



Analysis of the Influence of Environment, Social & Governance (ESG), Debt to Asset (DAR), and Return on Asset (ROA) on Stock Returns in Mining Companies Listed on the Indonesia Stock Exchange for the 2020-2024 Period

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Abstract: *Stock returns in energy and mining companies fluctuate and are influenced by corporate sustainability and financial performance. This study aims to examine the effects of Environmental, Social, and Governance (ESG) Score, Return on Assets (ROA), and Debt to Asset Ratio (DAR) on stock returns of energy and mining companies listed on the Indonesia Stock Exchange during 2020–2024. A quantitative approach was employed using secondary data from financial and sustainability reports. The population consisted of 43 companies, with 7 companies selected through purposive sampling. Data were collected through documentation and analyzed using panel data regression with the Common Effect Model (CEM), supported by model selection and classical assumption tests. The results show that ESG has a negative and insignificant effect on stock returns, ROA has a positive and significant effect, and DAR has a positive but insignificant effect. Simultaneously, ESG, ROA, and DAR do not significantly affect stock returns at the 5% level. The conclusion indicates that profitability is more relevant to stock returns than ESG and capital structure within the research model.*

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Introduction

Stock returns are the rate of return that reflects the profit or loss an investor receives on their stock investment. Stock returns are an important indicator because they represent a company's performance and prospects in the capital market (Gunawan & Anggraini, 2024). In the context of mining companies, stock returns are relatively volatile due to their high sensitivity to global commodity prices, government policies, and environmental issues. This makes stock returns a primary consideration for investors when making investment decisions. Easy access to company financial reporting information

allows investors to more rationally evaluate a company's fundamentals. Pandaya et al. (2020) state that fundamental analysis is necessary for making appropriate investment decisions, while fundamental factors are internal company factors reflected in financial statements. For mining companies with capital-intensive capital structures and high operational risks, managing fundamental conditions is crucial for maintaining performance and investor confidence.

Mining company stock returns from 2020 to 2024 showed significant changes. In 2020, the mining sector recorded a negative return of -3.83 percent, driven by global pressures from the COVID-19 pandemic and declining commodity prices. Returns then increased to 16.98 percent in 2021, in line with the recovery of the mining sector, increasing commodity demand, and stabilizing economic activity. In 2022, stock returns remained positive at 12.07 percent, but slowed again in 2023 and 2024, to 4.41 percent and 2.41 percent, respectively. These fluctuations indicate that mining company stock returns are not only related to external conditions but also to the company's fundamental strength. Fundamental factors can be seen through profitability, solvency, and liquidity. Setiowati et al. (2023) explain that profitability indicates a company's ability to generate profits at a given level of sales, assets, and capital. Kinasih et al. (2021) states that solvency measures a company's ability to meet long-term obligations, while Supeno (2022) explains that liquidity indicates a company's ability to meet short-term obligations.

In addition to fundamental factors, Environmental, Social, and Governance (ESG) is increasingly gaining attention in relation to mining company stock returns. The mining industry is directly linked to various environmental issues, making the implementation of sustainability principles a key investor concern. Li et al. (2021) emphasized that investors use ESG as a strategy to evaluate a company's future risks and prospects. The implementation of practices such as green mining, energy efficiency, waste management, and corporate governance transparency can shape market sentiment and influence stock returns.. Aditya (2022) stated that strong ESG transparency has the potential to enhance a company's reputation and support long-term business continuity. This increase in ESG disclosure indicates that sustainability is increasingly becoming a key consideration for investors, although its impact on stock returns remains mixed.

The research problem is evident in the inconsistencies in previous research findings regarding the effect of ESG on stock returns. Trisnowati et al. (2022), Wang et al. (2024), and Stotz (2021) stated that the ESG score had no significant effect on stock returns. Conversely, Yin et al. (2023), Rodionova et al. (2022), and Galema and Gerritsen (2022) found that the ESG score had a significant positive effect on company stock returns. These differences in results indicate that the influence of ESG on stock returns is contextual and may be related to differences in regulations, government incentives, the research period, and the industrial sector studied. This situation is especially relevant for mining companies because this sector has relatively high environmental exposure and different risk characteristics than other sectors.

