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The Effect of ESG Disclosure, Earnings Per Share, and Debt-to-Equity Ratio on Price-to-Book Value: Evidence from the Indonesian Coal Mining Industry

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Abstract

This study examines the effect of Environmental, Social, and Governance (ESG) Disclosure, Earnings Per Share (EPS), and Debt to Equity Ratio (DER) on Price-to-Book Value (PBV), with Return on Assets (ROA) and the USD/IDR exchange rate as control variables, among ten pure coal mining companies listed on the Indonesia Stock Exchange over 2022-2025 (40 firm-year observations). Using panel data regression estimated with a Random Effect Model and robust standard errors, the results show that ESG Disclosure and EPS each have a significant negative effect on PBV, while DER has no significant effect; the three variables jointly influence PBV significantly (Wald test, p = 0.0000), together explaining 18.56% of overall variation in PBV. These findings introduce the concept of conflicting valuation signals, in which ESG disclosure and financial fundamentals may simultaneously convey opposing information to investors under conditions of commodity price volatility and sustainability transition pressure in the coal mining sector.

Keywords: ESG Disclosure, Earnings Per Share, Debt to Equity Ratio, Firm Value, Coal Mining, Signaling Theory

Abstrak

Penelitian ini menguji pengaruh ESG Disclosure, Earnings Per Share (EPS), dan Debt to Equity Ratio (DER) terhadap Price-to-Book Value (PBV), dengan Return on Assets (ROA) dan kurs USD/IDR sebagai variabel kontrol, pada sepuluh perusahaan pertambangan batu bara murni yang terdaftar di Bursa Efek Indonesia periode 2022-2025 (40 observasi firm-year). Dengan menggunakan regresi data panel Random Effect Model dengan robust standard error, hasil penelitian menunjukkan bahwa ESG Disclosure dan EPS masing-masing berpengaruh negatif signifikan terhadap PBV, sedangkan DER tidak berpengaruh signifikan; ketiga variabel secara simultan berpengaruh signifikan terhadap PBV (uji Wald, p = 0,0000), dengan kontribusi sebesar 18,56% terhadap variasi PBV secara keseluruhan. Temuan ini memperkenalkan konsep conflicting valuation signals, yaitu kondisi ketika pengungkapan ESG dan fundamental keuangan dapat secara bersamaan menyampaikan informasi yang saling bertentangan kepada investor di tengah volatilitas harga komoditas dan tekanan transisi keberlanjutan pada sektor pertambangan batu bara.

Kata Kunci: Pengungkapan ESG; Laba Per Saham; Rasio Utang terhadap Ekuitas; Nilai Perusahaan; Batu Bara; Teori Sinyal.

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INTRODUCTION

Firm value depends heavily on the market's confidence that a company can generate sustainable returns rather than short-term gains alone. A key indicator reflecting this confidence is Price to Book Value (PBV), a valuation ratio widely used by investors, where a value above one indicates optimism toward the firm's prospects and a value below one signals doubt over its future performance (Damodaran, 2024). Firm valuation can be shaped by both financial fundamentals and non-financial dimensions, particularly through the growing emphasis on Environmental, Social, and Governance (ESG) practices, in line with the Triple Bottom Line principle of profit, people, and planet (Elkington, 1997). Corporate disclosures play a crucial role in shaping this valuation process, as information disclosed by firms functions as a signal that helps investors assess future prospects and reduces the information gap between management and shareholders (Nguyen, 2025).

ESG-related valuation dynamics can be observed across various sectors in Indonesia, as illustrated by the case of the coal mining industry, where a group of pure coal mining issuers listed on the Indonesia Stock Exchange displayed a notable disconnect between rising sustainability disclosure and volatile market valuation. Between 2022 and 2025, the sector's average ESG disclosure score increased from 49.93 to a peak of 57.29 points in 2024 before easing slightly to 55.93 in 2025, reflecting issuers' growing response to regulatory pressure and investor expectations. Over the same period, average PBV moved in a markedly non-linear pattern, falling from 2.01× in 2022 to a low of 1.38× in 2023, recovering to 1.92× in 2024, and then surging to 4.48× in 2025, a jump largely driven by a small number of issuers undergoing business transformation rather than a sector-wide re-rating. This pattern confirms that rising sustainability disclosure does not automatically translate into higher firm valuation when broader financial pressures, such as coal price volatility and the global energy transition, are also at play (World Bank, 2024).

