ISSN: 2338-8412 e-ISSN : 2716-4411

Ekombis Review – Jurnal Ilmiah Ekonomi dan Bisnis
Available online at : https://jurnal.unived.ac.id/index.php/er/index
DOI: https://doi.org/10.37676/ekombis.v14i3

Examining Financial Distress In The Indonesian Coal Sector: The Role Of Cash Flow, Leverage, Liquidity, And Institutional Ownership

Naomi Valentina Lumban Gaol [1)]; Indra Kusumawardhani [2)]
[1,2)]Accounting Study Program, Faculty Of Economics and Business, Veteran National Development University, Yogyakarta, Indonesia
Email: [1)] 142220004@student.upnyk.ac.id ; [2)] indra.kusumawardhani@upnyk.ac.id

How to Cite :
Gaol, N, V, L., Kusumawardhani, I. (2026). Examining Financial Distress In The Indonesian Coal Sector: The Role Of Cash Flow, Leverage, Liquidity, And Institutional Ownership. EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis, 14(3). DOI: https://doi.org/10.37676/ekombis.v14i3

ARTICLE HISTORY
Received [21 January 2026]
Revised [12 July 2026]
Accepted [16 July 2026]

KEYWORDS
Operating Cash Flow, Leverage, Liquidity, Institutional Ownership, Financial Distress.

ABSTRACT

This study investigates the effects of operating cash flow, leverage, liquidity, and institutional ownership on financial distress in coal companies listed on the Indonesia Stock Exchange during the 2022–2024 period. Financial distress is measured using the continuous form of the Altman Z-Score Model for Emerging Markets (2019 modification). The study utilizes secondary data from 29 firms selected through purposive sampling, resulting in 75 firm-year observations. Data are analyzed using multiple linear regression techniques. The partial (t-test) results indicate that operating cash flow, leverage, and liquidity have a significant effect on financial distress, while institutional ownership does not exhibit a significant influence. The simultaneous (F-test) results show a significance level of 0.000 with an F-statistic of 83.818, indicating that all independent variables jointly affect financial distress. Furthermore, the Adjusted R^2 value of 0.817 suggests that 81.7% of the variation in financial distress can be explained by the variables included in the model, while the remaining 18.3% is explained by other factors. These findings indicate that internal financial conditions play a dominant role in determining financial vulnerability in coal companies and support the use of continuous Z-Score measurements in capturing variations in firms' financial conditions.

INTRODUCTION

The coal industry represents a crucial component of Indonesia's energy sector, contributing significantly to domestic energy supply and export performance. Its role in supporting state revenue and maintaining trade balance positions coal companies as important actors within the national economy (Kurniawan and Hidayat, 2021; Sari et al., 2022). Previous studies in the mining sector also indicate that corporate value and financial stability are

influenced not only by market conditions but also by internal governance mechanisms, particularly institutional ownership structure, which plays a role in supervising managerial decisions in capital-intensive industries *(Safariani & Ryanto, 2025)*. However, the coal industry is also a highly volatile sector as it is greatly influenced by global commodity price fluctuations, energy policies, and international geopolitical dynamics. Despite its economic contribution, this sector is characterized by high volatility, as company performance is strongly affected by fluctuations in global coal prices, shifts in energy policy, and international geopolitical developments.

Coal mining activities require substantial capital allocation, particularly for exploration, mine development, procurement of heavy machinery, and logistics facilities. Due to the dominance of fixed operational costs, companies have limited flexibility in reducing expenses when market prices decline, making profitability highly sensitive to price movements (Putra and Nugroho, 2021 ; Wibowo et al., 2023). Consequently, falling coal prices tend to weaken operating cash flows and reduce firms' capacity to meet financial commitments, thereby increasing vulnerability to financial distress.

The period from 2022 to 2024 reflects a phase of significant uncertainty for the Indonesian coal industry. In 2022, benchmark coal prices surged above USD 300 per ton as global energy demand rebounded and Europe faced an energy crisis. However, prices declined considerably in the following year (Kementrian Energi dan Sumber Daya Mineral, 2023). Companies that expanded capacity or relied heavily on debt financing during the price surge subsequently encountered financial pressure as revenues declined, particularly in relation to interest expenses and mismatches between cash inflows and payment obligations (Sutrisnoet et al., 2022; Hapsari et al., 2023). Evidence from energy sector firms listed on the Indonesia Stock Exchange shows that capital structure and investment policy significantly affect firm value and financial performance, indicating that excessive reliance on debt can intensify financial vulnerability during commodity price downturns (Rika Julitia et al., 2025).

