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The Role of Environmental Social Governance (ESG) in Moderating the Influence of Financial Factors on Stock Returns in the Property and Real Estate Industry

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ABSTRACT

This study aims to analyze the effect of liquidity (CR), leverage (DER), profitability (ROA), and sales growth (SG) on stock returns, with Environmental Social and Governance (ESG) as a moderator variable. The research data is panel data from 13 companies listed on the Indonesia Stock Exchange and have reports related to ESG scores during the 2020-2023 period. Data analysis was carried out descriptively and inferentially. Inferential analysis uses a panel data regression approach, this analysis involves moderating variables into the regression model to test the interaction between independent and moderating variables whether they have a significant influence on the dependent variable.ESG as a moderator variable is used to moderate the independent variable against the dependent variable whether it strengthens or weakens. The results of the model selection test show that the common effect model (CEM) is the best model. The results of the study found that CR, ROA, and SG have a positive and significant effect on stock returns, while DER and ESG do not have a significant effect on stock returns. In addition, ESG does not act as a moderator variable in the relationship between CR, DER, ROA, and SG with stock returns.

Keywords: Stock Return, Leverage, Liquidity, Profitability, Sales growth, ESG, Property and Real Estate, Panel Data Regression

INTRODUCTION

Stock return is an important activity in the investment world because it provides a clear picture of how a stock investment performs over time. Information regarding stock returns not only provides an indication of how well or poorly an investment performs in generating profits, but also allows investors to compare their investment performance with relevant market indices or benchmarks (Fama & French, 1992). With a good understanding of stock returns, investors can make more informed investment decisions, manage risk effectively, and design a portfolio that fits their investment goals. Stock return analysis also helps in risk evaluation, timely investment decision-making, as well as in building better investment strategies.

The property and real estate industry has significant importance, this sector plays a vital role in the national economy. This industry not only contributes directly to economic growth through investment and infrastructure development, but also creates vast jobs for the community. As one of the main pillars in the economy, the development of the property and real estate sectors can affect overall economic stability (Chekina, 2022; Chen & Lee, 2020; Gong & Kong, 2022). However, the property and real estate industry also faces various challenges that can affect stock returns, such as property price fluctuations influenced by volatile market cycles, often unexpected regulatory changes, and negative environmental and

social impacts. Fluctuations in property prices can lead to high volatility in the return of a company's shares in this sector, which in turn affects investors' investment decisions (Dykusova & Golovina, 2019).

Table 1.1 Stock Returns of Companies in the Property and Real Estate Sector in 2019 to 2022

No	Emiten	2019	2020	2021	2022
1	BCIP	-281,0	17,2	22,7	-26,1
2	BSDE	0,0	0,0	-19,5	-9,0
3	CTRA	-2,9	-2,5	-1,5	-3,1
4	DMAS	86,2	-16,9	-22,4	-16,7
5	DUTI	13,8	-24,0	-10,8	22,1
6	GPRA	-31,0	-1,3	16,0	13,8
7	JRPT	-18,9	0,0	-13,3	3,8
8	KIJA	5,8	-26,7	-22,4	-12,0
9	MKPI	-28,0	72,8	-10,9	56,5
10	MTLA	29,5	-25,8	6,9	-16,1
11	NZIA	272,7	-78,1	-12,7	125,5
12	PPRO	-41,8	38,2	-38,3	-13,8
13	PWON	-8,1	-10,5	-9,0	-1,7
14	RDTX	0,9	-5,4	27,6	38,4
15	SMDM	-13,7	-13,4	90,3	-7,6
16	SMRA	24,8	-19,9	3,7	-27,5
17	URBN	19,7	-73,4	-10,1	-71,7
	Average	**16,5**	**-10,0**	**-0,2**	**3,2**

Source : Indonesia Stock Exchange, 2024 (processed)

Stock returns in the property and real estate sectors during the period 2019 to 2022 fluctuated. In 2019, the return on shares in this sector was at a fairly high value, namely 16.%. In 2020, the return of shares in the property and real estate sector decreased to negative value or experienced a capital loss. The industry's returns improved in 2021, but remained negative. Similarly, in 2022, the return is getting better and starting to have positive values, but it has not been able to return to the conditions of 2019.

There are several factors that affect stock returns. Referring to signal theory, a high level of liquidity can give a positive signal to investors regarding a company's ability to pay off its short-term obligations, which ultimately increases market confidence and impacts stock returns (Ross, 1977). Previous research has proven the influence of liquidity on stock returns with mixed results. Oktaviarni's research (2019) found that liquidity has a significant positive effect on the value of companies in the property and real estate sectors. On the other hand, Putri and Soedarsa (2025), Paramata et al, (2024), and Sululing and Sandangan (2020) found that liquidity has a significant negative effect on stock returns. On the other hand, Melina and Pinem (2018) and Nurjaya et al. (2021) found that liquidity does not have a significant influence on stock returns.

Leverage, reflects the extent to which a company funds its operational activities with debt rather than equity. Based on the trade-off theory, optimal use of debt can increase the value of a company by utilizing tax benefits from debt interest. However, if the leverage is too high, the risk of bankruptcy increases, which can negatively impact the stock's returns (Modigliani &

Miller, 1963). Previous research has shown that the influence of leverage on stock returns has yielded mixed findings. Nurhayatunisa and Kesuma (2020) and Pradiana and Yadnya (2019) found that leverage has a significant positive effect on stock returns. On the other hand, Wahyudi (2022) found that leverage has a significant negative influence on stock returns. On the other hand, Melina and Pinem (2018) and Meliza et al. (2024) found that leverage has no significant influence on stock returns.

Another factor that has also been studied for its influence on stock returns is profitability. One measure of profitability is Return on Assets (ROA) which measures a company's ability to generate profits from the total assets it owns. The higher the ROA, the better the company's performance in creating value for shareholders. So as to give a positive signal to investors, which can increase demand and stock returns. Previous research has shown mixed results regarding the effect of ROA on stock returns. Mayjesti et al. (2023) and Suhartono et al. (2024), found that ROA had a significant positive effect, while Efendi and Ngatno (2018) stated that ROA had no significant effect. Sales growth measures the level of sales growth of a company and reflects its ability to expand market share and increase revenue. High sales growth is a positive signal for investors. Maramis et al. (2021) found that sales growth had a significant positive effect, while Hari and Adiputra (2024) found no significant effect on stock returns.