Key financial indicators associated with firm valuation include Earnings Per Share (EPS) and Debt to Equity Ratio (DER); EPS reflects a firm's profitability efficiency and is generally interpreted as a positive signal to investors (Arsal, 2021), while DER indicates a firm's financial risk exposure and capital structure stability (Kamiliya & Pratiwi, 2023). Both indicators carry particular weight in the coal mining sector, as the sharp correction in global coal reference prices from around USD 400 per ton in September 2022 to the USD 100-150 per ton range throughout 2023-2025 (World Bank, 2024) directly pressured issuers' profitability and financing risk. Empirical studies confirm the relevance of ESG disclosure to firm value, although findings remain inconsistent, with some reporting a positive effect (Ilma & Wahyuni, 2025), others a negative effect (Luthfiah et al., 2025), and others no significant effect at all (Yuniar et al., 2025), while evidence on EPS and DER is similarly mixed across studies (Ayulianis et al., 2024; Islamie & Mildawati, 2022).

These inconsistencies highlight a research gap, suggesting that ESG disclosure may not always function as a clear valuation signal, particularly when financial fundamentals convey a different direction of information. Therefore, this study aims to examine the effect of ESG disclosure, EPS, and DER on PBV in coal mining sector companies listed on the Indonesia Stock Exchange (2022-2025), while introducing the concept of conflicting valuation signals. This concept emphasizes that ESG disclosure and financial fundamentals may simultaneously convey opposing information to investors, particularly under conditions of commodity price volatility and structural transition toward sustainability. Accordingly, this study addresses three research questions: (1) the effect of ESG disclosure, EPS, and DER on PBV, (2) the most reliable valuation signal among these indicators, and (3) the potential for conflicting signals under different firm conditions.

METHOD

This study adopts an associative quantitative approach to examine the effect of Environmental, Social, and Governance (ESG) Disclosure, Earnings Per Share (EPS), and Debt to Equity Ratio (DER) on Price-to-Book Value (PBV), with Return on Assets (ROA) and the USD/IDR exchange rate as control variables. The population comprises 47 coal sector companies listed on the Indonesia Stock Exchange (IDX) as of 2026. Using purposive sampling based on criteria including consistent listing status, uninterrupted publication of audited annual reports and GRI-based sustainability reports, positive net income throughout the observation period, and pure coal mining operations, 10 companies were selected, yielding 40 balanced panel observations over 2022-2025.

PBV is measured as the ratio of market price per share to book value per share. ESG Disclosure is measured using a GRI-based disclosure index comprising 80 items across the Environmental (GRI 300), Social (GRI 400), and Governance (GRI 2) dimensions, scored dichotomously (1 if disclosed, 0 otherwise). EPS is measured as net income divided by shares outstanding, while DER is measured as total liabilities divided by total equity. ROA and the exchange rate serve as control variables to account for profitability and macroeconomic conditions, respectively).

Table 1. Operational Definition of Variables

Variable	**Proxy**	**Formula**	**Source**
Firm Value (Y)	Price-to-Book Value (PBV)	PBV = Market Price per Share / Book Value per Share	Brigham & Houston (2022)
ESG Disclosure (X_1)	ESG Disclosure Index (ESGDI)	ESGDI = ΣXi / N, where Xi = 1 if a GRI item is disclosed, 0 otherwise; N = total GRI disclosure items	Yudiansyah & Burhany (2025)
Earnings Per Share (X_2)	Earnings Per Share (EPS)	EPS = Net Income / Weighted Average Shares Outstanding	Brigham & Houston (2022)
Debt to Equity Ratio (X_3)	Debt to Equity Ratio (DER)	DER = Total Liabilities / Total Equity	Kasmir (2019)
Control Variable	Return on Assets (ROA)	ROA = (Net Income / Total Assets) × 100%	Kasmir (2019)
Control Variable	Exchange Rate (USD/IDR)	ER = Σ(BI Middle Exchange Rate)t / 12 (annual average)	Sukirno (2016); Bank Indonesia

RESULTS AND DISCUSSION

Descriptive statistics for the six research variables, based on 40 firm-year observations from ten coal mining companies listed on the IDX (2022-2025), are presented in Table 2.

