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The Effect of Financial Performance Using the DuPont System on Stock Returns for Companies in the Energy Sector Listed on the Indonesia Stock Exchange (IDX) for the 2022–2024 Period

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Abstract

This study examines the effect of financial performance, measured using the DuPont System—Net Profit Margin (NPM), Total Asset Turnover (TATO), Equity Multiplier (EM), and DuPont Return on Equity (DuPont ROE)—on the stock returns of energy-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period, with Signaling Theory serving as the theoretical framework. The study employs a quantitative approach involving a population of 89 energy-sector companies. Using purposive sampling, 68 companies comprising 204 firm-year observations were selected, with the final sample reduced to 195 observations after outlier treatment. Stock returns were calculated based on realized returns over an event window of five trading days before and five trading days after the publication date of the annual financial statements. Panel data regression analysis was performed using EViews 12, with the Common Effect Model (CEM) selected based on the Chow test and Lagrange Multiplier test results. The t-test results indicate that NPM, TATO, and EM have no statistically significant effect on stock returns, whereas DuPont ROE has a positive and statistically significant effect. The adjusted R^2 value of 6.03% indicates that the four variables explain only a small proportion of the variation in stock returns, while the remaining variation is attributable to other factors not included in the model, such as fluctuations in global energy commodity prices. These findings suggest that, when examined individually, the components of the DuPont System provide insufficient explanatory power regarding stock returns.

INTRODUCTION

The capital market is one of the fundamental indicators of a country's economic health, as stock price movements reflect investors' collective expectations regarding companies' future performance. Stock returns, measured by changes in stock prices relative to the previous period plus dividends received, serve as a crucial benchmark for investors in evaluating investment gains (Tandelilin, 2017). Stock return dynamics are influenced by various fundamental factors, including external factors such as global macroeconomic conditions, monetary policy, and international commodity prices, as well as internal factors such as a company's financial performance (Brigham & Houston, 2025). The substantial variation in stock returns in emerging markets such as Indonesia highlights the need for a comprehensive and reliable analytical framework to predict and explain stock return movements.

In Indonesia, the Indonesia Stock Exchange (IDX) serves as the primary platform for stock trading and has experienced significant growth in recent years. According to data from the Indonesian Central Securities Depository (Kustodian Sentral Efek Indonesia [KSEI]), the

number of investors registered through Single Investor Identification (SID) has continued to increase annually. At the end of 2022, there were approximately 10.31 million investors, increasing by 17.94% to 12.16 million by the end of 2023 and rising by another 22.29% to approximately 14.87 million by the end of 2024 (Kustodian Sentral Efek Indonesia, 2024). This rapid growth in the number of investors reflects increasing public awareness of capital market investment as a wealth management instrument. Amid this growing investor participation, a comprehensive understanding of the fundamental factors affecting stock returns has become increasingly important for both individual and institutional investors (Faisal et al., 2021).

Among the various sectors listed on the IDX, the energy sector has exhibited significant dynamics and has become particularly relevant for investigation in recent years. The IDX energy sector encompasses diverse subsectors, including oil and natural gas, coal mining, and new and renewable energy, each of which has distinct risk characteristics and return potential. Overall, the energy sector comprises a substantial number of listed companies, making it an important component of Indonesia's capital market. The surge in global energy commodity prices following the economic recovery from the COVID-19 pandemic in 2022, reinforced by geopolitical tensions in Eastern Europe, significantly increased the net profits of several energy companies, which was subsequently reflected in higher stock prices and returns (Kementerian ESDM RI, 2023). However, during the 2023–2024 period, corrections in commodity prices, domestic energy policies such as the Domestic Market Obligation (DMO), and the transition toward renewable energy contributed to greater variation in the stock performance of energy-sector companies. These conditions make the energy sector a highly relevant and contextually appropriate setting for examining the relationship between financial performance and stock returns.

Given the substantial volatility in energy-sector stock returns, professional investors and financial analysts continually seek reliable fundamental indicators to assess and predict stock performance in order to minimize risk and maximize returns. Corporate financial performance is one of the internal factors considered to influence stock returns because it reflects management's ability to manage corporate resources effectively and efficiently to generate profits and enhance shareholder wealth (Nurjanah et al., 2023). Financial performance information disclosed by companies through their financial statements serves as a signal that investors interpret when making investment decisions (Brigham & Houston, 2025). Stronger financial performance signals may increase investor demand for a company's shares, which can ultimately contribute to higher stock returns. Therefore, analyzing financial performance is important for explaining stock return movements among energy-sector companies.

The DuPont System is a financial performance analysis framework that decomposes return on equity (ROE) into three primary components: net profit margin (NPM), total asset turnover (TATO), and equity multiplier (EM). Through these components, the DuPont System provides a comprehensive assessment of a company's ability to generate profits, utilize its assets efficiently, and manage its financial leverage. For energy-sector companies, which are generally capital-intensive and highly exposed to fluctuations in global commodity prices, analysis using the DuPont System may provide greater analytical insight than examining individual financial ratios separately. Nevertheless, previous studies examining the effects of individual DuPont System components on stock returns have produced mixed findings,

indicating that the relationship between financial performance and stock returns requires further empirical investigation.

