

Determinants of Financial Distress: The Role of Liquidity, Profitability, Leverage, Sales Growth, and Firm Size in Energy Sector Companies Listed on the Indonesia Stock Exchange for the 2020–2024 Period

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Abstract

Financial distress has become an important concern because it threatens corporate sustainability, financial performance, and investor confidence. Previous studies have reported inconsistent findings regarding the effects of liquidity, profitability, leverage, sales growth, and firm size on financial distress, particularly in Indonesia's energy sector. Therefore, this study aims to examine the influence of these factors on financial distress among energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. This study employs a quantitative approach using secondary data obtained from annual financial statements. The population consists of 89 energy sector companies listed on the IDX, from which 60 companies were selected using purposive sampling, resulting in 300 firm-year observations. Financial distress is measured using the Altman Z-Score model, while panel data regression analysis is employed using EViews 13, with the Common Effect Model (CEM) identified as the most appropriate estimation model. The findings indicate that liquidity, measured by the Current Ratio, has a positive and statistically significant effect on the Altman Z-Score, indicating that stronger liquidity reduces the likelihood of financial distress. In contrast, profitability, leverage, sales growth, and firm size do not exhibit statistically significant effects. These findings suggest that liquidity is the primary financial indicator in maintaining financial stability among Indonesian energy sector companies. This study contributes to the financial distress literature by providing updated empirical evidence from the Indonesian energy sector and offers practical insights for managers, investors, and other stakeholders in assessing corporate financial health and mitigating financial distress risk.

INTRODUCTION

Financial distress refers to a condition in which a company experiences difficulties in fulfilling its financial obligations and faces the risk of bankruptcy if corrective actions are not undertaken promptly (Apriliantika & Praptapa, 2025). This condition has become a major concern in financial management because it may threaten business continuity, reduce investor confidence, and negatively affect capital market stability. According to signaling theory, information disclosed in corporate financial statements serves as a signal to investors and creditors in evaluating a firm's future prospects (Brigham & Houston, 2013). Deteriorating financial performance, increasing debt burdens, and declining profitability may constitute negative signals that indicate the likelihood of financial distress (Rao et al., 2024). Therefore, identifying the determinants of financial distress is essential for providing an early warning mechanism against potential corporate failure.

Financial distress has been widely assessed using various bankruptcy prediction models, including the Springate, Zmijewski, Ohlson, and Altman Z-Score models. Among these approaches, the Altman Z-Score model is one of the most extensively applied methods due to its ability to integrate several financial ratios into a comprehensive measure of financial health (Prasetyo et al., 2023). Sánchez-Almeyda et al. (2025) demonstrated that the Altman Z-Score model functions effectively as an early warning system for detecting potential financial distress, thereby enabling firms to implement strategic financial decisions before their financial condition deteriorates further.

The significance of examining financial distress is particularly evident in the energy sector, which plays a vital role in supporting Indonesia's economic growth and development. Nevertheless, the sector is highly exposed to various uncertainties, including fluctuations in energy prices, regulatory changes, shifts in market demand, and global geopolitical developments. The sharp decline in oil prices to approximately USD 20 per barrel in 2020 created considerable financial challenges for many energy companies. For instance, PT Medco Energi Internasional Tbk reported a net loss of USD 188.97 million, while PT Adaro Energy Indonesia Tbk experienced a substantial decline in net income as a result of weakening energy commodity prices and lower market demand. A similar trend was observed in PT Perusahaan Gas Negara Tbk, which recorded a decrease in net profit despite an increase in revenue. These conditions demonstrate the susceptibility of energy companies to financial distress and highlight the importance of further empirical research to identify the factors that contribute to financial difficulties within the sector.

From a theoretical standpoint, financial distress may be influenced by several internal firm characteristics, including financial ratios, sales growth, and firm size. Financial ratios frequently used to assess the likelihood of financial distress include liquidity, profitability, and leverage. Liquidity reflects a firm's ability to fulfill its short-term obligations, while profitability indicates its capacity to generate earnings from the resources it controls. Leverage, on the other hand, represents the extent to which a company relies on debt financing in its capital structure. Beyond financial ratios, sales growth serves as an important indicator of a firm's ability to maintain and increase revenue over time. Firm size is also considered a relevant factor, as it reflects the scale of operations and the company's capacity to manage resources, obtain external financing, and cope with economic challenges.

