Conversely, lower valuation levels observed for some firms in specific periods suggest market concerns regarding operational performance, commodity price volatility, or firm-specific risks. Overall, the parallel movement of PBV and Tobin's Q indicates that both measures consistently capture fluctuations in firm value, supporting their suitability for examining the market implications of ESG disclosure.

3. Descriptive Statistics and Classical Assumption Tests

Descriptive statistics are used to provide an overview of the distribution, central tendency, and variability of the variables employed in this study. The analysis includes environmental, social, and governance (ESG) disclosure scores as independent variables and firm value indicators, namely Price to Book Value (PBV) and Tobin's Q, as dependent variables. Descriptive statistics also allow for an initial assessment of data suitability prior to conducting panel regression analysis. The summary of descriptive statistics for all variables is presented in Table 4.4

Table 4.4 Descriptive Statistics of ESG Disclosure and Firm Value Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Environmental	49	0.12	1.00	0.5465	0.24853

Social	49	-1.11	1.23	0.5773	0.46615
Governance	49	0.00	1.00	0.5659	0.38698
Price to Book Value (PBV)	49	0.07	4.55	1.3029	0.81416
Tobin's Q	49	0.53	2.38	1.1735	0.39106

Source: SPSS output, processed data, 2024

As shown in Table 4.4, all variables are based on 49 firm-year observations, indicating a balanced panel dataset. The mean values of environmental, social, and governance disclosure scores are relatively similar, suggesting a moderate level of ESG disclosure across the sampled firms. Among the ESG dimensions, social disclosure exhibits the highest variability, as reflected by its standard deviation, indicating greater inconsistency in social reporting practices over time.

Regarding firm value, the mean PBV exceeds one, suggesting that, on average, the market values the sampled firms above their book value. However, the relatively high standard deviation of PBV indicates substantial variation in equity-based valuation across firms and years. Tobin's Q also shows a mean value above one, implying positive market expectations regarding firms' growth prospects. Compared to PBV, Tobin's Q exhibits lower variability, suggesting that market-based valuation is relatively more stable across the observation period. Overall, the descriptive statistics indicate sufficient variation across variables to support further regression analysis.

Prior to conducting panel regression analysis, this study performs a series of classical assumption tests to ensure the validity and reliability of the estimated models. The tests include normality, multicollinearity, heteroskedasticity, and autocorrelation diagnostics for both Price to Book Value (PBV) and Tobin's Q models. The summary of the classical assumption test results is presented in Table 4.5.

Table 4.5 Summary of Classical Assumption Test Results

Assumption Test	Indicator	PBV	Tobin's Q	Conclusion
Normality	Asymp. Sig. (2-tailed)	0.200	0.200	Data are normally distributed
Multicollinearity	VIF (Environmental)	1.455	1.455	No multicollinearity
	VIF (Social)	1.340	1.340	No multicollinearity
	VIF (Governance)	1.368	1.368	No multicollinearity
Heteroskedasticity	Sig. (Environmental)	> 0.05	> 0.05	No heteroskedasticity
	Sig. (Social)	> 0.05	> 0.05	No heteroskedasticity
	Sig. (Governance)	> 0.05	> 0.05	No heteroskedasticity
Autocorrelation	Durbin–Watson	2.001	1.826	No autocorrelation

Source: SPSS output, processed data, 2024.

As shown in Table 4.5, the normality test results indicate that the residuals of both PBV and Tobin's Q models are normally distributed, as reflected by Asymp. Sig. values exceeding the 0.05 threshold. Multicollinearity diagnostics reveal that all independent variables exhibit variance inflation factor (VIF) values well below the critical value of 10, indicating the absence of multicollinearity among ESG variables.

Furthermore, heteroskedasticity test results show significance values greater than 0.05 for all independent variables, confirming homoscedastic residuals. The Durbin–Watson statistics for both models fall within the acceptable range, indicating no autocorrelation. Overall, these results confirm that all classical assumptions are satisfied, validating the use of panel regression analysis in this study.

4. Panel Regression Results

Prior to hypothesis testing, panel regression analysis was conducted to examine the effect of Environmental, Social, and Governance (ESG) disclosures on firm value, proxied by Price to Book Value (PBV) and Tobin's Q. The regression results, including coefficient estimates, significance levels, model fit, and joint significance tests, are summarized in Table 4.6.