Increasing global awareness of sustainability and its impact on business strategies and investment decisions is the background that ESG is a moderator variable to test the influence of liquidity, profitability, and sales growth on stock returns. Stakeholder Theory (Freeman and McVea, 2001) emphasizes that companies are responsible not only to shareholders, but also to all stakeholders, including society and the environment. In this context, ESG serves as an indicator of a company's responsibility towards sustainability, which can affect financial performance and stock returns. Suchman's (1995) Legitimacy Theory states that companies need to gain social legitimacy to operate sustainably; Good ESG practices can increase support from investors and the public, while neglect of sustainability can result in reputational risks and loss of investor trust, negatively impacting stock returns. A meta-analysis of Friede et al. (2015a), showed that 90% of the more than 2,000 studies found a positive or neutral relationship between ESG and a company's financial performance. In the property and real estate sector, ESG is becoming increasingly important given the industry's large environmental impact, as well as increasingly stringent sustainability regulations. ESG can moderate the relationship between fundamental factors such as liquidity, leverage, profitability, and sales growth to stock returns, depending on how well a company integrates sustainability into its business strategy.

This study aims to analyze the influence of liquidity, leverage, profitability, and sales growth on ESG-moderated stock returns. The study was conducted on companies in the property and real estate sector listed on the Indonesia Stock Exchange (IDX).

METHOD

The research was conducted with a Moderated Regression Analysis data panel approach. The research data was taken from 92 companies. Property and real estate companies that meet the sample criteria, including 1) Companies engaged in the property and real estate sector listed

on the Indonesia Stock Exchange (IDX) until 2024. 2) Have complete financial statements during the 2020 – 2023 research period. 3) Have historical ESG values available for the period 2020 to 2023 or have the latest ESG values available from trusted sources as the basis for estimating historical ESG values (2020–2023). The research variables are presented in the following table.

Table 2. Variables and Measurements.

No	Variable	Measurement	Measurement Data
1	*Stock Return* (Y)	*Stock returns* can be measured by the capital gain calculation process. *Capital gain* is the profit obtained from the increase in the stock price. The calculation process is carried out by subtracting the closing *price* at the end of the period by the initial share price divided by the initial share price of the period. $$\text{Capital gain} = \frac{\text{P} = P_t - P_{t-1}}{P_{t-1}} \text{x } 100\%$$	To be able to carry out the measurement process, some data according to the period and year is needed. 1. Pt = Stock price at the end of the period (*closing price*) • Pt-1 = Stock price at the beginning of the period (closing price of the previous year)
2	Liquidity (X1)	To measure the company's liquidity, the current ratio calculation can be used. Current ratio measures liquidity, measures a company's ability to pay short-term liabilities using current assets. Measurement is carried out by dividing current assets with current liabilities. $$\text{rasio lancar} = \frac{\text{Aset lancar}}{\text{kewajiban lancar}}$$	To measure liquidity, data is needed 1. Current assets 2. Seamless obligations
3	*Leverage* (X2)	To measure the level of *leverage* that the company has. The level of use of loan funds to fund the company's assets or operations, the measurement process can be carried out by the *Debt to Equity Ratio calculation method.*The following calculation process refers to the measure of the proportion of a company's debt to its shareholders' equity. The calculation is done by dividing the total debt by the total equity. $$Debt\ to\ Equity\ Ratio = \frac{\text{Total } Debt}{\text{Total } Equity}$$	To measure *leverage*, data is needed • Total *Debt* • Total *Equity*
4	Profitability (X3)	Profitability is an indicator used to measure a company's ability to generate profits from its operational activities. The calculation method used to measure profitability is *Return on Assets*. Measurement method It works by measuring how efficiently a company uses its assets to generate profits. The calculation process is carried out by dividing *Net Income* / Net Income by the total *Assets* owned. $$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} \text{x} 100\%$$	To measure the level of profitability, data is needed • Net Income • Total Assets

No	Variable	Measurement	Measurement Data
5	*Sales growth* (X4)	*Sales growth* is an important measure in business and financial analysis because it reflects a company's ability to increase its sales volume over time. Here's how to calculate *sales growth*: *Sales growth* is an indicator that measures the growth of a company's sales volume over time. Sales *growth* measurement can be measured by subtracting current sales and previous sales divided by previous sales. This will determine the sales growth ratio $$Sales\ growth = \frac{\text{Current Period Sales} - \text{Previous Period Sales}}{\text{Previous Period Sales}} \text{x} 100\%$$	To measure *sales growth*, data is needed 1. Current sales data 2. Previous period sales data
7	ESG Value (M)	ESG score measures a company's performance in the fields of Environment, Social, and Governance. The measurement process begins with the collection of data related to the company's practices, followed by an assessment using relevant key performance indicators (KPIs). KPIs in terms of the environment, evaluations are carried out on carbon emissions per unit of production, the use of renewable energy, waste management, and the implementation of environmental protection policies. On the social side, companies are judged based on occupational safety and health policies, efforts to promote diversity and inclusion in the workforce, and local community development programs implemented. Governance aspects include an assessment of the structure of an independent board of directors, the level of transparency in financial reporting, compliance with regulations and business ethics, and conflict of interest avoidance practices. After that, companies are assigned a numerical score for each ESG aspect, which is then combined to produce an overall ESG score from an interval of 0 - 100.	To measure ESG value, data is needed in accordance with KPIs. In accordance with the assessment performance indicator. In terms of the environment, if there is an evaluation of carbon emissions per minute in the KPI, then this data is needed. So in carrying out measurements, the necessary data is again adjusted in accordance with the context of the assessment of each environmental, social, and governance aspect.