Previous studies have demonstrated inconsistent findings regarding the effects of NPM, TATO, EM, and DuPont ROE on stock returns. Some studies have found that certain components of the DuPont System have positive and statistically significant effects on stock returns, whereas others have reported statistically insignificant relationships. These differences may be attributable to variations in industry characteristics, research periods, and market conditions. Furthermore, much of the previous research has focused on specific subsectors, such as coal mining, and therefore may not adequately represent the energy sector as a whole. These inconsistencies constitute a research gap that warrants further investigation using a broader research scope and a more representative study period.

This study examines energy-sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period, covering various subsectors, including oil and gas, coal mining, energy-related mining services, and other energy industries. This period was selected because it represents the post-pandemic era, which was characterized by substantial fluctuations in energy commodity prices resulting from global geopolitical developments and the ongoing energy transition. These varying economic conditions are expected to provide a more representative basis for examining the relationship between financial performance measured using the DuPont System and stock returns. By employing a broader sample and a larger panel dataset, this study is expected to generate more robust findings with greater generalizability.

Based on the aforementioned considerations, this study aims to examine the effects of net profit margin, total asset turnover, equity multiplier, and DuPont return on equity on the stock returns of energy-sector companies listed on the Indonesia Stock Exchange. This study is expected to make a theoretical contribution by enriching the literature on the application of the DuPont System and signaling theory in explaining stock returns. It also offers practical implications for companies, investors, and academics by providing a basis for investment and financial decision-making, as well as for the development of future research on corporate financial performance and capital markets.

METHOD

Unit of Analysis, Population, and Sample

This study employed an explanatory quantitative research design. The units of analysis were energy-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. The study population comprised 89 energy-sector companies listed on the IDX during the study period.

The sample was selected using purposive sampling based on the following criteria: companies that were continuously listed on the IDX throughout the 2022–2024 period, published complete audited annual financial statements, and had historical stock price data available for the study period. Based on these criteria, 14 companies were excluded because they were not continuously listed during the study period, while seven companies were excluded because of incomplete financial or stock price data. Consequently, the final sample consisted of 68 companies.

Over the three-year study period, 204 firm-year observations were obtained (68 companies × 3 years). Stock returns were calculated using stock price data within an event

window spanning five trading days before and five trading days after the publication date of each company's annual financial statements. The resulting data were used to examine the effects of the DuPont System components on the stock returns of energy-sector companies.

Data Collection Techniques

This study used secondary data obtained from sources that had previously collected and processed the information. Sugiyono (2019) defines secondary data as data obtained indirectly by researchers through other parties or documents. The data used in this study were obtained from the companies' financial reports, which were accessed through the official website of the Indonesia Stock Exchange (IDX) and the official websites of the respective companies.

The financial reports were used to obtain information on corporate financial performance, including Net Profit Margin (NPM), Total Asset Turnover (TATO), Equity Multiplier (EM), and DuPont Return on Equity (DuPont ROE). In addition, daily closing stock prices were used to calculate stock returns during the study period. Stock price data were obtained from the Indonesia Stock Exchange and Yahoo Finance. Yahoo Finance was used because it provides publicly accessible historical daily stock price data, including stock prices on specific dates surrounding the publication of financial statements required for the event-window analysis (Rahmah et al., 2024). Stock price data were collected over an event window covering five trading days before and five trading days after the publication date of each company's annual financial statements and were subsequently used to calculate stock returns.

Data Analysis Techniques

Data analysis was performed using EViews 12 and panel data regression because the dataset combined cross-sectional and time-series observations. The analysis began with descriptive statistics to summarize the characteristics of the data, followed by panel regression model selection using the Chow test, Hausman test, and Lagrange Multiplier (LM) test to determine the most appropriate model. Classical assumption tests, including normality, multicollinearity, heteroskedasticity, and autocorrelation tests, were subsequently conducted to assess the statistical assumptions of the model. Panel data regression analysis was then performed to examine the effects of Net Profit Margin (NPM), Total Asset Turnover (TATO), Equity Multiplier (EM), and DuPont Return on Equity (DuPont ROE) on stock returns. Hypothesis testing was conducted using the adjusted coefficient of determination (adjusted R^2), the F-test for overall model significance, and the t-test to assess the statistical significance of the individual effects of each independent variable on stock returns.

RESULTS AND DISCUSSION

Panel Data Regression Model Selection

Model selection tests were conducted to determine the most appropriate panel data regression model for this study. Three tests were used for panel data model selection: the Chow test, Hausman test, and Lagrange Multiplier (LM) test. The Chow test was used to select between the Common Effect Model (CEM) and the Fixed Effects Model (FEM). If the Chow test indicated that the CEM was more appropriate, the Lagrange Multiplier test was subsequently conducted to select between the CEM and the Random Effects Model (REM). Conversely, if the Chow test indicated that the FEM was more appropriate than the CEM, the Hausman test was conducted to determine whether the FEM or REM was the more appropriate model.

a. Uji *Chow*

The Chow test was used to determine the most appropriate model between the Common Effect Model (CEM) and the Fixed Effects Model (FEM). The decision criterion for the Chow test was based on the probability value of the F-statistic or Chi-square. If the probability value was less than the significance level ($\alpha = 0.05$), H_0 was rejected, indicating that the FEM was the more appropriate model. Conversely, if the probability value was greater than the significance level ($\alpha = 0.05$), H_0 could not be rejected, indicating that the CEM was the more appropriate model (Winarno, 2017). The Chow test was conducted after estimating both the Common Effect Model and the Fixed Effects Model using the Redundant Fixed Effects–Likelihood Ratio Test.