Although extensive studies on financial distress have been conducted, empirical findings remain inconclusive. Sánchez-Almeyda et al. (2025), Sushma et al. (2024), and Aliani and Kuswanto (2025) reported that liquidity and profitability negatively affect financial distress. In contrast, Tekalign, Getahun, and Obsa (2024) found positive relationships between these variables and financial distress. Similarly, findings regarding leverage remain inconsistent. Sánchez-Almeyda et al. (2025), Sugiharto et al. (2021), and Rosita (2024) reported a positive effect of leverage on financial distress, whereas Rao et al. (2024) and Kebede et al. (2024) documented a negative effect. Inconsistencies are also evident in studies examining sales growth and firm size, both in terms of the direction and significance of their effects on financial distress. These mixed findings suggest that the relationship between corporate financial characteristics and financial distress requires further investigation, particularly within the energy sector, which possesses distinct risk characteristics compared to other industries.

Based on the existing literature, a clear research gap emerges from the inconsistent empirical evidence regarding the effects of liquidity, profitability, leverage, sales growth, and firm size on financial distress. Furthermore, previous studies have predominantly focused on

manufacturing firms, banking institutions, and other non-energy sectors, while research specifically examining energy companies in Indonesia remains relatively limited. This gap is noteworthy because the energy sector exhibits unique characteristics, being highly sensitive to commodity price volatility, energy policy changes, and global economic conditions.

The novelty of this study lies in its comprehensive examination of financial distress determinants in energy sector companies listed on the Indonesia Stock Exchange by integrating financial ratios, represented by liquidity, profitability, and leverage, together with sales growth and firm size within a single empirical framework. While previous studies have primarily focused on manufacturing, banking, or other non-energy industries, research on financial distress in Indonesia's energy sector remains limited. Given the sector's high exposure to commodity price fluctuations, regulatory changes, and market uncertainty, this study provides a more industry-specific perspective on the factors influencing financial distress. Furthermore, by utilizing recent data from the 2020–2024 period, this study offers updated empirical evidence on the determinants of financial distress in the Indonesian energy sector.

Accordingly, this study aims to analyze the effects of liquidity, profitability, leverage, sales growth, and firm size on financial distress among energy sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Theoretically, this research is expected to enrich the literature on the determinants of financial distress within the energy sector. Practically, the findings are anticipated to provide valuable insights for corporate managers in formulating more effective financial strategies and to assist investors and other stakeholders in evaluating corporate financial health and investment risk.

METHODS

This study employs a quantitative research design with a causal approach to examine the effect of liquidity, profitability, leverage, sales growth, and firm size on financial distress in energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The study utilizes secondary data obtained from annual financial statements published on the official IDX website and company reports.

The population of this study consists of 89 energy sector companies listed on the Indonesia Stock Exchange (IDX). A purposive sampling technique was applied to select companies that met specific criteria to ensure data completeness and comparability across observations. The criteria include companies that were consistently listed on the IDX during the 2020–2024 period, companies that remained listed throughout the observation period, and companies that consistently published complete annual financial statements in Indonesian Rupiah over the same period. Based on these criteria, 60 companies were selected as the final sample. With a five-year observation period, this study generated 300 firm-year observations, calculated as 60 companies multiplied by 5 years.

The dependent variable in this study is financial distress, which is measured using the Altman Z-Score model, where a lower score indicates a higher likelihood of financial distress. The independent variables consist of liquidity, profitability, leverage, sales growth, and firm size. Liquidity is represented by the Current Ratio (CR), calculated as current assets divided by current liabilities. Profitability is measured using Return on Assets (ROA), computed as net income divided by total assets. Leverage is proxied by the Debt-to-Equity Ratio (DER), which is obtained by dividing total liabilities by total equity. Sales growth is calculated as the percentage change in net

sales from one period to the next, while firm size is represented by the natural logarithm of total assets.

This study employs panel data regression to analyze the effect of liquidity, profitability, leverage, sales growth, and firm size on financial distress in energy sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Panel data methodology is appropriate for this study because it allows the combination of cross-sectional and time-series dimensions, enabling the analysis of both inter-firm differences and temporal variations in financial performance. The estimation is conducted using three alternative models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection of the most appropriate model is determined through the Chow test, Hausman test, and Lagrange Multiplier (LM) test. All statistical analyses are performed using EViews 13.