This study uses annual secondary data in the form of cross-section and time series obtained through documentation techniques from various official sources to ensure its accuracy and validity. Property and real estate companies' share price data is taken from the Indonesia Stock Exchange (www.idx.co.id), while annual financial statements and related information are obtained from each company's official website. Environmental, Social, and Governance (ESG) value information is collected from CSRHUB (www.csrhub.com) as well as the Sustainability Report published on the company's website. All data used are historical and objective documents relevant to the research topic.

The data analysis method uses descriptive analysis and Moderated Regression Analysis (MRA) on panel data to test the influence of independent variables on stock returns and the role of Environmental, Social, and Governance (ESG) as a moderator variable. Descriptive analysis summarizes the characteristics of the data through statistical measures such as mean, minimum, maximum, and standard deviation. Classical assumptions (normality, multicollinearity, heteroscedasticity, and autocorrelation) tests were performed before selecting the best regression model through the Chow, Hausman, and Lagrange Multiplier tests. F-test, coefficient of determination (R^2), t-test, and interaction testing were used to assess model significance, influence of independent variables, and the role of moderator variables.

RESULTS AND DISCUSSION

Table 3. Descriptive Statistics of Research Variables (%)

Variable	Mean	Std. Dev.	Min	Max
Return Saham (RET)	-5.99	26.52	-76.60	84.56
Liquidity (CR)	269.61	153.13	101.20	637.50
Leverage (DER)	48.29	22.15	15.40	95.80
Profitability (ROA)	1.44	4.79	-19.10	8.79
Sales growth (SG)	11.73	37.33	-59.30	103.50
ESG (M)	48.24	5.01	35.80	57.3

Table 4.2 shows *the* mean return of shares worth -5.99%. This means that during the research period, the average stock price fell by -5.99%. This decline shows that investors who invested in stocks in the property and real estate sectors in the 2019-2023 period suffered losses because the average stock price fell. The minimum stock *return* value of -76.6% indicates a huge decline in the stock price. This was experienced by PT Modernland Realty Tbk (MDLN) in 2020. Meanwhile, the maximum value of 84.56% indicates a huge profit or increase in the share price, which was experienced by PT Mega Manunggal Property Tbk (MMLP) in 2021.

The average CR value is 269.61%. This figure shows that companies in the industry are, on average, in a liquid condition. The CR of 269.61% indicates that for every Rp100 of current liabilities, the company has Rp269.61 of current assets that are ready to be used to pay off these obligations. The minimum CR value is 101.20% experienced by PT Jaya Real Property Tbk (JRPT) in 2022. The minimum CR value still indicates that the company is in a liquid condition. Meanwhile, the maximum CR value is 637.50% experienced by PT Mega Manunggal Property Tbk (MMLP) in 2021.

Property and real estate companies have an average *leverage* measured by a *Debt* to *Equity* (DER) ratio of 48.29%. This figure shows that the company is in a solvent condition, because for every 100 rupiah of equity, there is 48.29 rupiah of debt. This shows that if the debt matures, the debt obligations can be repaid using equity. The minimum DER value of 15.4% was experienced by MMLP in 2021. The maximum value of 95.8% is owned by PT Agung Podomoro Land Tbk (APLN) in 2021. The maximum value of the DER remains indicates that the company is in a *solvent state*.

Profitability measured by *Return on Assets* (ROA) has an average value of 1.44%. This figure shows that, on average, companies in this industry are able to generate a net profit of IDR 1.44 for every IDR 100 of assets they own. The minimum ROA value of -19.1% was

experienced by PT Lippo Karawaci Tbk (LPKR) in 2020. A negative ROA indicates that the company has suffered losses. The maximum ROA value of 8.79% was experienced by JRPT in 2020.

The average sales growth rate of *property and real estate* companies is 11.73% per year. The minimum value of sales growth of -59.30% was experienced by PT Alam Sutera Realty Tbk (ASRI) in 2020. Negative sales growth indicates that the company is experiencing a decline in sales. The maximum value of sales growth was 103.5% by APLN in 2022.

The average ESG score of property and real estate companies is 48.24. Based on the range of ESG scores used by S&P Global (0–100), this figure indicates that companies in this industry have a mid-level level of ESG compliance. The minimum ESG score value is 35.8 experienced by PT Summarecon Agung Tbk (SMRA) in 2020, the maximum ESG score value of 57.3 experienced by MDLN in 2023. The maximum ESG value is still in the middle category.

Equation 1

The results of the test for selecting the best panel model for equation 1 are presented in Table 3.

Table 4. Results of Selection of the Best Panel Model Equation 1

Test	Test Criteria	Test Result	Conclusion
Chow	Prob Value. Chi-Square	0.4698	Best CEM
Hausman	Prob Value. Chi-Square	0.1108	Best REM
Lagrange Multiplier	Prob Value. Breusch-Pagan	1.0000	Best CEM

Based on the results of the panel model selection test in Table 4.3, the best model used for equation 1 is ***the Common Effect Model (CEM)*** or **(OLS).**

Classical Assumption Test Equation 1

A classical assumption test is performed to ensure that the regression model meets the BLUE (Best Linear Unbiased Estimator) requirements. Here are the test results for each of the classical assumptions in Equation 1:

Multicollinearity Test

Table 5. Results of the Multicollinearity Test Equation 1

	CR	DER	ROA	SG
CR	1.0000			
DER	-0.1601	1.0000		
ROA	0.0017	-0.2074	1.0000	
SG	0.1619	0.0143	0.2402	1.0000

Table 5. shows the correlation value between the free variables in equation 1 is none greater than 0.8. It can be concluded that there is no multicollinearity.

Heteroscedasticity Test

The results of the heteroscedasticity test using the Breusch-Pagan / Cook-Weisberg test showed a chi-squared value of 0.27 with a probability value **(**Prob > chi2**)** of 0.6043**.** Since the probability value is much greater than the significance level of 0.05, there is not enough

evidence to reject the null (Ho) hypothesis that the model has a constant residual variance (homoskedasticity). Thus, it can be concluded that there are no symptoms of heteroscedasticity in the regression model used, so the model is considered to meet classical assumptions related to homoscedasticity.