The hypotheses for the Chow test were formulated as follows:

H_0: The Common Effect Model (CEM) was appropriate if the probability value was > 0.05.

H_1: The Fixed Effects Model (FEM) was appropriate if the probability value was < 0.05.

The results of the Chow test conducted using EViews 12 are presented in Table 4.4.

Tabel 4.1 Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	0.782006	(64,126)	0.8621
Cross-section Chi-square	65.223034	64	0.4340

Source: *Output Software* EViews 12 (2026)

The Chow test results presented in the table above show that the probability values of the cross-section F-statistic and cross-section Chi-square were 0.8621 and 0.4340, respectively, both of which were greater than the significance level of 0.05. Therefore, H_0 could not be rejected, indicating that the Common Effect Model (CEM) was more appropriate than the Fixed Effects Model (FEM). As stated by Nachrowi and Usman (2020), the next relevant procedure was the Lagrange Multiplier (LM) test to determine whether the Common Effect Model (CEM) or Random Effects Model (REM) was more appropriate.

b. Uji *Lagrange Multiplier*

The Lagrange Multiplier (LM) test was used to determine the most appropriate model between the Common Effect Model (CEM) and the Random Effects Model (REM). The decision was based on the probability value (p-value) of the Breusch–Pagan LM test. If the p-value was greater than 0.05, the Common Effect Model (CEM) was selected. Conversely, if the p-value was less than 0.05, the Random Effects Model (REM) was selected (Winarno, 2017).

The hypotheses for the Lagrange Multiplier (LM) test were formulated as follows:

H_0: The Common Effect Model (CEM) was appropriate if the Breusch–Pagan LM p-value was > 0.05.

H_1: The Random Effects Model (REM) was appropriate if the Breusch–Pagan LM p-value was < 0.05.

The results of the Lagrange Multiplier (LM) test conducted using EViews 12 are presented in Table 4.6.

Tabel 4.2 *Lagrange Multiplier* Test Result

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	**Time**	**Both**
Breusch-Pagan	1.172145 (0.2790)	0.534084 (0.4649)	1.706228 (0.1915)
Honda	-1.082656 (0.8605)	-0.730810 (0.7676)	-1.282315 (0.9001)
King-Wu	-1.082656 (0.8605)	-0.730810 (0.7676)	-0.908118 (0.8181)
Standardized Honda	-0.938488 (0.8260)	-0.404248 (0.6570)	-7.608894 (1.0000)
Standardized King-Wu	-0.938488 (0.8260)	-0.404248 (0.6570)	-3.550102 (0.9998)
Gourieroux, et al.	--	--	0.000000 (1.0000)

Source: *Output Software* EViews 12 (2026)

The Lagrange Multiplier (LM) test results presented in the table above show that the Breusch–Pagan probability value was 0.2790, which was greater than the significance level of 0.05. Therefore, H_0 could not be rejected, indicating that the Common Effect Model (CEM) was the appropriate model.

Classical Assumption Test

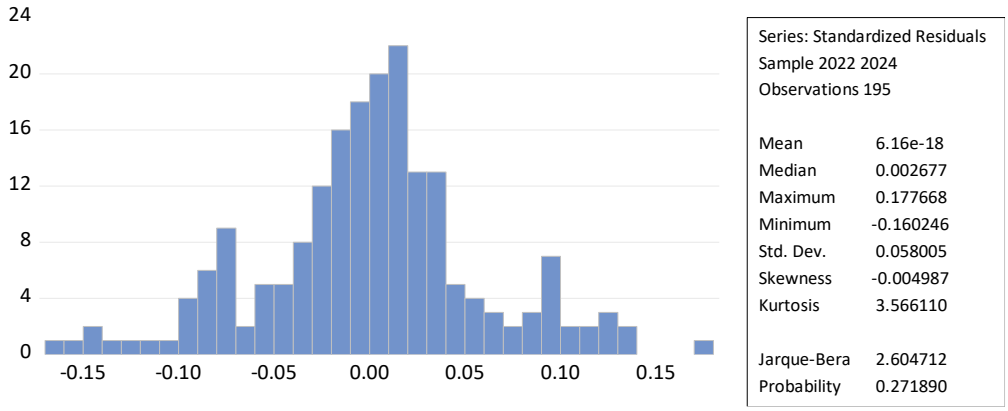
Classical assumption tests were conducted to ensure that the panel data regression model met the required statistical assumptions, thereby producing parameter estimates that satisfy the Best Linear Unbiased Estimator (BLUE) criteria. These tests consisted of the Normality Test, Multicollinearity Test, Autocorrelation Test, and Heteroscedasticity Test.

a. Normality Test

The Normality Test was conducted to assess whether the residual values in the regression model followed a distribution pattern that approximated a normal distribution. To determine whether the residuals were normally distributed, the Jarque–Bera statistic or its associated probability value was examined (Nachrowi & Usman, 2020). The decision-making criterion

was as follows: if the probability value of the Jarque–Bera statistic was ≥ 0.05, the residuals were considered normally distributed. Conversely, if the probability value of the Jarque–Bera statistic was < 0.05, the residuals were considered not normally distributed.