Table 2. Descriptive Statistics

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
PBV (Y)	40	2.7218	4.2997	0.39	25.62

Variable	Obs	Mean	Std. Dev.	Min	Max
ESG Disclosure (X_1)	40	0.7984	0.1582	0.2375	1.00
EPS (X_2)	40	1777.66	3460.49	0.45	16560.00
DER (X_3)	40	0.7628	0.3808	0.22	1.68
ROA	40	14.727	12.915	0.20	57.49
Exchange Rate (IDR/USD)	40	15636.21	623.63	14916.75	16503.50

Source: STATA 17 output, processed by the author (2026)

The wide dispersion in PBV (SD = 4.30) reflects sharply uneven market valuation across sample firms, while the large standard deviation of EPS relative to its mean points to substantial profitability gaps, likely driven by differences in firm scale and coal price volatility over the period. ESG Disclosure and DER show comparatively moderate variation, and ROA and the exchange rate reflect typical fluctuations in profitability and currency conditions during 2022-2025.

Table 3. Panel Data Model Selection

Test	Hypothesis Tested	Prob. Value	Outcome	Model Favored
Chow Test	CEM vs. FEM	0.0013	H0 rejected	FEM
Hausman Test	REM vs. FEM	0.6690	H0 not rejected	REM
LM Test	CEM vs. REM	0.1159	H0 not rejected	—

Source: STATA 17 output, processed by the author (2026)

The Chow test initially favors FEM (p = 0.0013), but the Hausman test result (p = 0.6690) points to REM as the more appropriate estimator. Given the strength of this result relative to the LM test, REM is adopted as the final model, estimated with robust standard errors to correct for heteroskedasticity.

Table 4. Random Effect Model with Robust Standard Errors

Variable	Coefficient	Std. Err.	z	P>|z|
ESG Disclosure (X_1)	-8.7962	3.4941	-2.52	0.012
EPS (X_2)	-0.0004063	0.0001938	-2.10	0.036
DER (X_3)	1.4207	1.4963	0.95	0.342
ROA	0.1598	0.0484	3.30	0.001
Exchange Rate	0.0025174	0.0016036	1.57	0.116
Constant	-32.3322	23.0276	-1.40	0.160

Source: STATA 17 output, processed by the author (2026)

$$PBV_{it} = -32.3322 - 8.7962\ ESG_{it} - 0.0004063\ EPS_{it} + 1.4207\ DER_{it} + 0.1598\ ROA_{it} + 0.0025174\ KURS_t + \varepsilon_{it}$$

The estimated regression equation shows a negative constant of -32.3322, indicating that when all independent and control variables are held at zero, the predicted PBV value is negative, a condition that is not economically meaningful on its own but serves as the baseline intercept for the model. The coefficients indicate that ESG Disclosure and EPS move in the opposite direction of PBV, each unit increase in these variables being associated with a decrease in PBV of 8.7962 and 0.0004063 units respectively, whereas DER, ROA, and the exchange rate move in the same direction as PBV, with ROA showing the most substantial positive contribution (0.1598) among them. This pattern suggests that, within this model, profitability measured through asset efficiency (ROA) reinforces firm valuation more consistently than disclosure-based or per-share profitability indicators.

Table 5. Diagnostic Tests and Model Fit

Test	**Statistic**	**Prob.**	**Interpretation**
Multicollinearity (Mean VIF)	1.42	—	No multicollinearity
Heteroskedasticity (Breusch-Pagan)	$\chi^2(1) = 25.25$	0.0000	Present; corrected via robust SE
Autocorrelation (Wooldridge)	F(1,13) = 4.355	0.0665	Not detected
Wald Test (Simultaneous)	—	0.0000	Model jointly significant
R^2 (Within/Between/Overall)	0.3775 / 0.0764 / 0.1856	—	—

Source: STATA 17 output, processed by the author (2026)

Diagnostic checks confirm the model is free of multicollinearity and autocorrelation, though heteroskedasticity is present and addressed through robust standard errors. The Wald test confirms that ESG Disclosure, EPS, and DER, together with the control variables, jointly influence PBV ($p = 0.0000$), supporting H4. The model explains 18.56% of overall PBV variation, with the remainder likely driven by unobserved factors such as coal price cycles or investor sentiment.