Autocorrelation Test

Autocorrelation testing is performed using the Breusch-Godfrey test (LM Test) to identify the presence of autocorrelation in the panel data. The test results showed that the p-value for was 0.978, which is greater than the significance level of 5%. Thus, there is no significant evidence of autocorrelation in the regression model.

Multiple Regression Analysis Data Equation Panel 1

Table 4.5 presents the results of the regression test of the data of the Equation 1 panel. It can be seen that the model built is fit because the F-Test produces a probability of 0.0156 (< 0.05).

Table 6. Results of Equation Regression Analysis 1

Variable	Equation-1		
	Coeff.	Prob	Information
Constant	-16.2252	0.145	
CR	0.0486	0.060	*
DER	-0.1550	0.348	
ROA	1.4715	0.110	
SG	0.2115	0.040	**
F-Statistic	-	0.0156	
R^2	0.3454	-	
Adjusted R^2	-	-	

Information: *** significant in α = 1%
** significant in α = 5%
* significant in α = 10%

Table 4.5 shows the R-Square value of 34.54%, indicating that the 34.54% variation in stock returns can be explained by the model. However, there are still 65.46% of other factors that affect *stock returns* and are not included in equation 1. The regression equation of equation 1 produced is as follows:

RET = -16.2252 + 0.0486CR - 0.1550DER + 1.4715ROA + 0.2115SG

From these equations, it can be explained as follows:

1. The constant is worth -16.2252 with a probability of 0.145 (> 0.10). Means the constant is insignificant**.**
2. The Liquidity Coefficient (CR) is 0.0486 with a probability of 0.060 (< 0.10). This shows that CR has a marginally positive and significant influence on stock returns at a significance level of 10%.
3. The Leverage Coefficient (DER) is -0.1550 with a probability of 0.348 (> 0.10). This shows that DERs do not have a significant influence on stock returns.
4. The Profitability Coefficient (ROA) is 1.4715 with a probability of 0.110 (>0.05). This suggests that ROA does not have a significant influence on stock returns.
5. The Sales Growth Coefficient (SG) is 0.2115 with a probability of 0.040 (< 0.05). This shows that SG has a positive and significant influence on stock returns.

Equation 2

The results of the test to select the best panel model for equation 2 are presented in the following Table 4.6:

Table 7. Results of Selection of the Best Panel Model Equation 2

Test	Test Criteria	Test Results	Conclusion
Chow	Prob Value. Chi-Square	0.4927	Best CEM
Hausman	Prob Value. Chi-Square	0.2029	Best REM
Lagrange Multiplier	Prob Value. Breusch-Pagan	1.0000	Best CEM

Based on the results of the panel model selection test in Table 4.6, the best model used for equation 2 is the ***Common Effect Model (CEM)*** or **(OLS).**

Classical Assumption Test Equation 2

A classical assumption test is performed to ensure that the regression model meets the BLUE (Best Linear Unbiased Estimator) requirements. Here are the test results for each of the classical assumptions in Equation 2:

Multicollinearity Test

Table 8. Results of the Multicollinearity Test Equation 2

	CR	DER	ROA	SG	ESG
CR	1.0000				
DER	-0.1601	1.0000			
ROA	0.0017	-0.2074	1.0000		
SG	0.1619	0.0143	0.2402	1.0000	
ESG	0.1532	-0.2382	-0.1328	0.1585	1.0000

Table 8. shows the correlation value between the variables of equation 2 is none greater than 0.8. It can be concluded that there is no multicollinearity.

Heteroscedasticity Test

The results of the heteroscedasticity test using the Breusch-Pagan / Cook-Weisberg test showed a chi-squared value of 0.30 with a probability value **(**Prob > chi2**)** of 0.5842. The probability value is much greater than the significance level of 0.05, so there is not enough evidence to reject the zero (Ho) hypothesis that the model has a constant residual variance (homoscedasticity). Thus, it can be concluded that there are no symptoms of heteroscedasticity in the regression model used, so the model is considered to meet classical assumptions related to homoscedasticity.

Autocorrelation Test

Autocorrelation testing is performed using the Breusch-Godfrey test (LM Test) to identify the presence of autocorrelation in the panel data. The test results show that the p-value for is 0.986, which is greater than the significance level of 5%. Thus, there is no significant evidence of autocorrelation in the regression model.

Multiple Regression Analysis Data Equation Panel 2

Table 4.8 presents the results of the regression test of the data of the Equation 2 panel. It can be seen that the model built is fit because the F-Test produces a probability with a value of 0.0249 (< 0.05).

Table 9. Results of Equation Regression Analysis 2

Variable	Equation-2		
	Coeff.	Prob	Information
Constant	-29.0710	0.431	
CR	0.0480	0.068	*
DER	-0.1390	0.428	
ROA	1.5353	0.106	
SG	0.2045	0.051	*
ESG	0.2535	0.713	
F-Statistic	-	0.0249	
R^2	0.3574	-	
Adjusted R^2	-	-	

Information: *** significant in α = 1%
** significant in α = 5%
* significant in α = 10%

Table 9. shows an R^2 value of 35.74% indicating that the model is able to explain the 35.74% variability of stock returns. However, there is still 64.26% variability influenced by factors other than the second equation model. In this second equation, the ESG variable acts as a moderator which aims to see whether ESG can strengthen or weaken the influence of the independent variables CR, DER, and ROA on stock returns. Compared to the first equation, there was an increase in the value of R-Squared from 34.54% to 35.74%, which indicates an increase in the model's ability to explain the variability of stock returns. This indicates that ESG as a moderator has a contribution to the regression equation 2 model produced as follows:

RET = 29.0710+ 0.0480CR - 0.1390DER + 1.5353ROA + 0.2045SG + 0.2535ESG

Dari persamaan tersebut dapat dijelaskan sebagai berikut:

1. Constant = -29.0710, with a probability of 0.431 (> 0.10). That is, the constant is not significant at a significance level of 10% (α = 0.10), so it has no statistically significant effect on stock returns.
2. Liquidity (CR) = 0.0480, with a probability of 0.068 (< 0.10). This shows that CR has a positive and significant effect on stock returns at a significance level of 10%. This means that if liquidity (CR) increases, then stock returns tend to increase.
3. Leverage (DER) = -0.1390, with a probability of 0.428 (> 0.10). This shows that DER has no significant effect on stock returns.
4. Profitability (ROA) = 1.5353, with a probability of 0.106 (> 0.10). This shows that ROA has no significant effect on stock returns.
5. Sales Growth (SG) = 0.2045, with a probability of 0.051 (< 0.10). This shows that SG has a positive and significant effect on stock returns at a significance level of 10%. This means that if sales growth increases, then stock returns tend to increase.
6. Environmental, Social, Governance (ESG) = 0.2535, with a probability of 0.713 (> 0.10). This suggests that ESG does not have a significant influence on stock returns in this model.