The list of sample companies selected in this study based on the purposive sampling criteria is presented in Table 1. This table provides a detailed list of energy sector companies that met all research criteria and were included in the final sample for the 2020–2024 observation period. These companies serve as the basis for the panel data analysis conducted in this study.

Table 1. Company Sample List

No	Description	Number
1	Energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period.	89
2	Energy sector companies that were not consistently listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period.	(23)
3	Energy sector companies listed on the Indonesia Stock Exchange (IDX) that did not consistently publish financial statements during the 2020–2024 period.	(6)
4	Number of companies in the research sample	60
Amount of research data (60x5)		300

Source: Processed data

The operationalization of variables in this study is based on established measurement approaches in prior financial literature. Each variable, including financial distress, liquidity, profitability, leverage, sales growth, and firm size, is measured using widely accepted financial indicators to ensure measurement consistency and comparability across firms.

1. Formula CR: *Current Ratio* = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
2. Formula ROA: *Return on Asset* = $\frac{\text{Net Income}}{\text{Total Assets}}$
3. Formula DER: *Debt to Equity Ratio* = $\frac{\text{Total Liability}}{\text{Total Equity}}$
4. Formula Rumus *Sales Growth* = $\frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}} \times 100\%$
5. Formula Rumus *Firm Size* = $\ln(\text{Total Assets})$
6. Formula Rumus Financial Distress: *Z – Score* = $6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$

Table 2. Operational Definition of Variables

No	Variable	Definition	Indicator	Scale
Variabel Dependen				
1	<i>Financial Distress (FD)</i>	Financial distress refers to a condition in which a firm faces financial difficulties caused by persistent operating losses, leading to declining profitability and an inability to fulfill its financial obligations due to limited capital (Apriliantika & Praptapa, 2025).	$Z - Score = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$ <i>Explanation:</i> $X_1 = \text{Working Capital} / \text{Total Assets}$ $X_2 = \text{Retained Earnings} / \text{Total Assets}$ $X_3 = \text{Earnings Before Interest and Taxes} / \text{Total Assets}$ $X_4 = \text{Book Value of Equity} / \text{Total Liabilities}$ (Maysaroh & Prasetyo, 2024)	Ratio
Variabel Independen				
2	Liquidity	Liquidity ratio is a financial indicator used to assess a company's ability to meet its short-term obligations on time or at their due dates (Cahyaningsih & Dela Mustapa, 2022).	$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$ (Astuti et al., 2021)	Ratio
3	Profitability	The profitability ratio is a financial analysis tool used to measure a company's ability to generate profits over a specific period to support its operations (Cahyaningsih et al., 2022). A higher ROA indicates greater efficiency in asset utilization to generate profits, which may decrease the likelihood of financial distress.	$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$	Ratio

4	Leverage	The ratio is used to assess a company's ability to fulfill its obligations, including both short-term and long-term liabilities (Rissi & Herman, 2021).	$DER = \frac{Total\ Liability}{Total\ Equity}$	Ratio
5	<i>Sales Growth (SG)</i>	Sales growth is an indicator that measures the percentage change in sales over time, reflecting a company's ability to sustain and expand its market share and increase revenue (Raihan Ariffianto & Takarini, 2024).	$\frac{Sales_t - Sales_{t-1}}{Sales_{t-1}} \times 100\%$	Ratio
6	<i>Firm Size (FS)</i>	Firm size is an indicator of a company's operational scale, commonly measured by proxies such as total assets or total sales. It reflects the magnitude of a company's resources and its ability to access financing, manage risks, and withstand financial pressures (Hashmi et al., 2020).	$Firm\ Size = \ln(TotalAssets)$	Ratio

Source: Data processed by the author (2026)

Data analysis in this study was carried out using panel data regression to examine the effect of liquidity, profitability, leverage, sales growth, and firm size on financial distress in energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. This method combines time-series and cross-sectional data, allowing for more efficient and robust estimation compared to single-dimensional approaches. Prior to model estimation, classical assumption tests were conducted, including normality, multicollinearity, and heteroscedasticity tests, to ensure the validity of the regression model. The selection of the most appropriate panel

data model was performed using the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), which were determined through the Chow test, Hausman test, and Lagrange Multiplier (LM) test. Hypothesis testing was carried out using partial and simultaneous significance tests to evaluate the influence of each independent variable on financial distress, while all statistical analyses were processed using EViews software to ensure accuracy and replicability.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 3. Descriptive Analysis Results