The next issue relates to fundamental factors, particularly profitability, as measured by Return on Assets (ROA). ROA indicates a company's ability to generate returns on its assets. In the capital-intensive mining industry, asset utilization effectiveness is a crucial indicator of a company's operational performance. AA Mangantar et al. (2020), Parawansa et al. (2021), and Hisar et al. (2021) state that ROA has a significant positive effect on stock returns. However, other studies have yielded conflicting results. Laulita and Yanni (2022), Imara and Erdkhadifa (2023), and Lameo et al. (2023) all state that ROA has a negative effect on stock returns. This discrepancy suggests that the relationship between profitability and stock returns needs further examination, particularly in the context of mining companies in Indonesia.

Another issue lies in solvency, as measured by the Debt-to-Asset Ratio (DAR). DAR indicates the proportion of a company's assets financed by debt. For mining companies with investment needs and capital-intensive characteristics, debt structure management is crucial for maintaining financial stability. Hisar et al. (2021) and Ristyawan (2019) stated that DAR has a positive effect on stock returns. These results differ from those of Sari and Maryoso (2022) and Desprisila et al. (2022), which found

that DAR had no significant effect on stock returns. Therefore, there are still discrepancies in research findings regarding the influence of ESG, ROA, and DAR on stock returns. This research is needed to obtain empirical evidence regarding the relationship between these three variables in mining companies listed on the Indonesia Stock Exchange.

This study aims to empirically examine the influence of ESG Score, Return on Assets (ROA), and Debt to Asset Ratio (DAR) on stock returns of mining companies in Indonesia, both partially and simultaneously. The urgency of this research lies in the fluctuations in mining company stock returns from 2020 to 2024 and the inconsistency of previous research results regarding ESG, ROA, and DAR on stock returns. The novelty of this study lies in the use of the 2020 to 2024 research period with mining companies listed on the Indonesia Stock Exchange as the object. This allows for an empirical overview of the influence of sustainability and financial performance aspects on stock returns in sectors with high risk and capital intensity characteristics. This research is expected to enrich the financial management literature and serve as a reference for investors and mining company management in understanding the factors that influence stock returns.

Research methods

This study uses a quantitative approach to examine the influence of Environmental, Social, and Governance (ESG), Return on Assets (ROA), and Debt to Asset Ratio (DAR) on Stock Returns in mining companies listed on the Indonesia Stock Exchange for the period 2020 to 2024. The quantitative approach is used to test hypotheses through numerical data analysis and objectively measuring variables using statistical techniques (Sugiyono, 2019). The data used are secondary data obtained indirectly through company financial reports, annual reports, sustainability reports, and other official publication sources relevant to the study.

The research instrument used documentary data in the form of ESG Score, ROA, DAR, and company Stock Returns for the period 2020 to 2024. ESG Score is measured by the independent institution MSCI with a value of 0 to 100, ROA is expressed as a percentage, DAR is expressed as a percentage, while Stock Returns use a percentage ratio scale (Gunawan & Anggraini, 2024; Brigham & Houston, 2019). The data analysis technique used panel data regression that combines time series and cross-section data. This analysis is used to test the effect of ESG Score, ROA, and DAR on Stock Returns. Panel data regression is carried out using three models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) (Alamsyah et al., 2022). Model selection is done through the Chow Test, Hausman Test, and Breusch Pagan Lagrange Multiplier (LM) Test. Next, diagnostic tests were conducted, including multicollinearity, heteroscedasticity, and autocorrelation tests. Hypothesis testing was carried out using the coefficient of determination (R^2), t-test, and F-test.

The study population consisted of 43 mining companies listed on the Indonesia Stock Exchange and had data on ESG Score, ROA, DAR, and Stock Returns for the period 2020 to 2024. The sample determination used a purposive sampling technique, namely selecting samples based on certain characteristics according to the research needs. The sample criteria included companies listed on the Indonesia Stock Exchange, had an observation period of 2020 to 2024, and had complete research variable data during that period. Based on these criteria, 7 companies were obtained as research samples, namely Alamtri Resources Indonesia Tbk PT, Aneka Tambang Tbk PT, Bukit Asam Tbk PT, Bumi Resources Tbk PT, Indo Tambangraya Megah Tbk PT, Vale Indonesia Tbk PT, and Harum Energy Tbk PT.