Equation 3

The results of the test of selecting the best panel model for equation 3 are presented in the following Table 4.9:

Table 10. Results of Selection of the Best Panel Model Equation 3

Test	Test Criteria	Test Results	Conclusion
Chow	Prob Value. Chi-Square	0.1936	Best CEM
Hausman	Prob Value. Chi-Square	0.0000	Best FEM
Lagrange Multiplier	Prob Value. Breusch-Pagan	1.0000	Best CEM

Based on the results of the panel model selection test in Table 4.9, the best model used for equation 3 is **the Common Effect Model (CEM)** or **(OLS).**

Classical Assumption Test Equation 3

A classical assumption test is performed to ensure that the regression model meets the BLUE (Best Linear Unbiased Estimator) requirements. Here are the test results for each of the classic assumptions in Equation 3:

Multicollinearity Test

Table 11. Results of the Multicollinearity Test Equation 3

	CR	DER	ROA	SG	ESG	CR_ESG	DER_ESG	ROA_ESG	SG_ESG
CR	1.0000								
DER	-0.1601	1.0000							
ROA	0.0017	-0.2074	1.0000						
SG	0.1619	0.0143	0.2402	1.0000					
ESG	0.1513	-0.2382	-0.1328	0.1585	1.0000				
CR_ESG	0.1786	-0.1411	0.1607	0.1092	-0.3052	1.0000			
DER_ESG	-0.1258	0.3909	-0.0327	-0.0775	0.0986	0.0301	1.0000		
ROA_ESG	0.1767	-0.0404	-0.0002	0.0377	0.3985	-0.2416	-0.2116	1.0000	
SG_ESG	0.1157	-0.0922	0.0364	0.3531	0.1328	0.2972	-0.0301	0.0993	1.0000

Table 11. shows the correlation value between the variables of equation 3 is none greater than 0.8. It can be concluded that there is no multicollinearity.

Heteroscedasticity Test

The results of the heteroscedasticity test using the Breusch-Pagan / Cook-Weisberg test showed a chi-squared value of 0.59 with a probability value **(**Prob > chi2**)** of 0.4428**.** Since the probability value is much greater than the significance level of 0.05, there is not enough evidence to reject the null (Ho) hypothesis that the model has a constant residual variance (homoskedasticity). Thus, it can be concluded that there are no symptoms of heteroscedasticity in the regression model used, so the model is considered to meet classical assumptions related to homoscedasticity.

Autocorrelation Test

Autocorrelation testing is performed using the Breusch-Godfrey test (LM Test) to identify the presence of autocorrelation in the panel data. The test results showed that the p-

value for was 0.812, which was greater than the significance level of 5%. Thus, there is no significant evidence of autocorrelation in the regression model.

Multiple Regression Analysis Data Equation Panel 3

Table 4.11 presents the results of the regression test of the data of the Equation 3 panel. It can be seen that the model built fits because the F-Test produces a probability with a value of 0.0001 (< 0.05).

Table 12. Results of Equation 3 Regression Analysis.

Variable	Equation-3		
	Coeff.	Prob	Information
Constant	-3.4952	0.368	
CR	0.0502	0.072	*
DER	-0.0556	0.790	
ROA	1.7754	0.092	*
SG	0.1067	0.207	
ESG	0.8216	0.302	
CR*ESG	0.0019	0.685	
DER*ESG	-0.0045	0.896	
ROA*ESG	-0.3963	0.094	*
SG*ESG	0.0657	0.003	***
F-Statistic	-	0.0001	
R^2	0.4743	-	
Adjusted R^2	-	-	

Information: *** significant in α = 1%
** significant in α = 5%
* significant in α = 10%

The model's ability to explain the problem phenomenon can be seen in the R^2 result, which is 47.43%. The amount of R^2 indicates that there are still 52.57% of other factors that affect stock returns and have not been included in equation model 3. It can be seen that the R-Squared value of Equation 3 has increased from the initial value of Equation 1 by 34.54% and Equation 2 by 35.74%. The increase in the value of R-Squared to 47.43% indicates an increase in the model's ability to explain the variability of stock returns. The regression model equation 3 produced is as follows:

RET= -3.4952 + 0.0502CR - 0.0557DER + 1.7754ROA + 0.1067SG + 0.8216ESG + 0.0019CR_ESG - 0.0045DER_ESG - 0.3963ROA_ESG + 0.0657SG_ESG

From these equations, it can be explained as follows:

1. Constant (Intercept) = -3.4952, with a probability of 0.368 (> 0.10), indicates that the constant is not statistically significant.
2. The CR coefficient = 0.0502, with a probability of 0.072 (< 0.10), indicates that the current ratio (CR) has a positive and marginally significant effect on stock returns at a significance level of 10%.
3. The DER coefficient = -0.0556, with a probability of 0.790 (> 0.10), indicates that leverage (DER) has no significant effect on stock returns, even if the direction of the effect is negative.
4. The ROA coefficient = 1.7754, with a probability of 0.092 (< 0.10), indicates that profitability (ROA) has a positive and marginally significant effect on stock returns at a significance level of 10%.