The results of the Normality Test after outlier treatment were as follows:



Gambar 4.1 Results of the Data Normality Test
Sources: *Output Software* EViews 12 (2026)

After outlier treatment was performed by removing nine extreme observations (n = 195), the Jarque–Bera probability value increased significantly to 0.271890, which was above the 0.05 significance level. Therefore, it can be concluded that the residuals after outlier treatment were normally distributed. This improvement was also reflected in the skewness value, which was close to zero (-0.004987), and the kurtosis value of 3.566110, which was relatively close to 3, the benchmark for a normal distribution. With the normality assumption satisfied, the residuals of the regression model in this study were considered appropriate for proceeding to the subsequent classical assumption tests.

a. Multikolinearitas Test

The Multicollinearity Test was conducted to assess whether the model exhibited multicollinearity, a condition in which a very strong linear relationship exists among some or all of the independent variables. This condition makes it difficult to identify the individual effect of each independent variable on the dependent variable. In this study, the Multicollinearity Test was performed using a correlation matrix among the independent variables. If the correlation coefficient between independent variables exceeds 0.80, this indicates a serious multicollinearity problem in the model (Nachrowi & Usman, 2020).

The results of the Multicollinearity Test are presented in Table 4.7 below:

Tabel 4.3 Multikolinearitas Result Test

	X1	X2	X3	X4
X1	1	-0.098	-0.051	0.035
X2	-0.098	1	0.017	0.060
X3	-0.051	0.017	1	-0.371
X4	0.035	0.060	-0.371	1

Source: *Output Software* EViews 12 (2026)

The test results above indicate that all correlation coefficients among the independent variables were well below the threshold of 0.80. Therefore, the regression model in this study can be considered free from significant multicollinearity problems and suitable for further analysis.

b. Heteroskedastisitas Test

Homoscedasticity refers to a condition in which the variance of the residuals remains constant across all values of the independent variables. If this condition is not satisfied, it is referred to as heteroscedasticity. In this study, the heteroscedasticity test was conducted using the Glejser Test, which involves regressing the absolute values of the residuals on the independent variables. The decision criterion was as follows: if the probability value of each independent variable in the auxiliary regression was ≥ α = 0.05, H0 could not be rejected, indicating that there was no heteroscedasticity problem (Winarno, 2017).

The results of the Heteroscedasticity Test using the Glejser Test are presented in Table 4.8 below:

Tabel 4.4 Heteroskedastisitas Result Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.042578	0.005561	7.656268	0.0000
X1	-0.000287	0.000257	-1.118066	0.2650
X2	-0.001514	0.004763	-0.317894	0.7509
X3	0.000664	0.001337	0.496589	0.6201
X4	0.002268	0.004074	0.556772	0.5783

Source: *Output Software* EViews 12 (2026)

Based on the table above, the probability values for all independent variables (X1, X2, X3, and X4) were greater than 0.05, at 0.2650, 0.7509, 0.6201, and 0.5783, respectively. These results indicate that there was no statistically significant relationship between the absolute residual values and the independent variables in the model. Therefore, it can be concluded that the regression model in this study was free from heteroscedasticity problems.

c. Autokorelasi Test

Autocorrelation occurs when the residual value of one observation is correlated with that of another observation. Autocorrelation can result in biased variance estimates, leading to R-squared and F-statistic values that tend to be excessively high. In this study, autocorrelation was detected using the Durbin–Watson (DW) Test. The Durbin–Watson statistic ranges from 0 to 4. There is no positive autocorrelation when the DW value is greater than dU, and no negative autocorrelation when the DW value is less than 4 − dU. Autocorrelation is indicated when the DW value is below dL or above 4 − dL (Ghozali & Ratmono, 2017).

The results of the Autocorrelation Test can be observed from the regression results presented in Table 4.9 below:

Tabel 4.5 Autokorelasi Result Test (*Durbin-Watson*)

Durbin-Watson stat
2.073773

Source: *Output Software* EViews 12 (2026)

Based on the table above, the resulting Durbin–Watson (DW) statistic was 2.073773. With 195 observations (n = 195) and four independent variables (k = 4) at a 5% significance level, the lower bound (dL) was 1.73445 and the upper bound (dU) was 1.79688, resulting in a 4 − dU value of 2.20312. Since the DW statistic of 2.073773 fell between dU (1.79688) and 4 − dU (2.20312), it can be concluded that there was no evidence of either positive or negative autocorrelation in the regression model used in this study.

Since all classical assumption tests—normality, absence of multicollinearity, homoscedasticity, and absence of autocorrelation—were satisfied, the panel data regression model in this study met the BLUE (Best Linear Unbiased Estimator) criteria and was therefore considered appropriate for subsequent regression analysis and hypothesis testing.