At the partial level, ESG Disclosure shows a significant negative effect on PBV ($\beta = -8.7962$; $p = 0.012$), supporting H1 but in the opposite direction than typically assumed, consistent with the earlier argument that high ESG compliance costs in the coal sector may outweigh short-term reputational gains. EPS also shows a significant negative effect ($\beta = -0.0004063$; $p = 0.036$), failing to support H2, suggesting investors may discount reported earnings as unsustainable amid volatile coal prices. DER shows no significant effect ($\beta = 1.4207$; $p = 0.342$), leading to the rejection of H3. Among the controls, ROA is a significant positive predictor of PBV ($\beta = 0.1598$; $p = 0.001$), while the exchange rate shows no significant effect ($p = 0.116$).

The results indicate that ESG Disclosure, EPS, and DER each convey distinct effects on Price-to-Book Value, with two of the three producing directions that contradict conventional theoretical expectation. Based on signaling theory (Spence, 1973), financial and non-financial disclosures are expected to reduce information asymmetry and guide investor perception; however, this study shows that such signals can be ambiguous or even inverted depending on sector-specific conditions.

ESG Disclosure has a negative and significant effect on PBV ($\beta = -8.7962$; $p = 0.012$). This finding is consistent with Prabawati and Rahmawati (2022), Sari and Valdiansyah (2025), and Arianto and Sofie (2026), but contradicts Ilma and Wahyuni (2025), who report a positive effect, and Yuniar et al. (2025), who find no significant effect at all. This suggests that higher ESG disclosure does not automatically reflect sustainability strength to the market; rather, it may signal the substantial cost burden of environmental compliance, land reclamation, emission control, and sustainability reporting, which agency theory frames as rising agency costs that compress short-term profitability. From a legitimacy theory perspective, ESG disclosure in a high-risk sector such as coal mining may also be interpreted as a defensive legitimation response to regulatory pressure rather than a genuine value-creating signal. Therefore, ESG disclosure in this sector may produce an ambiguous signal and should be interpreted cautiously.

EPS shows a significant negative effect on PBV ($\beta = -0.0004063$; $p = 0.036$), failing to support H2 and contradicting Islamie and Mildawati (2022), who identify EPS as the most consistent positive predictor of firm value in the mining sector. This reversal suggests investors may discount reported earnings as unsustainable, given that the observation period coincides with a sharp correction in global coal reference prices (World Bank, 2024). This indicates EPS may lose its conventional signaling reliability in commodity-dependent sectors experiencing high price volatility.

DER shows no significant effect on PBV ($\beta = 1.4207$; $p = 0.342$), leading to the rejection of H3. This result contradicts Ayulianis et al. (2024), who report a negative effect, but is consistent with Islamie and Mildawati (2022), who similarly find DER statistically irrelevant in the mining sector. This suggests that in a capital-intensive industry where debt financing is a routine feature of operations, leverage level alone does not carry a clear signaling value to investors.

Among the controls, ROA is a significant positive predictor of PBV ($\beta = 0.1598$; $p = 0.001$), reinforcing that valuation in this sector responds more consistently to demonstrated profitability than to disclosure or per-share earnings.

Overall, this study extends signaling theory by introducing the concept of conflicting valuation signals, whereby ESG disclosure and financial fundamentals may simultaneously convey opposing information to investors. Rather than reinforcing firm value as conventionally assumed, ESG Disclosure and EPS instead exert a depressing effect on PBV, while DER shows no discernible influence, indicating that under simultaneous commodity price collapse and sustainability transition pressure, investors may weigh these signals against sector-specific risk narratives that invert or neutralize their expected direction.

CONCLUSION

This study examined the effect of ESG Disclosure, EPS, and DER on PBV in ten pure coal mining companies listed on the IDX over 2022-2025, using a Random Effect Model with robust standard errors. The findings show that ESG Disclosure and EPS both exert a significant negative effect on PBV, while DER has no significant effect; jointly, the three variables significantly influence PBV (Wald test, $p = 0.0000$), supporting H4, though the model explains only 18.56% of overall variation, suggesting other unobserved factors such as coal price cycles and investor sentiment play a substantial additional role.