5. The SG coefficient = 0.1067, with a probability of 0.207 (> 0.10), indicates that sales growth (SG) has no significant effect on stock returns, even though the direction of the effect is positive.
6. The ESG coefficient = 0.8216, with a probability of 0.302 (> 0.10), indicates that ESG has no significant effect on stock returns, even if the direction of the influence is positive.
7. The CR and ESG Interaction Coefficient (CR_ESG) = 0.0019, with a probability of 0.685 (> 0.10), indicates that the interaction between liquidity (CR) and ESG has no significant effect on stock returns.
8. The DER and ESG Interaction Coefficient (DER_ESG) = -0.0045, with a probability of 0.896 (> 0.10), indicates that the interaction between DER and ESG has no significant effect on stock returns, even though the direction of the influence is negative.
9. The ROA and ESG Interaction Coefficient (ROA_ESG) = -0.3963, with a probability of 0.094 (< 0.10), indicates that the interaction between ROA and ESG has a negative and marginally significant effect on stock returns at a significance level of 10%.
10. The interaction coefficient of SG and ESG (SG_ESG) = 0.0657, with a probability of 0.003 (< 0.01), indicates that the interaction between SG and ESG has a positive and significant effect on stock returns at a significance level of 1%.

Discussion

In the previous section, it has been found that the best model in this study is the common effect model. The following are presented the results of the regression of panel data using a common effect model with a moderated regression analysis design. Although the results of the classical assumption test do not show a violation, the regression is still performed with a robust standard error in case of possible hidden violations such as heteroscedasticity and autocorrelation.

Table 13. Overall Results of Regression Analysis

Variable	Equation-1		Equation-2		Equation-3	
	Coeff.	Prob	Coeff.	Prob	Coeff.	Prob
Constant	-16.2252	0.145	-29.0710	0.431	-3.4952	0.368
CR	0.0486	0.060	0.0480	0.068	0.0502	0.072
DER	-0.1550	0.348	-0.1390	0.428	-0.0556	0.790
ROA	1.4715	0.110	1.5353	0.106	1.7754	0.092
SG	0.2115	0.040	0.2045	0.051	0.1067	0.207
ESG	-	-	0.2535	0.713	0.8216	0.302
CR*ESG	-	-	-	-	0.0019	0.685
DER*ESG	-	-	-	-	-0.0045	0.896
ROA*ESG	-	-	-	-	-0.3963	0.094
SG*ESG	-	-	-	-	0.0657	0.003
F-Statistic	-	0.0156	-	0.0249	-	0.0001
R^2	0.3454	-	0.3574	-	0.4743	-
Adjusted R^2	-	-	-	-	-	-

Table 13. presents the complete regression results of 3 models of MRA regression equations, namely (1) regression model on the influence of independent variables on dependent variables, (2) regression models to show the influence of independent and moderate variables

on dependent variables, (3) regression models to show the influence of the interaction of free variables with moderator variables on dependent variables.

Regression Equation 1

In the first regression equation, the regression model will test the influence of independent ***variables Current Ratio* (CR), *Debt to Equity* Ratio (DER), *Return on Assets* (ROA),** and ***Sales growth* (SG)** on ***Stock Return***. The results of the analysis show:

The Effect of Current Liquidity *Ratio* on *Stock Return*

Violet (2019) *current ratio* has a positive effect on stock returns. Company liquidity is an indicator that reflects the capacity of a business entity to fulfill its short-term obligations with the assets acquired. Companies with high liquidity tend to show good financial capabilities, which can help a business entity to deal with financial crises more effectively. This shows that companies with good liquidity tend to have higher stock *returns*, due to the company's ability to meet its short-term obligations. Companies that can maintain a good level of liquidity tend to have an attraction for investors so that the demand for stocks increases and encourages increases in stock prices and *returns*. Research by Adi dan Nuryakin (2020) This support these findings, where high liquidity is considered a strong indicator of financial health, which in turn increases the attractiveness of the company in the eyes of investors. In addition, research by also supports this finding that high liquidity has a positive contribution to stock yields Violita (2019).

(Suryana & Anggadini, 2020) (Suryana & Anggadini, 2020) (Aminah, 2021) Another study also found that the current ratio has a significant impact on stock earnings in the food and beverage sector, suggesting that the impact can vary by industry or specific conditions not only in the property and real estate industry (Aminah, 2021). Finally, these findings are further supported by another study focusing on the retail trading sector that found a significant positive relationship between current ratios and stock prices, suggesting that in some sectors, liquidity measured by current ratios can positively affect stock prices (Suryana & Anggadini, 2020).

The Effect of *Leverage Debt to Equity Ratio* on *Stock Returns*

Based on the results of the elaboration of regression model equation 1, this finding shows that the debt-to-equity ratio (DER) does not have a significant influence on the rate of return on shares, so it does not support the second hypothesis (H2) that has been proposed previously. Leverage is a measure of the extent to which a company uses debt to finance its assets. When *leverage* is high, it means that the company uses more debt than equity, which can increase the company's financial risk. This shows that the level of debt relative to the company's equity does not significantly affect the return on the stock. One of the main reasons is that investors may see *leverage* as a double-edged sword, although *leverage* can increase potential profits, it can also increase the risk of bankruptcy. However, if the company is able to manage its debts well, by ensuring that the interest expense remains under control and that cash is sufficient to pay obligations, and that the company's fundamentals such as profitability, revenue growth, or operational efficiency, remain strong, then *leverage* will not have much effect on stock *returns* so that investors remain confident in the company's prospects that *leverage* will not affectstock *returns* if managed properly.

Jensen dan Meckling (1976) Jensen dan Meckling (1976) Octaviary (2019) Melina and Pinem (2018) *Leverage* on stock *returns* may be inconsistent where in some conditions *leverage* can have a negative effect on the company or have no effect at all. The results of this study are in line with the results of the research Oktaviarni (2019) in the property and real estate industry sector listed on the IDX in 2014-2016, is also in line with research on the consumer good company sector listed on the Indonesia Stock Exchange for the period 2016-2020 Melina dan Pinem (2018) found similar results that *leverage* had no effect on *stock* returns.