The research procedure was carried out by first determining the mining companies that would be the research objects based on sample criteria. Next, secondary data was collected through annual financial reports and corporate sustainability reports published from 2020 to 2024 through Refinitiv. The collected data included ESG Score, ROA, DAR, and Stock Returns. After the data was collected, it was organized into a panel data set that combined five years of time series data with company cross-sectional data. The next stage was to conduct panel data regression analysis by testing CEM, FEM, and REM, then determining the most appropriate model through a model specification test. After the model was selected, a diagnostic test was conducted to ensure its feasibility. Hypothesis testing was then continued using the R^2 test, t-test, and F-test to determine the effect of ESG Score, ROA, and DAR on Stock Returns.



Results and Discussion

Descriptive Statistical Analysis

Table 1. Results of Descriptive Statistical Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
TOTAL RETURN	35	.3254715	.6312824	-.4720497	2.491654
ESG	35	69.13426	14.47377	28.74	87.52375
ROA	35	.1130066	.1279599	-.0905	.55734
DAR	35	.1156131	.1399522	0	.5010825

Source: Results of data processing with STATA17 (2026)

Based on Table 1, the descriptive statistics for the first variable are the Stock Return (TOTALRETURN) variables. The Stock Return (TOTALRETURN) variable obtained a minimum value of -0.472 and a maximum value of 2.492. The Stock Return variable has an average value of 0.325 with a standard deviation of 0.631. The average value of 0.325 indicates that, in general, the sample companies were able to generate positive stock returns during the study period. The minimum value of -0.472 indicates that some companies experienced a decline in stock returns of up to 47.2%, while the maximum value of 2.492 indicates that some companies achieved very high stock returns of up to 249.2%. The standard deviation of 0.631, which is greater than the average value, indicates that the variation in stock returns between companies is relatively high, resulting in significant differences in stock performance between sample companies during the study period.

The second variable is Environment, Social, and Governance (ESG). The ESG variable in this study has an average value of 69.134 with a standard deviation of 14.474, a minimum value of 28.740, and a maximum value of 87.524. The average ESG value of 69.134 indicates that, in general, the sample companies have a fairly good level of implementation of sustainability practices and corporate governance. The minimum value of 28.740 indicates that there are still companies with a relatively low level of ESG implementation, while the maximum value of 87.524 indicates that there are companies that have implemented ESG principles very well. The standard deviation of 14.474 indicates that there is variation in the level of ESG implementation between companies, although this variation is still considered moderate compared to the average value.

The third variable is Return on Assets (ROA). The ROA variable in this study has an average value of 0.113 with a standard deviation of 0.128, a minimum value of -0.091, and a maximum value of 0.557. The average ROA value of 0.113 indicates that the company is generally able to generate a profit of 11.3% of its total assets. The minimum value of -0.091 indicates a company experiencing losses, resulting in a negative ROA, while the maximum value of 0.557 indicates a company that is very efficient in utilizing its assets to generate profits. The standard deviation of 0.128, which is slightly larger than the average value, indicates a fairly high variation in profitability between companies during the study period.

The fourth variable is the Debt to Asset Ratio (DAR). The DAR variable in this study has an average value of 0.116 with a standard deviation of 0.140, a minimum value of 0.000, and a maximum value of 0.501. The average DAR value of 0.116 indicates that, on average, sample companies finance approximately 11.6% of their assets using liabilities or debt, while the remainder is financed using equity. A minimum value of 0.000 indicates a company that has no debt in a given period, while a maximum value of 0.501 indicates a company that finances approximately 50.1% of its assets using debt. A standard deviation of 0.140 indicates variations in capital structure between companies, although the level of variation is still considered moderate.

The standard deviation of 0.189 indicates that there is considerable variation in capital structure between companies.