Description	Y	X1	X2	X3	X4	X5
Mean	4,4704	2,3587	0,0524	1,1514	15.920,7973	22,7891
Maximum	667,8816	40,1906	0,6173	35,3276	1.812.147,4538	31,4456
Minimum	-46,6233	0,0019	-1,1222	-39,3259	-90,2941	16,0198
Standar Deviasi	39,9056	3,9742	0,1614	4,5447	159.644,4831	4,0647

Source: Data processed by the author (2026)

The descriptive statistics indicate that the research data exhibit varying levels of dispersion across the variables. Variables Y, X1, and X3 demonstrate relatively high variability, suggesting substantial differences among the observed firms. In contrast, X2 shows a more homogeneous distribution compared to the other variables. Meanwhile, X4 exhibits the highest level of variability, indicating significant disparities among firms within the sample and the potential presence of extreme values. Conversely, X5 displays a relatively more stable distribution with lower variability. Overall, these findings suggest that the sample adequately captures the diversity of firm characteristics, thereby providing a robust basis for subsequent empirical analysis.

The high variability in Sales Growth reflects the volatile business environment faced by energy companies during the observation period, particularly due to fluctuations in commodity prices and changes in market demand. Likewise, the wide dispersion in the Altman Z-Score indicates considerable differences in the financial conditions of the sampled firms, ranging from financially distressed companies to financially healthy ones. These characteristics demonstrate that the dataset captures substantial cross-sectional variation, thereby providing a solid basis for panel data regression analysis.

Empirical Result

Multicollinearity Test

Table 4. Multicollinearity Test Results

Correlation	X1	X2	X3	X4	X5
X1	1.000000				
X2	0.097724	1.000000			
X3	-0.058585	-0.048488	1.000000		
X4	0.171901	0.000364	-0.012010	1.000000	
X5	0.043015	-0.073129	-0.061531	0.144804	1.000000

Source: EVIEWS 13 Data Processing Results (2026)

Based on the multicollinearity test results presented in the table above, all correlation coefficients among the independent variables are below the threshold value of 0.90. The correlation coefficient between Current Ratio (X1) and Return on Assets (X2) is 0.097724, indicating a very weak relationship between the liquidity and profitability variables. Similarly, the correlation coefficient between Debt-to-Equity Ratio (X3) and Sales Growth (X4) is -0.012010, suggesting a negligible relationship between these two variables. Firm Size (X5) also exhibits low correlations with the other independent variables, indicating the absence of strong linear associations within the research model. Therefore, it can be concluded that none of the independent variables exhibit symptoms of multicollinearity, as all inter-variable correlation coefficients remain well below the accepted threshold of 0.90. Consequently, the panel data regression model employed in this study satisfies the multicollinearity assumption and is considered appropriate for further analysis.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.35730	13.06849	1.481219	0.1396
X1	-0.166740	0.575373	-0.289795	0.7722
X2	-1.195251	13.99170	-0.085426	0.9320
X3	-0.376911	0.494689	-0.761914	0.4467
X4	2.45E-06	1.44E-05	0.170594	0.8647
X5	-0.496657	0.559246	-0.888083	0.3752

Source: EVIEWS 13 Data Processing Results (2026)

Based on the heteroscedasticity test results presented in the table above, all independent variables exhibit probability values greater than the 0.05 significance level. Specifically, the probability values for Current Ratio (X1), Return on Assets (X2), Debt-to-Equity Ratio (X3), Sales Growth (X4), and Firm Size (X5) all exceed the established threshold for statistical significance. These findings indicate that the regression model does not suffer from heteroscedasticity, as none of the independent variables show a significant relationship with the residual variance. Consequently, the assumption of homoscedasticity is satisfied, implying that the variance of the error terms remains constant across observations. Therefore, the panel data regression model is considered statistically reliable and appropriate for further analysis.

Chow Test

Table 6. Chow Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.406538	(59,235)	0.0401
Cross-section Chi-square	90.726331	59	0.0050

Source: EVIEWS 13 Data Processing Results (2026)

Based on the Chow test results, the probability value of the Cross-section Chi-square is 0.0050, which is below the 0.05 significance level. This result indicates that the null hypothesis

(H_0) is rejected and the alternative hypothesis (H_1) is accepted, suggesting that the Fixed Effect Model (FEM) is more appropriate than the Common Effect Model (CEM) for estimating the panel data. Therefore, the analysis proceeds to the Hausman test to determine the most suitable model between the Fixed Effect Model (FEM) and the Random Effect Model (REM).