Panel Data Regresion Analysis

Panel data regression analysis was conducted to examine the effects of the independent variables, namely Net Profit Margin (X1), Total Asset Turnover (X2), Equity Multiplier (X3), and DuPont Return on Equity (X4), on the dependent variable, namely Stock Return (Y). Based on the model selection tests conducted in the previous subsection, the model employed in this study was the Common Effect Model (CEM). The results of the Panel Data Regression Analysis are presented as follows:

Tabel 4.6 Panel Data Regresion Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.004931	0.008286	-0.595162	0.5524
X1	-0.000200	0.000383	-0.521951	0.6023
X2	-0.009412	0.007097	-1.326309	0.1863
X3	0.001169	0.001993	0.586893	0.5580
X4	0.023069	0.006070	3.800267	0.0002

Root MSE	0.057856	R-squared	0.079633
Mean dependent var	-0.008410	Adjusted R-squared	0.060257
S.D. dependent var	0.060462	S.E. of regression	0.058613
Akaike info criterion	-2.810431	Sum squared resid	0.652731
Schwarz criterion	-2.726508	Log likelihood	279.0170
Hannan-Quinn criter.	-2.776451	F-statistic	4.109844
Durbin-Watson stat	2.073773	Prob(F-statistic)	0.003229

Source: *Output Software* EViews 12 (2026)

The panel data regression equation presented in the table above can be formulated as follows:

Description:

$$Y_{it} = -0{,}00493 - 0{,}000200^{*}X1_{it} - 0{,}00941^{*}X2_{it} + 0{,}00117^{*}X3_{it} + 0{,}02307^{*}X4_{it} + \varepsilon$$

1. The constant value of -0.00493 indicates that if all independent variables, namely Net Profit Margin (X1), Total Asset Turnover (X2), Equity Multiplier (X3), and DuPont Return on Equity (X4), remain constant or are equal to zero, Stock Return (Y) is estimated to be -0.00493 units, representing a decrease of 0.493%.
2. The regression coefficient for Net Profit Margin (X1) was -0.000200, indicating a negative relationship. This means that a one-unit increase in Net Profit Margin is associated with a decrease in Stock Return of 0.000200 units, assuming that all other independent variables remain constant (ceteris paribus).
3. The regression coefficient for Total Asset Turnover (X2) was -0.00941, indicating a negative relationship. This means that a one-unit increase in Total Asset Turnover is associated with a decrease in Stock Return of 0.00941 units, assuming that all other independent variables remain constant (ceteris paribus).
4. The regression coefficient for Equity Multiplier (X3) was 0.00117, indicating a positive relationship. This means that a one-unit increase in Equity Multiplier is associated with an increase in Stock Return of 0.00117 units, assuming that all other independent variables remain constant (ceteris paribus).
5. The regression coefficient for DuPont Return on Equity (X4) was 0.02307, indicating a positive relationship. This means that a one-unit increase in DuPont Return on Equity is associated with an increase in Stock Return of 0.02307 units, assuming that all other independent variables remain constant (ceteris paribus).

Uji Hipotesis

Uji hipotesis dilakukan untuk menarik kesimpulan berdasarkan hasil estimasi model regresi data panel, guna mengetahui apakah hipotesis yang telah dirumuskan pada Bab II dapat didukung oleh bukti empiris dari data yang dianalisis. Dalam penelitian ini, uji hipotesis dilakukan melalui tiga tahapan, yaitu Uji Koefisien Determinasi (R^2), Uji Kelayakan Model, dan Uji Signifikansi Parameter Individual (Uji t).

a. Koefisien Determinasi Test (R^2)

The coefficient of determination (R^2) test was used to measure the extent to which the independent variables in the model were able to explain variations in the dependent variable. A low coefficient of determination (R^2) indicates that the independent variables have limited ability to explain variations in the dependent variable. Conversely, an R^2 value approaching 1 indicates that the independent variables are able to explain most of the variation in the dependent variable, suggesting that the model has greater explanatory power (Ghozali & Ratmono, 2017).

Tabel 4.7 Koefisien Determinasi Test Result (R^2)

R-squared	0.079633
Adjusted R-squared	0.060257

Source: *Output Software* EViews 12 (2026)

Based on the table above, the Adjusted R-squared value was 0.060257, or equivalent to 6.03%, indicating that the independent variables, namely Net Profit Margin, Total Asset

Turnover, Equity Multiplier, and DuPont Return on Equity, were able to explain only 6.03% of the variation in Stock Returns. Meanwhile, the remaining 93.97% was explained by other factors outside the research model, such as macroeconomic conditions, fluctuations in global energy commodity prices, market sentiment, and other non-fundamental factors that were not included in the model.

The relatively low Adjusted R-squared value is not uncommon in studies that use stock returns as the dependent variable, given that stock price movements in capital markets are influenced by numerous factors beyond a company's fundamental performance. These factors include investor expectations, market liquidity conditions, and external dynamics that are difficult to fully capture using a linear regression model. **Kelayakan Model Test**

The Model Feasibility Test was used to determine the goodness of fit and suitability of the model for the observed data or cases. This test assesses the statistical accuracy of the regression function in estimating actual values, thereby determining whether the regression model is appropriate for use in the study (Ghozali & Ratmono, 2017). The decision-making criterion is as follows: if the probability value of the F-statistic is < 0.05, the regression model is considered feasible (fit) for explaining the effects of the independent variables on the dependent variable.

Tabel 4.8 Model FeasibilityTest Results

F-statistic	4,109844
Prob(F-statistic)	0,003229

Source: *Output Software* EViews 12 (2026)

Based on the table above, the F-statistic value was 4.109844, with a significance level of 0.003229 < 0.05. These results indicate that the regression model used in this study was statistically feasible (fit) for explaining the simultaneous effects of Net Profit Margin (X1), Total Asset Turnover (X2), Equity Multiplier (X3), and DuPont Return on Equity (X4) on Stock Returns (Y) of energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period.

b. Individual Parameter Significance Test (t-Test)

The t-test was used to determine the extent to which each independent variable individually or partially explains variations in the dependent variable. The decision-making criterion was as follows: if the probability value of the t-statistic was < 0.05, the corresponding independent variable was considered to have a statistically significant effect on the dependent variable (Ghozali & Ratmono, 2017).