Table 4.6 Summary of Panel Regression Results

Variable	PBV Model		Tobin's Q Model	
	Coefficient (β)	Sig.	Coefficient (β)	Sig.
Constant	1.730	<0.001	1.275	<0.001
Environmental	0.702	0.004	0.695	0.001
Social	-1.830	<0.001	-0.565	<0.001
Governance	0.434	0.004	-0.275	0.039
F-statistic	84.265	<0.001	Significant	<0.001
R^2	0.849		0.479	
Adjusted R^2	0.839		0.445	
Observations (N)	49		49	

Source: SPSS 27 output, processed data, 2024.

The regression results presented in Table 4.6 indicate that Environmental disclosure has a positive and statistically significant effect on firm value in both PBV and Tobin's Q models. This finding suggests that firms with higher environmental transparency are more positively valued by the market.

Conversely, Social disclosure exhibits a significant negative effect on firm value across both models. This result may indicate that increased social disclosure is perceived by investors as a cost burden rather than a value-enhancing activity in the energy and basic materials sectors.

Governance disclosure shows a positive and significant effect on PBV, indicating that stronger governance practices enhance book-based firm valuation. However, governance disclosure demonstrates a negative effect on Tobin's Q, suggesting that market-based valuation may respond differently to governance mechanisms.

The F-statistics confirm that the independent variables jointly have a significant effect on firm value. Furthermore, the high adjusted R^2 value in the PBV model indicates strong explanatory power, while the Tobin's Q model shows

moderate explanatory capability.

5. Discussion

a. Effect of Environmental Disclosure on Firm Value (PBV)

The empirical results indicate that environmental disclosure has a positive and statistically significant effect on firm value measured by Price to Book Value (PBV). The regression coefficient of environmental disclosure is 0.702 with a t-value of 3.065 and a significance level of 0.004, which is below the 5% threshold. This finding supports Hypothesis 1 (H1), indicating that higher environmental transparency enhances firm value among energy and basic materials companies listed on the Indonesia Stock Exchange during the 2017–2023 period.

This result suggests that investors perceive environmental disclosure as a positive signal of corporate responsibility and long-term sustainability, particularly in industries with high environmental risk. The finding is consistent with signaling theory, which posits that transparent environmental practices reduce information asymmetry and strengthen investor confidence. This outcome aligns with the findings of Aboud and Diab (2018), who documented a positive relationship between environmental disclosure and firm value, as well as previous evidence reported by Breusch and Pagan (1979), which emphasized the importance of environmental transparency in influencing market valuation.

b. Effect of Social Disclosure on Firm Value (PBV)

The regression results show that social disclosure has a significant negative effect on firm value proxied by PBV. The estimated coefficient is −1.830 with a t-value of −15.618 and a significance level below 0.001, supporting Hypothesis 2 (H2). This indicates that increased social disclosure is associated with lower firm value in the observed sectors.

This negative relationship may reflect investor perceptions that extensive social initiatives impose additional operational costs without generating immediate financial benefits, particularly in capital-intensive industries such as energy and basic materials. While prior studies such as Leony et al. (2024) reported a positive association between social disclosure and firm value, the present findings are more consistent with Mahfuzhah (2021), who found that the effect of ESG disclosure on firm value varies across economic conditions and periods. These mixed results suggest that the value relevance of social disclosure may depend on contextual factors such as industry characteristics and market expectations.

c. Effect of Governance Disclosure on Firm Value (PBV)

Governance disclosure is found to have a positive and statistically significant effect on PBV, with a coefficient of 0.434, a t-value of 3.045, and a significance level of 0.004. Thus, Hypothesis 3 (H3) is accepted. This result implies that strong corporate governance practices enhance firm value from a book-value perspective.