Hausman Test

Table 7. Hausman Test Result

Test Summary	Chi-Sq.		
	Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.796156	5	0.8766

Source: EVIEWS 13 Data Processing Results (2026)

Based on the Hausman test results, the probability value of the Cross-section Random is 0.8766, which exceeds the 0.05 significance level. This result indicates that the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected, suggesting that the Random Effect Model (REM) is more appropriate than the Fixed Effect Model (FEM) for this study. The finding implies that the unobserved individual characteristics of each firm are not correlated with the independent variables included in the model. Therefore, the analysis proceeds to the Lagrange Multiplier test to determine the most suitable model between the Random Effect Model (REM) and the Common Effect Model (CEM).

Lagrange Multiple Test

Table 8. Lagrange Multiple Test Result

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	3.121849 (0.0772)	0.004483 (0.9466)	3.126332 (0.0770)

Source: EVIEWS 13 Data Processing Results (2026)

Based on the Lagrange Multiplier (LM) test results, the Breusch–Pagan Cross-section probability value is 0.0772, which is greater than the 0.05 significance level. This result indicates that the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected. Therefore, the Common Effect Model (CEM) is considered the most appropriate panel data regression model for this study, as there is no significant random effect present in the panel data. Consequently, the pooled regression approach represented by the Common Effect Model is deemed sufficient for estimating the relationship between the independent and dependent variables.

Panel Data Regression Equation

Table 9. Panel Data Regression Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.76929	13.32634	1.108278	0.2686
X1	1.382896	0.586726	2.356971	0.0191
X2	26.04960	14.26777	1.825766	0.0689

X3	0.186585	0.504450	0.369878	0.7117
X4	4.37E-06	1.47E-05	0.298442	0.7656
X5	-0.667401	0.570280	-1.170303	0.2428
R-squared	0.038617	Mean dependent var	4.470403	
Adjusted R-squared	0.022267	S.D. dependent var	39.90557	
S.E. of regression	39.45879	Akaike info criterion	10.20819	
Sum squared resid	457756.8	Schwarz criterion	10.28226	
Log likelihood	-1525.228	Hannan-Quinn criter.	10.23783	
F-statistic	2.361870	Durbin-Watson stat	1.151036	
Prob(F-statistic)	0.040113			

Source: EVIEWS 13 Data Processing Results (2026)

Based on the results presented in Table 4.15, the panel data regression equation using the Common Effect Model (CEM) was formulated to examine the effect of Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size on Financial Distress. The estimated regression equation can be interpreted as follows:

$$Y = 14,76929 + 1,382896X_1 + 26,04960X_2 + 0,186585X_3 + 4,37X_4 - 0,667401X_5 + e$$

Where:

Y = Financial Distress

X_1 = Liquidity

X_2 = Profitability

X_3 = Leverage

X_4 = Sales Growth

X_5 = Firm Size

The coefficients indicate how each independent variable influences financial distress in terms of direction and intensity.

Based on the results presented in Table 4.15, the panel data regression equation using the Common Effect Model (CEM) was formulated to examine the effect of Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size on Financial Distress. The estimated regression equation can be interpreted as follows:

1. The constant term of 14.76929 indicates that when all independent variables—Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size—are assumed to be zero or remain constant, the Financial Distress value, proxied by the Altman Z-Score, is expected to be 14.76929 for energy sector companies during the 2020–2024 period.
2. The coefficient of Current Ratio is 1.382896, implying that a one-unit increase in the Current Ratio, holding other variables constant, is associated with an increase of 1.382896 units in the Altman Z-Score. This finding suggests a positive relationship between liquidity and Financial Distress as measured by the Altman Z-Score.
3. The coefficient of Return on Assets is 26.04960, indicating that a one-unit increase in Return on Assets, ceteris paribus, leads to an increase of 26.04960 units in the Altman Z-Score. This result demonstrates a positive relationship between profitability and Financial Distress.
4. The coefficient of Debt-to-Equity Ratio is 0.186585, suggesting that a one-unit increase in the Debt-to-Equity Ratio, while other variables remain unchanged, increases the Altman Z-Score by 0.186585 units. This indicates a positive association between leverage and Financial Distress.
5. The coefficient of Sales Growth is 4.37, indicating that a one-unit increase in Sales Growth, holding other variables constant, is associated with an increase of 4.37 units in the Altman

Z-Score. This result reflects a positive relationship between sales growth and Financial Distress.