These external shocks are reflected in firms' internal financial conditions, especially in operating cash flow, leverage, and liquidity indicators. Operating cash flow indicates a firm's ability to generate cash from core mining and sales activities, while leverage reflects reliance on debt to finance fixed assets and expansion projects (Hery, 2015; Santoso, 2017). Liquidity, meanwhile, represents the firm's ability to meet short-term liabilities arising from continuous operational requirements (Setiawan & Suryono, 2022). Weak performance in any of these indicators may accelerate the onset of financial distress.

From a governance standpoint, institutional ownership is considered a monitoring mechanism that may influence corporate financial stability. Institutional investors are expected to promote more prudent investment and financing decisions, particularly in high-risk industries such as coal mining (Mandala et al., 2017; Widhiadnyana et al., 2019). Nevertheless, empirical evidence regarding the effectiveness of such monitoring remains inconclusive.

Recent financial conditions of major coal firms such as Adaro Energy Indonesia Tbk. (ADRO) and Bumi Resources Tbk. (BUMI) illustrate how declining operating cash flow and elevated financial expenses may increase financial distress risk. ADRO experienced reduced operating cash flow in 2023 compared to the previous year, while BUMI continued to face post-restructuring debt pressures and unstable revenues throughout 2023–2024 (Noviyana et al., 2024; Hommes, 2007). These cases highlight the sensitivity of coal companies to commodity price changes and capital structure risks. Similar patterns of sustained losses following reputational and external shocks have also been documented in environmentally sensitive industries, where prolonged financial pressure accelerates the transition from operational decline to financial distress (Azizah & Prastiwi, 2025).

Prior studies investigating determinants of financial distress report inconsistent findings. Fitri & Dillak (2020) found that leverage significantly affected financial distress, while operating cash flow showed no effect. Conversely, Bandung et al., (2022) reported a significant role of

operating cash flow. Anisa et al., (2023) identified liquidity and leverage as significant predictors, whereas Humairoh et al., (2022) emphasized institutional ownership. Such discrepancies indicate an unresolved empirical gap, particularly within the coal industry, which differs structurally and operationally from other sectors.

In addition to empirical inconsistency, sectoral and methodological gaps also persist. Research focusing on coal companies during the post-pandemic volatility period remains limited, and many studies rely on categorical classifications of financial distress. This approach may not adequately capture gradual changes in financial vulnerability. Therefore, this study applies the continuous form of the Emerging Market Altman Z-Score Model (2019 modification) to provide a more sensitive assessment consistent with coal industry characteristics (Altman et al., 2019).

Based on this background, the study aims to examine the effects of operating cash flow, leverage, liquidity, and institutional ownership on financial distress among coal companies listed on the Indonesia Stock Exchange during 2022–2024. The findings are expected to contribute to academic literature and support decision-making by management, investors, and regulators in managing financial risk amid commodity price volatility and energy transition.

LITERATURE REVIEW

Agency Theory

Agency theory explains the contractual relationship between shareholders (principals) and managers (agents), in which divergent objectives and information asymmetry may generate agency conflicts (Jensen & Meckling, 1976). Under financial constraints, managers may prioritize short-term performance or undertake excessive risk-taking to protect personal interests, thereby increasing agency costs in the form of monitoring and residual losses.

Capital structure and ownership structure serve as governance mechanisms to mitigate agency conflicts. Debt financing may restrict managerial discretion through mandatory repayment obligations, while institutional ownership strengthens external monitoring (Mandala, et al., 2017). However, excessive leverage intensifies financial pressure and elevates financial distress risk, particularly in the coal industry, which is characterized by capital intensity, revenue volatility, and exposure to regulatory and market uncertainties.

Signaling Theory

Signaling theory suggests that parties possessing superior information convey signals to reduce information asymmetry (Spence, 1973). In capital markets, financial performance indicators and financing policies serve as signals that help investors evaluate corporate risk and future prospects (Ross, 1977).

Indicators such as operating cash flow, liquidity, and capital structure reflect a firm's financial resilience. Strong operating cash flow and adequate liquidity are generally interpreted as positive signals that reduce perceived financial distress risk. Furthermore, institutional investors may enhance signal credibility by demanding higher transparency and higher-quality financial reporting, thereby strengthening market confidence (Kusumaningrum and Rahardjo, 2021).