Model Selection Estimation

1. Chow Test

Table 2. Chow Test

F-test	Prob > F
1.01	0.4396

Source: Results of data processing with STATA17 (2026)

Based on the results of Table 2, the Chow Test proves that the Chow Test obtained a Probability F value of 0.4396 or greater than ≥ 0.05 , meaning that the selected model is the Common Effect Model (CEM).

2. LM Test

Table 3. LM Test

Chi 2	Prob > Chi
0.00	1,0000

Source: Results of data processing with STATA17 (2025)

Based on Table 3, the LM Test proves that the Prob>Chi value is 1.0000, or greater than 0.05. This means that the selected model is the Common Effect Model (CEM). With these results, this study can determine that the Common Effect Model (CEM) is the appropriate model for the study.

Diagnostic Test

1. Multicollinearity Test

Table 4. Multicollinearity Test

Variables	(1)	(2)	(3)	(4)
(1) Return	1,0000			
(2) ESG	-0.3025	1,000		
(3) ROA	0.3517	-0.0916	1,0000	
(4) DAR	-0.0348	0.0602	-0.4107	1,0000

Source: Results of data processing with STATA17 (2026)

Based on Table 4, the results of the Multicollinearity Test using the Pairwise Correlation method, no strong indication of multicollinearity was found between the independent variables (ESG, ROA, and DAR) because the correlation values between these variables were relatively low and did not exceed the general threshold of 0.80. Therefore, it can be concluded that the variables used do not have multicollinearity problems.

2. Autocorrelation Test

Table 5. Autocorrelation Test

Prob > F
0.5798

Source: Results of data processing with STATA17 (2025)

Based on Table 5 of the Autocorrelation Test, the test results show a probability value (p-value) of 0.5798, indicated by Prob > F. Since the probability value is greater than 0.05, it can be concluded that there is no autocorrelation problem in the panel data regression model used. Thus, the model used has met the assumption of being autocorrelation-free, so that the parameter estimates can be considered valid within the context of this assumption.

3. Heteroscedasticity Test

Table 6. Heteroscedasticity Test

Prob > chi2
0.0700

Source: Results of data processing with STATA17 (2025)

Based on Table 6 of the Heteroscedasticity Test, the probability value (p-value) is greater than 0.05, meaning there is no heteroscedasticity problem. The results shown show a probability value (p-value) of 0.0700, which is greater than 0.05. Therefore, it can be concluded that the panel data regression model used does not have a heteroscedasticity problem. Thus, the model used has met the assumption



of being free from heteroscedasticity, so that the parameter estimates can be considered valid within the context of this assumption.

Panel Data Regression Analysis Results

Table 7. Panel Data Regression Results

Return	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
ESG	-.0120274	.0069786	-1.72	0.095	-.0262604	.0022056	*
ROA	1.892919	.8641926	2.19	0.036	.1303869	3.655452	**
DAR	.6287721	.7882499	0.80	0.431	-.9788741	2.236418	
Constant	.8703729	.5219463	1.67	0.105	-.1941436	1.934889	
Mean dependent var		0.013	SD dependent var		0.314		
R-squared		0.2135	Number of obs		35		
F-test		2.81	Prob > F		0.0560		
Akaike crit. (AIC)		65.70493	Bayesian crit. (BIC)		71.92633		
*** $p < .01$, ** $p < .05$, * $p < .1$							

Source: Results of data processing with STATA17 (2026)

Hypothesis Testing

1. R² Test

Table 8. R2 Test Results

R-squared	0.2135
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Source: Results of data processing with STATA17 (2026)

Based on Table 8, the panel data regression results using the Common Effect Model (CEM) yield an R-squared value of 0.2135, or 21.35%. This indicates that the ESG, ROA, and DAR variables explain 21.35% of the stock return variable, while the remaining 78.65% is explained by other variables outside this study that were not included in the research model.

2. F test

Table 9. F Test Results

Prob > F	0.0560
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Source: Results of data processing with STATA17 (2026)

Based on Table 9, the panel data regression results obtained an F-statistic value of 2.81 with a Prob > F value of 0.0560. With a significance level of 5%, it can be concluded that the variables Environmental, Social, and Governance (ESG), Return on Assets (ROA), and Debt to Asset Ratio (DAR) simultaneously have no significant effect on Stock Returns.