6. The coefficient of Firm Size is -0.667401 , implying that a one-unit increase in Firm Size, ceteris paribus, decreases the Altman Z-Score by 0.667401 units. This finding indicates a negative relationship between Firm Size and Financial Distress.
7. Overall, the regression results suggest that Current Ratio, Return on Assets, Debt-to-Equity Ratio, and Sales Growth are positively associated with the Altman Z-Score, whereas Firm Size exhibits a negative association. Since a higher Altman Z-Score generally reflects a lower likelihood of financial distress, positive coefficients indicate factors that strengthen firms' financial condition, while a negative coefficient suggests a factor associated with a lower Altman Z-Score.

Test of the Coefficient of Determination (R^2)

Table 10. Coefficient of Determination (R^2) Test Result

R-squared	0.038617	Mean dependent var	4.470403
Adjusted R-squared	0.022267	S.D. dependent var	39.90557
S.E. of regression	39.45879	Akaike info criterion	10.20819
Sum squared resid	457756.8	Schwarz criterion	10.28226
Log likelihood	-1525.228	Hannan-Quinn criter.	10.23783
F-statistic	2.361870	Durbin-Watson stat	1.151036
Prob(F-statistic)	0.040113		

Source: EViems 13 Data Processing Results (2026)

Based on Table 8, the coefficient of determination test using the Common Effect Model (CEM) yields an Adjusted R-squared value of 0.022267 , indicating that the independent variables included in the model Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size collectively explain approximately 2.22% of the variation in Financial Distress. The remaining 97.78% is attributable to other factors not incorporated into the research model. The relatively low Adjusted R-squared value suggests that the explanatory power of the model is limited, indicating that the selected financial indicators account for only a small proportion of the variation in Financial Distress among energy sector firms during the study period. This finding implies that other determinants, which were not examined in this study, may play a more substantial role in influencing firms' financial distress conditions.

Simultaneous Test (F Test)

Table 11. Simultaneous Test

R-squared	0.038617	Mean dependent var	4.470403
Adjusted R-squared	0.022267	S.D. dependent var	39.90557
S.E. of regression	39.45879	Akaike info criterion	10.20819
Sum squared resid	457756.8	Schwarz criterion	10.28226
Log likelihood	-1525.228	Hannan-Quinn criter.	10.23783
F-statistic	2.361870	Durbin-Watson stat	1.151036
Prob(F-statistic)	0.040113		

Source: EViems 13 Data Processing Results (2026)

Based on the Common Effect Model (CEM) estimation results, the F-statistic is 2.361870 with a corresponding probability value of 0.040113 . Since the probability value is lower than the

0.05 significance level ($0.040113 < 0.05$), the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Therefore, it can be concluded that Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size jointly have a statistically significant effect on Financial Distress among energy sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. These results indicate that the independent variables, when considered simultaneously, contribute significantly to explaining variations in firms' financial distress conditions.

Partial Test (t-Test)

Table 12 Partial Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.76929	13.32634	1.108278	0.2686
X1	1.382896	0.586726	2.356971	0.0191
X2	26.04960	14.26777	1.825766	0.0689
X3	0.186585	0.504450	0.369878	0.7117
X4	4.37E-06	1.47E-05	0.298442	0.7656
X5	-0.667401	0.570280	-1.170303	0.2428

Source: EVIEWS 13 Data Processing Results (2026)

Table 11 presents the estimation results of the panel data regression model examining the effects of Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size on Financial Distress among energy sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The partial test results can be summarized as follows.

The constant term has a positive coefficient but is not statistically significant, indicating that the baseline level of Financial Distress, as measured by the Altman Z-Score, is not significantly different from zero when all explanatory variables are held constant. The positive intercept nevertheless suggests that, on average, the sampled firms maintained relatively favorable financial conditions during the observation period.

Current Ratio is found to have a positive and statistically significant effect on Financial Distress, as evidenced by its positive coefficient and probability value below the 5% significance level. Given that Financial Distress is proxied by the Altman Z-Score, a higher Current Ratio is associated with an improvement in firms' financial condition and a lower likelihood of experiencing financial distress. Therefore, the hypothesis regarding the effect of Current Ratio is supported.