Tabel 4.9 Uji t Test

Variable	t-Statistic	Prob.
C	-0.595162	0.5524
X1	-0.521951	0.6023
X2	-1.326309	0.1863
X3	0.586893	0.5580
X4	3.800267	0.0002

Source: *Output Software* EViews 12 (2026)

The partial effects of each independent variable on the dependent variable are as follows:

1. The first hypothesis in this study states that Net Profit Margin has a positive effect on Stock Returns. Based on the results, the significance value of X1 was 0.6023, which was greater than 0.05, with a negative coefficient (-0.000200). These results indicate that the first hypothesis was rejected (H1 rejected), because both the statistical significance and the direction of the relationship were inconsistent with the formulated hypothesis..
2. The second hypothesis in this study states that Total Asset Turnover has a positive effect on Stock Returns. Based on the results, the significance value of X2 was 0.1863, which was greater than 0.05, with a negative coefficient (-0.00941). These results indicate that the second hypothesis was rejected (H2 rejected), because both the statistical significance and the direction of the relationship were inconsistent with the formulated hypothesis.
3. The third hypothesis in this study states that Equity Multiplier has a positive effect on Stock Returns. Based on the results, the significance value of X3 was 0.5580, which was greater than 0.05, although the coefficient was positive (0.00117), consistent with the hypothesized direction. These results indicate that the third hypothesis was rejected (H3 rejected), because although the direction of the relationship was consistent with the hypothesis, the statistical significance criterion was not satisfied ($p > 0.05$).
4. The fourth hypothesis in this study states that DuPont Return on Equity has a positive effect on Stock Returns. Based on the results, the significance value of X4 was 0.0002, which was less than 0.05, with a positive coefficient (0.02307). These results indicate that the fourth hypothesis was accepted (H4 accepted), because both the statistical significance and the direction of the relationship were consistent with the formulated hypothesis.

Based on the analyses and tests conducted in this study, the following section discusses the effects of Net Profit Margin, Total Asset Turnover, Equity Multiplier, and DuPont Return on Equity on Stock Returns of energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period.

The Effect of Net Profit Margin on Stock Returns

Based on the results of the partial test (t-test), Net Profit Margin (X1) had a probability value of 0.6023, which was greater than the 0.05 significance level, with a negative coefficient of -0.000200. Therefore, H1 was rejected, indicating that Net Profit Margin had no statistically significant effect on Stock Returns of energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period.

This finding indicates that changes in NPM did not have a meaningful effect on the stock returns of energy sector companies during the observation period. This result can be further explained by grouping the data based on the sample's average NPM of 0.84. The group of companies with NPM values above the average was very small and was dominated by the extreme values of PT Sumber Energi Andalan Tbk (ITMA), resulting from profit contributions from associated entities. This group recorded an average return of 1.75%. Meanwhile, the majority of companies with NPM values below the average, most of which had NPM values within a reasonable range below 1, recorded an average negative return of -0.45%. This finding indicates that the high average NPM in the sample did not actually represent the condition of the majority of companies but was instead driven by a small number of extreme and

unrepresentative values. Consequently, NPM had limited explanatory power in distinguishing stock returns across energy sector companies.

A similar pattern was also observed at the individual company level. PT Adaro Energy Indonesia Tbk (ADRO), a company with a relatively high NPM, recorded an NPM of 0.87 in 2023 and a positive stock return of 10%. However, in 2024, despite maintaining a relatively high NPM of 0.75, the company recorded a negative stock return of -7%. Conversely, companies with very low or even negative NPM values, such as PT Artha Mahiya Investama Tbk (AIMS), which recorded an NPM of -5.64 in 2024, did not demonstrate a consistently worse stock return pattern than companies with higher NPM values. This inconsistency in the direction of the relationship at the individual company level reinforces the statistical finding that NPM had no significant effect on stock returns. Stock return movements therefore appeared to be more strongly influenced by factors other than corporate profit margins, such as global energy commodity price sentiment, which may move independently of an individual company's profitability ratios.

From the perspective of Signaling Theory (Brigham & Houston, 2025), NPM should theoretically serve as a positive signal that enhances investor confidence. However, in the highly volatile energy sector, signals derived from NPM appear to be less informative to investors than commodity price signals, which are more real-time and directly observable. This condition suggests that investors in the Indonesian capital market, particularly in the energy sector, may not rely primarily on information from annual financial statements when determining stock returns, especially when more dominant external factors, such as fluctuations in global energy prices, are present.

The findings of this study are consistent with Rahmawati and Martaseli (2021), who found that NPM had no significant effect on stock returns among coal companies listed on the Indonesia Stock Exchange during the 2014–2019 period. Similar findings were reported by Abadiyah (2023), who found that NPM had no significant effect on stock returns among insurance companies listed on the Indonesia Stock Exchange. Furthermore, Akpotor et al. (2024), in their study of banking companies in Nigeria using the Generalized Method of Moments (GMM), also found that NPM had no significant effect on stock returns. These findings indicate that the insignificant effect of NPM on stock returns is not limited to the Indonesian capital market but may also be relevant to capital markets in other developing countries.