3. T-test

Table 10. T-Test Results

Variables	P>Value	Interpretation	Beta	Interpretation
X1 > Y	0.095	No effect	-0.2757599	Relatively small influence
X2 > Y	0.036	Positive influence	0.3836916	Greatest relative influence
X3 > Y	0.431	No effect	0.1393957	Smallest relative influence

Source: Results of data processing with STATA17 (2026)



Based on table 10, the t-test results are declared significant if the significance value (p-value) is ≤ 0.05 , so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, which means there is a statistically significant effect. Conversely, if the p-value is > 0.05 , then H_0 fails to be rejected because there is insufficient evidence to state a significant effect between the independent variables on the dependent variable. The hypotheses tested in the t-test are as follows:

A. ESG on Stock Returns

The Environmental, Social, and Governance (ESG) variable has a regression coefficient of -0.0120274 with a p-value of 0.095. Because the p-value is greater than the 5% significance level (0.05), H_0 is not rejected and H_a is rejected. This indicates that the ESG variable does not have a significant effect on Stock Returns. Although the regression coefficient shows a negative direction, the effect is not statistically strong enough to be concluded as having an effect on Stock Returns. Thus, based on Hypothesis 1 (H_1) which states "Environmental, Social, and Governance (ESG) has a positive effect on Stock Returns" is rejected because ESG does not have a significant effect on Stock Returns.

B. ROA Against Stock Returns

The Return on Assets (ROA) variable has a regression coefficient of 1.892919 with a p-value of 0.036. This p-value is smaller than the 5% significance level (0.05), so H_0 is rejected and H_a is accepted. This indicates that the ROA variable has a positive and significant effect on Stock Returns. This means that every one unit increase in ROA will increase Stock Returns by 1.892919 units, assuming other variables are held constant. This positive effect indicates that companies with higher levels of profitability tend to produce better Stock Returns. Thus, based on Hypothesis 2 (H_2) which states "Return on Assets (ROA) has a positive effect on Stock Returns" is accepted because ROA has a significant positive effect on Stock Returns.

C. DAR on Stock Returns

The Debt to Asset Ratio (DAR) variable has a regression coefficient of 0.6287721 with a p-value of 0.431. A p-value greater than 0.05 indicates that DAR has no significant effect on Stock Returns. Thus, the company's leverage level as measured by the debt to asset ratio does not provide a significant contribution in explaining changes in Stock Returns in the companies studied. Based on Hypothesis 3 (H_3) which states "Debt to Asset Ratio (DAR) has a positive effect on Stock Returns" is rejected because DAR does not have a significant effect on Stock Returns.

The t-test results show that only Return on Assets (ROA) has a positive and significant partial effect on stock returns. This indicates that a company's profitability is a factor investors consider when making investment decisions.

Meanwhile, the Environmental, Social, and Governance (ESG) and Debt-to-Asset Ratio (DAR) variables did not significantly influence stock returns. This finding indicates that investors in the sample companies still prioritize profitability over sustainability and capital structure when making investment decisions.

Discussion

The Influence of Environmental, Social, and Governance (ESG) on Stock Returns

Based on the panel data regression results in Table 4.7, the Environmental, Social, and Governance (ESG) variable has a regression coefficient of -0.012 with a p-value of 0.095. This p-value is greater than the 5% significance level (0.05), so the first hypothesis (H_1) stating that ESG has a positive effect on stock returns is rejected. These results indicate that ESG does not significantly influence stock returns of companies in the energy and mining sector during the study period.

The results of this study indicate that ESG implementation has not yet become a primary consideration for investors when making investment decisions in the energy and mining sectors in Indonesia. Investors still tend to prioritize external factors such as global commodity price fluctuations, macroeconomic conditions, and market sentiment over corporate sustainability. This situation results in an increase in ESG scores not always being accompanied by an increase in a company's stock returns.