Regarding the three research questions: (1) ESG Disclosure and EPS negatively affect PBV, while DER shows no significant effect; (2) ROA emerges as the most reliable valuation signal, given its consistent, theoretically expected relationship with PBV, whereas ESG Disclosure and EPS produce signals contrary to expectation; and (3) the study confirms the presence of conflicting valuation signals, most evident in the simultaneous negative effects of ESG Disclosure and EPS, two indicators conventionally expected to enhance firm value, under the structural pressures unique to the coal sector during this period.

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REFERENCE

Arianto, D. G., & Sofie. (2026). The effect of ESG disclosure and firm size on firm value: An analysis using Tobin's Q as a market value proxy. Journal of Economics and Business UBS, 15(5), 710-720.

Arsal, M. (2021). Impact of earnings per share and dividend per share on firm value. Atestasi: Jurnal Ilmiah Akuntansi, 4(1), 11-18.

Ayulianis, A., Chandrayanti, T., & Hadya, R. (2024). Pengaruh struktur modal dan environmental, social, dan governance (ESG) disclosure terhadap nilai perusahaan di industri manufaktur yang terdaftar di Bursa Efek Indonesia. Jurnal Riset Manajemen, 1(1), 101-112.

Baltagi, B. H. (2021). Econometric analysis of panel data (6th ed.). Springer Nature.

Brigham, E. F., & Houston, J. F. (2022). Fundamentals of financial management (16th ed.). Cengage Learning.

Damodaran, A. (2024). Investment valuation: Tools and techniques for determining the value of any asset (4th ed.). John Wiley & Sons.

Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. Capstone Publishing.

Ilma, L. N., & Wahyuni, N. I. (2025). Pengaruh pengungkapan environmental, social, and governance (ESG) terhadap nilai perusahaan pada perusahaan agroindustri di Indonesia. E-Jurnal Akuntansi TSM, 5(2), 303-312.

Islamie, N. S., & Mildawati, T. (2022). Pengaruh return on asset, debt to equity ratio, dan earning per share terhadap nilai perusahaan. Jurnal Ilmu dan Riset Akuntansi, 11(2), 1-20.

Kamiliya, D. P. W., & Pratiwi, T. D. (2023). Analysis of profitability and leverage on firm value. Indonesian Accounting Journal, 10(2), 101-115.

Kasmir. (2019). Analisis laporan keuangan (Edisi revisi). Rajawali Pers.

Luthfiah, P., Alamsyah, S., & Erdawati, L. (2025). Pengaruh risiko bisnis, profitabilitas, dan ESG disclosure terhadap nilai perusahaan pada perusahaan perbankan di Indonesia (2020-2023). BIMA: Journal of Business Inflation Management and Accounting, 2(2), 524-526.

Nguyen, V. H. (2025). Corporate social responsibility disclosure and firm value: A signaling theory perspective. Journal of Economics and Development, 27(2), 114-128.

Prabawati, P. I., & Rahmawati, I. P. (2022). The effects of environmental, social, and governance (ESG) scores on firm values in ASEAN member countries. Jurnal Akuntansi dan Auditing Indonesia, 26(2), 119-129.

Sari, D. D. I., & Valdiansyah, R. H. (2025). Effectiveness of ESG practices in enhancing firm value: Evidence from Indonesian banking. Journal of Contemporary Accounting, 7(3), 226-238.

Spence, M. (1973). Job market signaling. The Quarterly Journal of Economics, 87(3), 355-374.

Sukirno, S. (2016). Makroekonomi: Teori pengantar (Edisi ketiga). PT RajaGrafindo Persada.

Widarjono, A. (2018). Ekonometrika: Pengantar dan aplikasinya disertai panduan EViews (Edisi ke-5). UPP STIM YKPN.

World Bank. (2024). Commodity markets outlook, October 2024. World Bank.

Yudiansyah, R., & Burhany, D. I. (2025). Pengaruh environmental, social, and governance (ESG) disclosure dan enterprise risk management (ERM) terhadap nilai perusahaan subsektor makanan dan minuman. Indonesian Accounting Literacy Journal, 5(3), 336-346.

Yuniar, A., Puteri, D. A., & Rahmadini, S. (2025). Profitabilitas, leverage, dan ESG disclosure: Faktor kunci dalam meningkatkan nilai perusahaan di sektor energi dan barang baku pada indeks ESGL. Indonesian Journal of Auditing and Accounting, 2(2), 120-132