Return on Assets exhibits a positive coefficient, indicating that greater profitability tends to be associated with a higher Altman Z-Score. However, the effect is not statistically significant at the 5% level, suggesting that profitability does not exert a significant influence on Financial Distress within the sample. Consequently, the proposed hypothesis for Return on Assets is not supported.

Debt-to-Equity Ratio also shows a positive but statistically insignificant coefficient. This finding implies that variations in leverage are not significantly associated with changes in Financial Distress among the observed firms. Accordingly, the hypothesis concerning the effect of Debt-to-Equity Ratio is rejected.

Similarly, Sales Growth demonstrates a positive relationship with the Altman Z-Score, indicating that firms with higher sales growth tend to exhibit better financial conditions.

Nevertheless, the effect is not statistically significant, implying that sales growth does not meaningfully explain variations in Financial Distress during the study period. Therefore, the corresponding hypothesis is not supported.

Firm Size has a negative coefficient, suggesting an inverse relationship with the Altman Z-Score. However, this effect is not statistically significant, indicating that firm size does not significantly influence Financial Distress among energy sector companies. As a result, the hypothesis regarding the effect of Firm Size is rejected.

Overall, the partial regression results reveal that only Current Ratio has a significant effect on Financial Distress, while Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size do not demonstrate statistically significant effects. These findings suggest that liquidity plays a more important role than profitability, leverage, growth, and firm size in explaining variations in the financial condition of energy sector companies during the study period.

DISCUSSION

The Effect of Current Ratio, Return on Assets, Debt-to-Equity Ratio, Sales Growth, and Firm Size on Financial Distress

The findings indicate that liquidity, profitability, leverage, sales growth, and firm size collectively contribute to explaining the financial distress conditions of energy sector companies. This result supports Signaling Theory, which posits that financial information serves as an important signal for investors and creditors in assessing a firm's financial health. The combination of various financial indicators provides a more comprehensive assessment of a company's ability to maintain financial stability and avoid financial distress.

This finding is consistent with the studies of Sugiharto et al. (2021) and Gamia et al. (2025), which demonstrate that financial ratios play a significant role in explaining financial distress. The consistency of these results suggests that financial distress is not driven by a single financial factor but rather reflects the combined influence of multiple aspects of a firm's financial performance. In the energy sector, the capital-intensive nature of operations, commodity price volatility, and exposure to global economic conditions make financial distress a multidimensional phenomenon that is better explained through a combination of financial indicators than by individual variables alone.

The Effect of Current Ratio on Financial Distress

Liquidity was found to be a significant determinant of financial distress among energy sector firms. This finding suggests that a company's ability to meet its short-term obligations is a crucial indicator of financial health. Firms with stronger liquidity positions are generally better equipped to maintain operational stability and withstand financial pressures, thereby reducing the likelihood of experiencing financial distress.

This result supports Signaling Theory, which argues that strong liquidity sends a positive signal to stakeholders regarding a firm's ability to fulfill its obligations. The finding is also consistent with the studies of Sánchez-Almeyda et al. (2025), Rao et al. (2024), Sugiharto et al. (2021), and Nurhayati (2021), all of which identify liquidity as a key determinant of financial distress. The consistency across these studies suggests that the ability to manage short-term liabilities remains a fundamental factor influencing financial stability across different industries, including the energy sector.

The Effect of Return on Assets on Financial Distress

Profitability was not found to be a significant determinant of financial distress in energy sector companies. This finding suggests that the ability to generate profits does not necessarily translate into a lower risk of financial distress. In the energy industry, profitability is often

influenced by external factors such as energy price fluctuations, regulatory changes, and global economic conditions, making it a less reliable indicator of a firm's overall financial stability.

This finding is consistent with the study conducted by Nurhayati (2021), which reported that profitability does not significantly affect financial distress. However, the result contrasts with the findings of Rao et al. (2024), Kebede et al. (2024), and Gamia et al. (2025), who identified profitability as a significant determinant of financial distress. This discrepancy may be attributed to the unique characteristics of the energy sector, which is highly capital-intensive and strongly influenced by external market dynamics. Consequently, high profitability in a particular period may not necessarily reflect a sustainable financial condition or guarantee protection against future financial difficulties.