Based on research data, several companies have consistently shown increases in ESG scores, but not accompanied by increases in stock returns. For example, Harum Energy Tbk PT experienced an



increase in its ESG score from 28.74 in 2020 to 55.34 in 2024. However, the company's stock returns actually experienced a significant decline from 249.2% in 2021 to -22.5% in 2024. A similar phenomenon also occurred at Vale Indonesia Tbk PT, which had a high and stable ESG score in the range of 83–87, but the company's stock returns continued to decline over several observation periods.

This situation indicates that the Indonesian capital market, particularly in the energy and mining sectors, remains more focused on short-term profits than on corporate sustainability. Mining companies' stock price movements tend to be influenced by the volatility of coal, nickel, and other commodity prices, which are highly sensitive to global economic conditions. Therefore, even if a company has increased its ESG implementation, the market may not immediately respond positively to its shares.

Furthermore, the differences in ESG scores between companies in this study were quite significant. For example, Vale Indonesia Tbk PT had an ESG score of 85.37 in 2020, while Harum Energy Tbk PT only scored 28.74 during the same period. This difference indicates that sustainability implementation in Indonesia's energy and mining sector remains uneven. This difference may be influenced by company size, governance preparedness, global investor pressure, and the company's ability to consistently implement sustainability policies.

The results of this study align with research indicating that ESG does not always significantly impact stock returns, particularly in commodity-based sectors. Investors in these sectors tend to be more responsive to changes in commodity prices and market conditions than to corporate sustainability information.

The results of this study are also supported by previous research (Atan, 2018; Velte, 2017), which found that ESG does not significantly influence stock returns. Research conducted by Atan et al. (2018) shows that ESG disclosure has not been able to directly increase market response, thus not having a significant impact on company market performance. Furthermore, research by Velte (2017) also found that ESG implementation does not significantly influence stock returns because investors still focus more on financial factors and company profitability in making investment decisions. The similarity of these research results indicates that ESG information has not been fully responded to by the market as a factor capable of increasing stock returns, especially in sectors whose business characteristics are heavily influenced by market conditions and commodity price fluctuations, such as the energy and mining sectors.

The Influence of Return on Assets (ROA) on Stock Returns

Based on the panel data regression results in Table 4.7, the Return on Assets (ROA) variable has a regression coefficient of 1.893 with a p-value of 0.036. This value is less than the 5% significance level (0.05). The beta test results obtained a result of 38% (0.38) so that the strength of the ROA correlation has the greatest effect compared to other variables. Thus, the second hypothesis (H2), which states that ROA has a positive effect on stock returns, is accepted. These results indicate that ROA has a positive and significant effect on stock returns.

A positive regression coefficient indicates that the higher a company's ability to generate profits from its assets, the higher the potential stock returns investors receive. This indicates that investors still consider a company's profit-generating ability as a key indicator in assessing its investment prospects.

Based on research data, companies with high ROA tend to have relatively high stock returns over several observation periods. For example, Indo Tambangraya Megah Tbk PT recorded an ROA of 55.7% in 2021, followed by a stock return of 57.8%. Furthermore, Bukit Asam Tbk PT had an ROA of 30.9% in 2021 with a stock return of -0.6%. However, in 2022, the company maintained a high ROA of 26.3%, with a stock return increasing to 57.9%.

These results indicate that a company's profitability remains an important signal for investors. According to Signaling Theory, a high ROA reflects a company's ability to effectively manage assets to generate profits. This information is a positive signal for investors because it indicates the company's growth potential and ability to generate profits in the future.

Furthermore, the energy and mining sectors are heavily influenced by commodity price cycles. When commodity prices rise, companies are able to generate higher profits, leading to increased ROA, which is positively responded to by the market through higher share prices. Therefore, company profitability is a key indicator investors pay close attention to in this sector.

The results of this study are supported by research by Suhartono et al. (2024) conducted on manufacturing companies listed on the Indonesia Stock Exchange. The study showed that Return on Assets (ROA) significantly influences stock returns. These results indicate that a company's ability to generate profits from its assets is a factor investors consider when making investment decisions. Furthermore, research by Ratna Sari (2024) also found that ROA significantly influences stock returns in manufacturing companies. These findings indicate that the more effectively a company manages assets to generate profits, the greater the company's chances of receiving a positive market response through increased stock returns. Therefore, these research findings strengthen empirical evidence that profitability, as reflected in ROA, is a fundamental indicator capable of influencing a company's stock returns.