The Effect of Total Asset Turnover on Stock Returns

Based on the results of the partial test (t-test), Total Asset Turnover (X2) had a probability value of 0.1863, which was greater than the 0.05 significance level, with a negative coefficient of -0.00941. Therefore, H2 was rejected, indicating that Total Asset Turnover had no statistically significant effect on Stock Returns of energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period.

This finding indicates that the level of efficiency with which companies utilize their assets to generate sales did not have a significant effect on stock return movements during the study period. Grouping the data based on the sample's average TATO of 0.80 showed that companies with TATO values above the average (79 observations) recorded an average stock return of -0.24%, while companies with TATO values below the average (125 observations) recorded an average stock return of -0.52%. The difference in average stock returns between

the two groups was relatively small, and both groups recorded negative returns, confirming that the efficiency of asset utilization was insufficient to meaningfully differentiate stock return performance.

At the company level, PT Sumber Global Energy Tbk (SGER), which recorded the highest TATO values in the sample (3.18 in 2024 and 3.10 in 2022), experienced negative stock returns in both years (-3% and -9%, respectively). Conversely, a company with a very low TATO, such as PT Sumber Energi Andalan Tbk (ITMA), whose TATO was close to zero due to its associate-income-based business model, recorded relatively stable returns and even a positive stock return in 2023 (1%). This pattern, which runs contrary to theoretical expectations, indicates that a high TATO in the energy sector does not necessarily reflect pure operational efficiency that is valued by the market. Instead, it may be influenced by external factors, such as increases in commodity selling prices that automatically raise the asset turnover ratio without any substantial improvement in managerial efficiency.

From the perspective of Signaling Theory (Brigham & Houston, 2025), TATO should reflect managerial efficiency and thereby enhance investor confidence. However, in the energy sector, which is highly influenced by external commodity price movements, the informational value of TATO as a signal to investors becomes limited. Consequently, changes in TATO may not be directly reflected in stock return movements during periods surrounding the publication of financial statements.

The findings of this study are consistent with Gusman and Sari (2024), who found that TATO had no significant effect on stock returns among coal companies listed on the IDX. Similar findings were reported by Dini et al. (2021), who found that TATO had no significant effect on stock returns among restaurant, hotel, and tourism companies listed on the IDX. Furthermore, Wilda et al. (2023), in their study of banking companies listed on the IDX during the 2015–2021 period, also found that TATO had no significant effect on stock returns. These findings reinforce the evidence that the insignificant relationship between TATO and stock returns is a recurring pattern across different industry sectors.

The Effect of Equity Multiplier on Stock Returns

Based on the results of the partial test (t-test), Equity Multiplier (X3) had a probability value of 0.5580, which was greater than the 0.05 significance level, although the coefficient was positive at 0.00117. Therefore, H3 was rejected, indicating that Equity Multiplier had no statistically significant effect on Stock Returns of energy sector companies listed on the IDX during the 2022–2024 period.

This finding indicates that although the EM coefficient was positive and consistent with the direction proposed in the hypothesis, the effect was not sufficiently strong to be considered statistically significant. Grouping the data based on the sample's average EM of 2.20 showed that companies with EM values above the average (57 observations) recorded a higher average stock return of 0.54%, compared with companies with EM values below the average (147 observations), which recorded an average stock return of -0.78%. This pattern is consistent with the positive coefficient generated by the model; however, the difference was not sufficiently pronounced to be statistically significant, particularly given the extremely wide and heterogeneous range of EM values in the sample.

For illustration, PT Indah Prakasa Sentosa Tbk (INPS) recorded the highest EM value (16.05) in 2022 but experienced a negative stock return of -12%. In 2024, when the same

company's EM changed dramatically to -8.00 due to an equity deficit, its stock return remained negative, although the decline was less severe at -2%. A pattern contrary to theoretical expectations was also observed in PT Dwi Guna Laksana Tbk (DWGL), which recorded a very high EM of 11.79 in 2023 but generated only a modest positive stock return of 2%. Meanwhile, PT Mitra Tirta Buana Tbk (MTFN), with a negative EM of -1.45 in 2022, recorded a neutral stock return of 0%. These inconsistent relationships across companies confirm that capital structure, although showing an average group-level direction consistent with the hypothesis, was not sufficiently strong to determine stock returns on a case-by-case basis. Its effect on investor perceptions depends heavily on company-specific circumstances, including the underlying reasons for a high level of leverage.

From the perspective of Signaling Theory (Brigham & Houston, 2025), well-managed debt should theoretically serve as a positive signal reflecting management's confidence in the company's future prospects. An optimal level of financial leverage is theoretically expected to increase Return on Equity and potentially contribute to higher stock prices. However, the 2022–2024 period was characterized by aggressive interest rate increases by central banks worldwide, including the effects of Federal Reserve monetary policy on Indonesian financial markets. Under such conditions, high debt levels may have been interpreted by investors as an indication of increased financial risk rather than a signal of management optimism. Consequently, EM may have lost its signaling power to investors and was therefore unable to exert a statistically significant effect on stock returns.