(Supriadi, 2015) *Setyowati and Prasetyo (2021)* stock. It is supported again based on research conducted by pharmaceutical companies on the Indonesia Stock Exchange for the 2017-2019 period that DER does not affect (Supriadi, 2015)Setyowati dan Prasetyo (2021) *Stock Returns*. All the findings of domestic studies and foreign studies in various industrial sectors that have been put forward further strengthen the results of the research that *the leverage* proxied by the debt-to-equity ratio (DER) has no effect on *stock* returns.

The finding that Leverage (capital structure) does not have a significant effect on stock returns can be caused by several things. First, the market is inefficient. In many markets, particularly emerging markets, financial information is not yet fully reflected in stock prices. Investors may not fully understand or pay attention to a company's leverage level, so its impact on stock returns becomes unclear. Both Effects of Leverage Are Already Reflected in Risk. Leverage increases the company's risk, and this risk could have been offset by the investor through a risk premium. In other words, higher returns from high-risk companies may simply reflect compensation for additional risk, not because leverage itself provides immediate financial benefits. Third, there is the influence of other factors that are more dominant. Factors such as revenue growth, profitability, management quality, macroeconomic conditions, and market sentiment often dominate stock returns rather than capital structure (leverage). The four optimal capital structures are different. Trade-off and pecking order theory explains that there is no one ideal capital structure that applies to all companies. In some cases, high leverage can be reasonable and not negatively impacted, depending on the industry, cash flow, or company strategy. Fifth, debt risk management**.** Companies that use leverage intelligently (for example, with good debt management or fixed interest rates) may not show a significant increase in risk, so leverage does not have a noticeable effect on stock returns. Sixth, short-term vs. long-term stock returns**.** In the short term, stock prices can be heavily influenced by speculation and market sentiment, so fundamental effects such as leverage become less visible. But in the long run, leverage may only show its effect cumulatively.

The Effect of Return on Asset Profitability on *Stock Returns*

The results of the study show that profitability measured using Return on Assets (ROA) does not have a significant effect on stock returns. This means that even though the company is able to generate profits from its assets, it is not necessarily reflected directly in the increase in the stock price or the return received by investors. This insignificance suggests that other factors beyond profitability can be more dominant in influencing investor decisions and the performance of stocks in the market. One of the reasons why ROA does not have a significant impact on stock returns is because information about a company's profitability has often been reflected in previous stock prices, especially in efficient markets. Additionally, investors can

focus more on short-term factors such as market volatility, investor sentiment, macroeconomic risk, or quarterly performance, compared to fundamental indicators such as ROA. This causes the relationship between ROA and stock returns to be indirect and statistically insignificant in some market conditions or certain industry sectors.

Similar findings are also seen in research in the mining and agribusiness sectors, where ROA only shows a negative influence that is not significant on stock prices (Zaman, 2021; Fangohoi et al., 2023; Elliyana, 2018). This reinforces the assumption that profitability is not always the main indicator for investors, especially in sectors that are heavily influenced by external dynamics such as commodity prices, government policies, or global sentiment towards certain industry sectors.

The Effect of *Sales Growth* on *Stock Return*

The results of the study show that sales *growth* has a significant positive effect on stock returns. Sales growth is a measure of the percentage increase or decrease from year to year in the sales of a company's products or services. Sales growth also measures how quickly a company can increase its revenue over time. High sales growth is considered an indicator of a company's health and its growth potential in the future. Investors tend to place more value on the company's stock which is able to significantly increase sales because this growth can indicate the company's ability to generate greater revenue in the future. Companies that manage to increase their sales can often also increase their net profit, which in turn can bring benefits to shareholders through larger dividend distributions or increased stock values resulting in increased *returns* on shares received or distributed.

Trisna Hari and Adiputra (2024) Trisna Hari and Adiputra (2024) Diva and Suaryana (2024) Jegadeesh and Livnat (2006) *Sales growth* has a positive effect on stock returns. Other research conducted by Diva and Suaryana (2024) In infrastructure sector companies listed on the Indonesia Stock Exchange in 2020-2022, it is also in line that significant sales growth can positively strengthen performance feedback on managerial decision-making, which can ultimately influence investment decisions and stock returns. Plus foreign research conducted by the company Jegadeesh and Livnat (2006) Non-financial and non-utility listed on the US stock market for the period 1987 to 2003 is in line with the results of research that profit affects stock returns where the higher the profit or profit, the higher the stock return. Finally, a company's success in achieving consistent sales growth tends to indicate the prospect of continued growth, which can increase the company's attractiveness in the eyes of investors and drive an increase in the stock price.

Regression Equation 2

The second regression equation builds on the previous model by adding the Environmental, Social, and Governance (ESG) moderator variable. The test results show:

The Influence of Environment, *Social*, *Governance* on *Stock* Returns

Based on the results of the elaboration on the regression model equation 2, this result is inconsistent with the hypothesis proposed (H5), so it can be concluded that ESG does not have a significant effect on *stock* returns.

Despite these limitations, the results in this study are in line with the research conducted by Aditya (2022) dan Junius et al (2020) in companies listed in the ESGLeaders30 index in 2021-2022. The results of the second study also show that ESG does not have a significant effect on stock returns. In addition, an overseas study conducted on 271 registered companies from 4 ASEAN countries (Indonesia, Malaysia, Singapore, Thailand) in 2013-2017 also showed that ESG did not have a significant effect on the market value of *the company*'s stock return (Junius et al., 2020). This is reinforced by another study conducted on companies listed in the Eurostoxx50 index during the period 2010 to 2018, where the study found that ESG factors did not have a significant influence on the *stock returns* of companies in the Eurostoxx50 index (La Torre *et al*., 2020). All of the above research further strengthens the evidence that ESG has no effect on *stock* returns.