The Effect of Debt to Asset Ratio (DAR) on Stock Returns

Based on the panel data regression results in Table 4.7, the Debt to Asset Ratio (DAR) variable has a regression coefficient of 0.629 with a p-value of 0.431. This value is greater than the 5% significance level (0.05), so the third hypothesis (H3) stating that DAR has a positive effect on stock returns is rejected. These results indicate that DAR does not have a significant effect on stock returns.

These results indicate that a company's leverage level is not a primary factor investors consider when making investment decisions in the energy and mining sectors. Investors likely consider the use of debt in these sectors to be normal, given the mining industry's significant capital requirements for operations and business expansion.

Based on research data, most companies have relatively stable DAR values from year to year. For example, Bukit Asam Tbk PT has a DAR in the range of 2% to 4%, while Aneka Tambang Tbk PT ranges from 6% to 28%. DAR variations between companies tend to be less extreme, with the exception of Bumi Resources Tbk PT, which has a relatively high DAR, ranging from 44% to 50%.

However, a high DAR does not always translate into a decline in stock returns. For example, Bumi Resources Tbk PT managed to record a stock return of 140.3% in 2022 despite having a DAR of 44%. This suggests that investors in the energy and mining sectors are more focused on commodity price prospects and market momentum than on a company's leverage level.

Furthermore, during the study period, the energy and mining sectors experienced significant commodity price fluctuations due to global economic conditions and the aftermath of the COVID-19 pandemic. These conditions led investors to place greater emphasis on external factors than on a company's capital structure. Therefore, DAR was unable to significantly explain changes in stock returns in this study.

The results of this study align with research conducted by Precilia, Syaipudin, and Sembiring (2026) on energy sector companies listed on the Indonesia Stock Exchange for the 2021–2024 period. The study found that the solvency ratio, measured by the Debt to Equity Ratio (DER), did not significantly impact stock returns, indicating that investors in the energy sector tend to prioritize external factors such as market conditions and industry prospects over the company's funding structure. Furthermore, research by Ramadhani and Desmiza (2024) on consumer goods companies listed on the Indonesia Stock Exchange for the 2019–2023 period also showed that the Debt to Asset Ratio (DAR) was not a dominant factor in determining stock returns. These findings indicate that investment decisions are influenced not only by a company's leverage level but also by various other factors such as macroeconomic conditions, market sentiment, and industry growth prospects. Therefore, the results of this study further strengthen the empirical evidence that the DAR is unable to significantly explain changes in stock returns in energy and mining sector companies.

Conclusion

This study shows that Environmental, Social, and Governance (ESG), Return on Assets (ROA), and Debt to Asset Ratio (DAR) simultaneously have not had a significant effect on Stock Returns of energy and mining sector companies listed on the Indonesia Stock Exchange for the period 2020 to 2024. Partially, ESG has a negative and insignificant effect on Stock Returns with a coefficient of -

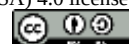


0.0120274 and a p-value of 0.095, while ROA has a positive and significant effect with a coefficient of 1.892919 and a p-value of 0.036. DAR has a positive coefficient of 0.6287721, but has no significant effect with a p-value of 0.431. The research model has an R^2 value of 0.2135, which means that ESG, ROA, and DAR are only able to explain 21.35% of the variation in Stock Returns, while 78.65% is explained by other factors outside the model.

This study is limited by its variable coverage, which only explains a small portion of stock return variation, and by the use of a sample of companies that meet the research criteria for the period 2020 to 2024. Future research is recommended to consider other variables beyond ESG, ROA, and DAR, including external factors that are discussed in the study and can influence stock return movements, such as commodity price fluctuations, macroeconomic conditions, and market sentiment. Practically, the results of this study indicate that profitability, represented by ROA, is a more relevant factor for investors than ESG and capital structure in this study. Therefore, investors can pay greater attention to the company's ability to generate profits from its assets, while company management needs to maintain fundamental performance while paying attention to ESG implementation and capital structure management as part of a comprehensive company evaluation.

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