The findings of this study are consistent with Gusman and Sari (2024), who found that EM had no significant effect on stock returns among coal companies listed on the IDX. Similar results were reported by Erika et al. (2025), who found that EM had no significant effect on stock returns among manufacturing companies listed on the IDX. Furthermore, Rahmawati and Martaseli (2021) found that EM had no significant effect on stock returns. Their study, however, covered the 2014–2019 period, which preceded the global interest rate hiking cycle of 2022–2023. This fundamentally different macroeconomic environment may help explain differences in the role of leverage across study periods.

The Effect of DuPont Return on Equity on Stock Returns

Based on the results of the partial test (t-test), DuPont Return on Equity (X4) had a probability value of 0.0002, which was lower than the 0.05 significance level, with a positive coefficient of 0.02307. Therefore, H4 was accepted, indicating that DuPont Return on Equity had a positive and statistically significant effect on Stock Returns of energy sector companies listed on the IDX during the 2022–2024 period.

This finding indicates that the higher the ROE-DuPont of an energy sector company, the higher the stock return generated during the period surrounding the publication of its annual financial statements. Grouping the data based on the sample's average ROE-DuPont of 0.073 revealed a considerably more consistent pattern than those observed for the other three variables. Companies with ROE-DuPont values above the average (128 observations) recorded a positive average stock return of 0.98%, whereas companies with ROE-DuPont values below the average (76 observations) recorded a substantially negative average stock return of -2.75%. The difference of nearly 3.7 percentage points between the two groups was considerably larger than the differences observed for NPM, TATO, and EM. This pattern helps explain why ROE-

DuPont was the only variable among the four independent variables found to have a statistically significant effect.

At the company level, the group with the lowest ROE-DuPont values was dominated by companies experiencing substantial financial pressure. For example, PT Artha Mahiya Investama Tbk (AIMS) recorded an ROE-DuPont of -7.56 in 2023, accompanied by a stock return of -20%, while PT Indah Prakasa Sentosa Tbk (INPS) recorded an ROE-DuPont of -3.89 in 2022, accompanied by a stock return of -12%. Conversely, companies with the highest ROE-DuPont values, such as PT Golden Energy Mines Tbk (GEMS), which recorded an ROE-DuPont of 1.25 in 2022, and PT Bayan Resources Tbk (BYAN), which recorded an ROE-DuPont of 1.15 in 2022, were coal mining companies that benefited from the surge in global commodity prices during that year. These results reflect the combined effects of high profit margins, efficient asset utilization, and well-managed capital structures.

This finding demonstrates that when tested individually, the components of ROE-DuPont—namely NPM, TATO, and EM—were not sufficiently informative to serve as signals that significantly influenced stock returns. However, when these three components were combined into an integrated performance measure through ROE-DuPont, the resulting measure had a statistically significant effect and exhibited a much clearer distinction between the two groups. This suggests that investors may ultimately pay greater attention to the combined effects of several dimensions of financial performance rather than to individual financial ratios in isolation. For investors in the energy sector, a company's simultaneous ability to generate strong profit margins, utilize assets efficiently, and maintain an appropriate capital structure may provide a more meaningful signal of overall performance quality than strength in any single financial dimension.

From the perspective of Signaling Theory (Brigham & Houston, 2025), ROE-DuPont functions as an integrated signal that may provide more comprehensive information than the partial signals conveyed by individual financial ratios. Investors in the capital market may interpret a high ROE-DuPont as a positive signal that the company is capable of generating optimal returns for shareholders through the combined effects of operational efficiency, effective asset utilization, and supportive financing policies. This strong and integrated positive signal may increase demand for the company's shares, thereby contributing to higher stock prices and positive stock returns for investors (Kasmir, 2019; Pradnyaningsih & Suarjaya, 2022).

The findings of this study are consistent with Gusman and Sari (2024), who found that ROE-DuPont had a positive and significant effect on stock returns among coal companies listed on the IDX. This finding confirms that an integrated performance measure based on the DuPont System has strong empirical relevance in explaining variations in stock returns within the energy commodity sector. Similar results were reported by Rahmawati and Martaseli (2021), who found that ROE-DuPont had a positive and significant effect on stock returns among coal companies during the 2014–2019 period. Therefore, the present findings further reinforce the consistency of the positive relationship between ROE-DuPont and stock returns in the energy sector across different periods. In addition, Shalsabila and Hermala (2025), in their study of automotive subsector companies using panel data regression in EViews, found that ROE had a positive and significant effect on stock returns. This suggests that the explanatory relevance of ROE to stock returns may extend across sectors and is not limited to energy sector companies.

CONCLUSION

Based on the results of the analysis and discussion, this study concludes that, individually, Net Profit Margin (NPM), Total Asset Turnover (TATO), and Equity Multiplier (EM) have no statistically significant effects on the stock returns of energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period, whereas DuPont Return on Equity (ROE) has a positive and statistically significant effect on stock returns. These findings indicate that investors tend to assess a company's overall financial performance using DuPont ROE rather than focusing solely on its individual components. Theoretically, this study reinforces the relevance of signaling theory and contributes to the literature on DuPont analysis as a comprehensive approach to evaluating financial performance. From a practical perspective, the findings may serve as a reference for corporate management in improving financial performance through an integrated approach and for investors in making informed investment decisions. Nevertheless, this study has several limitations, including the limited number of variables examined, the relatively short observation period, and its exclusive focus on the energy sector. Therefore, future research should incorporate relevant macroeconomic variables, extend the observation period, and broaden the scope to include companies from other sectors to generate more comprehensive findings with greater generalizability.

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