The Effect of Debt-to-Equity Ratio on Financial Distress

Leverage was not found to significantly influence financial distress among energy sector companies. This finding indicates that the use of debt does not automatically increase the likelihood of financial distress. In the energy industry, debt financing is commonly used to support large-scale investments and long-term projects. Therefore, leverage may represent a financing strategy rather than a direct indicator of financial vulnerability.

This finding supports the studies of Valentina and Tjhai Fung Jin (2020) and Fiyanti and Yanti (2025), which reported no significant relationship between leverage and financial distress. However, it contradicts the findings of Sugiharto et al. (2021), Sánchez-Almeyda et al. (2025), and Kebede et al. (2024), who found leverage to be a significant determinant of financial distress. These contrasting results suggest that the impact of leverage depends largely on industry characteristics. Within the energy sector, firms generally possess substantial long-term assets and investment projects, enabling them to manage higher debt levels without necessarily experiencing financial distress, provided that cash flows and debt obligations are managed effectively.

The Effect of Sales Growth on Financial Distress

Sales growth was not found to significantly affect financial distress among energy sector firms. This finding suggests that increased sales do not necessarily lead to improved financial conditions or reduced financial distress risk. Growth in revenue may not be accompanied by improvements in operational efficiency, profitability, or cash flow management.

This result is consistent with the findings of Asmi et al. (2024), who reported that sales growth does not significantly influence financial distress. However, it differs from the findings of Sugiharto et al. (2021), who found a significant relationship between sales growth and financial distress. This discrepancy may be explained by the nature of the energy sector, where sales performance is highly affected by commodity price fluctuations. Under such conditions, sales growth may result from favorable market prices rather than genuine improvements in operational performance, thereby reducing its effectiveness as an indicator of financial distress.

The Effect of Firm Size on Financial Distress

Firm size was not found to significantly influence financial distress among energy sector companies. This finding indicates that larger firms are not necessarily less vulnerable to financial distress than smaller firms. Although large firms generally possess greater resources and broader access to financing, they also face higher operational complexity, larger investment requirements, and greater administrative costs.

This finding supports the study of Asmi et al. (2024), which reported that firm size does not significantly affect financial distress. However, it contrasts with the findings of Valentina and Tjhai Fung Jin (2020), Kebede et al. (2024), and Fiyanti and Yanti (2025), who found firm size to be a significant determinant of financial distress. These differing results suggest that firm size is not a universally reliable predictor of financial distress. In the context of the energy sector, effective management of assets, investments, and operational activities appears to be more important than

the absolute size of the company. Therefore, possessing larger assets does not automatically guarantee financial stability or immunity from financial distress.

CONCLUSION

This study examined the effects of liquidity, profitability, leverage, sales growth, and firm size on financial distress among energy sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The findings reveal that the selected financial indicators collectively contribute to explaining financial distress. However, when analyzed individually, only liquidity demonstrates a significant role in explaining variations in firms' financial distress conditions. This finding highlights the importance of short-term financial strength in maintaining corporate financial stability within the energy sector.

The study contributes to the financial distress literature by providing evidence that the determinants of financial distress may vary across industries. While liquidity emerges as a significant predictor, profitability, leverage, sales growth, and firm size do not exhibit a significant individual influence on financial distress in the energy sector. These findings suggest that industry-specific characteristics, such as high capital intensity, dependence on commodity prices, and exposure to external economic conditions, may weaken the explanatory power of commonly used financial indicators.

From a theoretical perspective, the findings support Signaling Theory by demonstrating that financial information, particularly liquidity, serves as an important signal regarding a firm's financial condition. From a practical perspective, the results imply that managers should prioritize effective liquidity management to reduce the likelihood of financial distress. Investors and creditors may also consider liquidity performance as a key indicator when evaluating the financial health of energy companies.

Despite its contributions, this study has several limitations. First, the explanatory power of the model remains relatively low, indicating that financial distress is likely influenced by additional firm-specific and macroeconomic factors that were not incorporated into the analysis. Second, financial distress was measured using a single proxy, namely the Altman Z-Score. Third, the study focused exclusively on companies in the energy sector within a limited observation period.

Future research is encouraged to incorporate additional determinants of financial distress, such as operating cash flow, activity ratios, interest coverage ratio, commodity prices, inflation, exchange rates, and dividend policy. Further studies may also employ alternative financial distress models, including the Springate, Zmijewski, or Ohlson models, and extend the analysis to other industrial sectors and longer observation periods to improve the generalizability of the findings.

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