Effective governance mechanisms reduce agency problems, enhance managerial accountability, and improve investor trust, which in turn increase firm valuation. This finding supports the agency theory framework and is consistent with the results reported by Aydoğmuş et al. (2022) and Pinuji (2022), who documented that governance disclosure positively influences firm value.

d. Effect of Environmental Disclosure on Firm Value (Tobin's Q)

The regression analysis using Tobin's Q as a proxy for firm value reveals that environmental disclosure has a positive and significant effect, with a coefficient of 0.695, a t-value of 3.395, and a significance level of 0.001. Therefore, Hypothesis 4 (H4) is supported.

This finding indicates that environmental transparency not only improves book-based valuation but is also positively assessed by the market. Investors appear to reward firms that demonstrate strong environmental responsibility, particularly in environmentally sensitive sectors. This result is consistent with the findings of Dwi Jayanti et al. (2024) and Wu et al. (2022), who emphasized the role of ESG performance in enhancing market-based firm value.

e. Effect of Social Disclosure on Firm Value (Tobin's Q)

The results show that social disclosure has a significant negative effect on firm value measured by Tobin's Q. The estimated coefficient is −0.565 with a t-value of −5.400 and a significance level below 0.001, supporting Hypothesis 5 (H5).

This negative effect suggests that market participants may interpret extensive social disclosure as a signal of increased costs or inefficiencies rather than value creation. Although some studies, such as Ruth et al. (2023), reported a positive association between ESG performance and Tobin's Q, the present findings are more aligned with Qodary and Tambun (2021), who observed that ESG disclosure does not always translate into higher market returns. This indicates that the market valuation of social initiatives may vary depending on firm-specific and sectoral contexts.

f. Effect of Governance Disclosure on Firm Value (Tobin's Q)

Governance disclosure exhibits a negative but statistically significant effect

on Tobin's Q, with a coefficient of −0.275, a t-value of −2.130, and a significance level of 0.039. Thus, Hypothesis 6 (H6) is accepted.

This result suggests that while governance mechanisms enhance internal control and book-based valuation, they may not always be perceived positively by the market. The negative association could indicate that stricter governance practices are viewed as limiting managerial flexibility or increasing compliance costs. This finding is consistent with Constantinescu and Lungu (2021), who reported regional variations in the impact of governance disclosure, as well as Yu and Xiao (2022), who found that governance performance does not consistently influence firm value across different markets..

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This study investigates the effect of Environmental, Social, and Governance (ESG) disclosure on firm value among energy and basic materials companies listed on the Indonesia Stock Exchange during the 2017–2023 period. The findings reveal that ESG disclosure plays a significant yet multidimensional role in shaping firm value. Environmental disclosure consistently demonstrates a positive and significant impact on both Price to Book Value (PBV) and Tobin's Q, indicating that environmental transparency is the most value-relevant ESG dimension in environmentally sensitive industries. In contrast, social disclosure shows a significant negative relationship with firm value across both valuation proxies, suggesting that social initiatives are perceived by investors as cost-intensive and may not generate immediate financial returns. Governance disclosure exhibits mixed effects, with a positive association with PBV but a negative relationship with Tobin's Q, implying that governance practices enhance internal efficiency and book-based valuation but are not always rewarded by the market in the short term. Overall, the results highlight that the economic consequences of ESG disclosure depend on both the ESG dimension and the valuation perspective.

Despite these contributions, this study has several limitations. First, the sample is restricted to seven firms that consistently disclosed ESG information, which may limit the generalizability of the findings. Second, the study focuses solely on companies in the energy and basic materials sectors, which may have unique ESG characteristics compared to other industries. Third, ESG disclosure is measured using disclosure scores, which capture the extent of reporting but may not fully reflect the quality or effectiveness of ESG practices. Finally, firm value is proxied only by PBV and Tobin's Q, while other financial or market-based measures could provide additional insights.

Based on these limitations, several recommendations for future research are

proposed. Future studies could expand the sample by including additional sectors or extending the observation period to enhance generalizability. Incorporating alternative measures of firm value, such as stock returns or profitability indicators, may also provide a more comprehensive understanding of the ESG value relationship. In addition, future research could distinguish between ESG disclosure quality and ESG performance to better capture the substantive impact of sustainability practices. From a practical perspective, managers should prioritize environmental transparency as a strategic tool to enhance firm value, while policymakers are encouraged to strengthen ESG reporting standards to improve consistency, comparability, and market relevance in emerging economies.

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