Regression Equation 3

The third regression equation adds the ESG interaction variables with each independent variable (**CR, DER, ROA**, and **SG).** Test results show:

The Role of ESG Moderation on the Effect of Liquidity on Stock Returns

It was found that ESG is not able to moderate the influence of liquidity on stock returns. The results of the study show that the interaction between CR and ESG does not have a significant effect. Thus ESG does not play a role as a moderator variable and is a potential type of moderator. In concept, *the current ratio* is a financial ratio used to measure a company's ability to meet its short-term obligations. This ratio reflects the company's liquidity and short-term operational aspects. In contrast, ESG (*Environmental, Social, and Governance*) is a sustainability indicator that focuses on long-term strategic dimensions. The results of this study support the conclusion of the study La Torre *et al*. (2020) in the company Eurostoxx50. The results of the study found that ESG commitments do not directly affect the performance of a company's stocks, including the relationship between specific financial indicators such as liquidity and *stock* returns (La Torre *et al*., 2020). Other meta-analyses also show that the influence of ESG on financial performance is inconsistent or neutral depending on the sector and indicators used (Whelan *et al*., 2021).

Thus, in this study, ESG is a potential moderator variable. A potential moderator variable is a variable that has the potential to be a moderating variable, but has not shown significant interaction with an independent or dependent variable. This means that these variables have no direct influence on the dependent variables nor do they interact with independent variables. In this study, ESG does not have a direct influence on the relationship between liquidity (CR) and *stock returns, but can play a role in moderating the relationship under certain conditions, depending on external factors or the specific characteristics of the company and industry sector*.

The Role of ESG Moderation on the Influence of Leverage on Stock Returns

Lee dan Giese (2019) *(Whelan et al., 2021)* , which is measured by *the Debt to Equity Ratio*, focuses on a company's debt-to-equity ratio, which is directly related to financial risk and potential profits. Meanwhile, ESG focuses more on environmental, social, and governance factors that impact investor reputation and trust in the long run. ESG has no direct influence on capital structure decisions or *leverage* that affect stock *returns* over shorter periods. The results of this study support the conclusion that although ESG plays an important role in attracting

investors who pay attention to sustainability and social factors, its impact on short-term financial performance, particularly in terms of management Lee dan Giese (2019) *leverage*, insignificant. ESG is more related to long-term goals, such as reputation enhancement and management of social and environmental risks, which do not directly affect capital structure decisions. This conclusion is also supported by a 2021 study from the NYU Stern School of Business that revealed that while ESG can improve a company's reputation and attract investors who care about social and environmental factors, the influence of ESG on capital structure decisions, such as debt-to-equity ratios, is not always significant. Thus, in this study, ESG is also a potential moderator variable (Whelan et al., 2021)*(homologiser moderator)* on the influence of capital structure on stock returns.

The Role of ESG Moderation on the Influence of Profitability on Stock Returns

This study found that ESG is able to moderate the influence of ROA on stock returns. Thus, ESG is a pure moderator variable. The interaction coefficient between ROA and ESG shows a significant negative direction, which means that the existence of ESG actually weakens the positive influence of ROA on stock returns. These findings suggest that while ESG has a role to play in the relationship, the direction of its influence is counter-productive to the profitability effect. This can be understood by looking at the difference in orientation between ROA and ESG. ROA focuses on a company's efficiency in generating profits as a key indicator for short-term investors, while ESG emphasizes sustainability and social responsibility aspects that are more relevant for long-term goals.

The findings in this study support the conclusion in a study conducted by Moolkham (2025) that in highly profitable companies, an increase in ESG ratings does not actually strengthen stock returns. This is due to the fact that investors already appreciate the company's financial performance, so ESG no longer serves as a significant differentiator in attracting investors. In fact, the increase in ESG can be seen as a signal that companies are starting to shift their focus from financial efficiency to non-financial activities, which can lead to a negative perception of the outlook for stock returns (Moolkham, 2025).

Thus, the findings in this study show that although ESG plays a significant moderator of the relationship between ROA and stock returns, the direction of moderation is negative. This means that ESG undermines the positive influence of ROA on stock returns, which can be explained by the short-term trade-off between ESG implementation and financial efficiency. In this study, ESG plays a role as a pure moderator because it does not have a significant direct influence on stock returns. However, ESG significantly moderates the relationship between ROA and stock returns in a negative direction. This shows that when a company has a high ESG score, the positive influence of profitability (ROA) on stock returns becomes weaker.

The Role of ESG Moderation on the Influence *of Sales Growth* on Stock Returns

This study found that ESG is able to moderate the influence of SG on stock returns. Thus, ESG is a type of pure moderator variable. The coefficient of interaction between sales growth and ESG shows a significant positive direction, which means that the existence of ESG reinforces the positive influence of sales growth on stock returns. These findings indicate that companies with high ESG performance tend to gain greater return appreciation when

experiencing sales growth. This can be explained by the increasing investor confidence in companies that not only grow financially, but also carry out environmentally responsible, social, and governance business practices. Thus, ESG is not only a risk mitigation tool, but also a catalyst in strengthening the fundamental relationship between sales performance and stock returns.

The findings in this study support the studies of Liu et al. (2023), and Wu et al. (2024), which stated that ESG (Environmental, Social, and Governance) performance has a role in strengthening the relationship between sales growth and stock returns. These findings show that ESG significantly amplifies the positive influence of sales growth on stock returns. This means that companies with good ESG performance tend to get higher stock returns when experiencing sales growth. The explanation for these findings is that companies with high ESG scores generally have better governance, high transparency, and environmental and social concerns. This creates greater trust from investors because the company is considered more responsible and able to maintain sustainable growth. In increasing sales conditions, companies with high ESG are considered better able to maintain market confidence and increase return expectations.

CONCLUSION

Based on the results of the study, it can be concluded that liquidity measured by the current ratio has a significant positive influence on the return of company shares in the property and real estate sectors, indicating financial stability and low risk of bankruptcy. In contrast, the level of leverage measured by the Debt to Equity Ratio did not have a significant effect on stock returns, and profitability measured by Return on Assets (ROA) also did not show a significant effect. Sales growth has a significant positive influence on stock returns, reflecting good business prospects and increasing investor confidence. On the other hand, Environment, Social, Governance (ESG) does not have a significant effect on stock returns, and cannot moderate the influence of liquidity and leverage on stock returns. However, ESG can moderate the effect of profitability (ROA) and sales growth on stock returns.

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