Financial Distress and Altman Z-Score Model

Financial distress refers to deteriorating financial conditions that may precede bankruptcy. Altman (1968) associates distress with declining profitability, high leverage, and weakening liquidity, while Rahmayanti & Hadromi (2017) describe distress as a critical stage before insolvency. Negative earnings, reduced cash flow, and elevated debt levels are commonly viewed as early warning signs (Hommes, 2007; Almamy et al., 2019).

The Emerging Market Altman Z-Score Model (2019 modification) was developed to accommodate firms in developing economies and non-manufacturing sectors. Using continuous

scores allows for a more precise assessment of financial vulnerability. This approach is particularly relevant for the coal industry, which is highly sensitive to price volatility, demand fluctuations, and policy changes (Altman et al., 2019; Kliestik et al., 2020)

Operating Cash Flow

Operating cash flow reflects a firm's capacity to generate cash from routine business operations. According Hery (2015), it constitutes the primary internal financing source. Unlike accounting profitability, operating cash flow captures actual liquidity available to support operations, meet short-term obligations, and service debt commitments. High reported profits do not necessarily imply strong cash availability, making operating cash flow a more reliable indicator of financial sustainability (Blanc and Setzer, 2015).

Within the coal industry, operating cash flow stability is influenced by coal price movements, cost structures, supply chain efficiency, and export demand. Firms with weak operating cash flow are more vulnerable to financial distress, particularly during periods of declining coal prices or rising operational costs. From a signaling perspective, strong operating cash flow provides a favorable signal regarding a firm's financial strength and lower exposure to distress risk (Sukamulja & Sari, 2021).

Leverage

Leverage indicates the proportion of company financing obtained through debt. Higher leverage implies greater fixed financial commitments, thereby increasing exposure to financial strain (Fahmi, 2010). Although debt may function as a disciplinary tool within agency theory, excessive leverage heightens agency conflicts and financial distress risk.

In the coal industry, companies often require substantial capital investment in production facilities, logistics infrastructure, and working capital, leading to greater dependence on external financing. High leverage magnifies financial vulnerability when revenue declines, thereby increasing the likelihood of financial distress (Amna et al., 2021). Empirical studies consistently demonstrate a positive relationship between leverage and financial distress risk (Putri & Ardini, 2020; Wahyuningtiyas & Retnani, 2019)

Liquidity

Liquidity measures the firm's ability to meet short-term obligations using current assets. Adequate liquidity reduces financial distress risk (Fahmi, 2010) and reflects operational resilience Carolina et al., (2017). Empirical evidence shows that liquidity combined with efficient cost structures improves overall financial efficiency, which functions as a buffer against financial distress, particularly in industries with high operating expenses (Rahmadani et al., 2025). However, excessively high liquidity may signal inefficient asset utilization, requiring joint evaluation with operational efficiency, especially in industries with long cash cycles such as coal (Setiawan & Suryono, 2022).

Institutional Ownership

Institutional ownership refers to the proportion of company shares held by institutional investors, including financial institutions, investment funds, and government-related entities. These investors typically possess superior monitoring capabilities and resources to oversee managerial behavior (Khurshid et al., 2018). ithin the agency framework, institutional ownership can mitigate opportunistic managerial actions and improve governance quality.

Recent empirical evidence suggests that institutional ownership enhances human and structural capital efficiency, which contributes to stronger long-term financial performance and lower financial distress risk (Poaler & Laturette, 2025). However, monitoring effectiveness depends on investor engagement, as passive ownership may not significantly reduce financial distress risk (Elyasian et al., 2010; Humairoh et al., 2022).

The Influence of Operating Cash Flow on Financial Distress

Operating cash flow represents the company's ability to generate cash from its primary operating activities. Under signaling theory, higher operating cash flow provides favorable signals to stakeholders about the firm's financial strength and lower exposure to financial distress. Empirical studies by Giarto & Fachrurrozie (2020) and Safiq et al., (2020) confirm that operating cash flow significantly decreases the probability of financial distress.
H1: Operating cash flow affects financial distress.

The Influence of Leverage on Financial Distress

Leverage indicates the degree of a company's dependence on debt financing. High leverage increases financial burdens and default risks, thereby increasing the potential for financial distress. From an agency theory perspective, excessive use of debt can trigger agency conflicts and risky managerial decisions. Putri & Ardini (2020) as well as Wahyuningtiyas & Retnani (2019) found that leverage affects an increase in the risk of financial distress.
H2: Leverage affects financial distress.

The Influence of Liquidity on Financial Distress

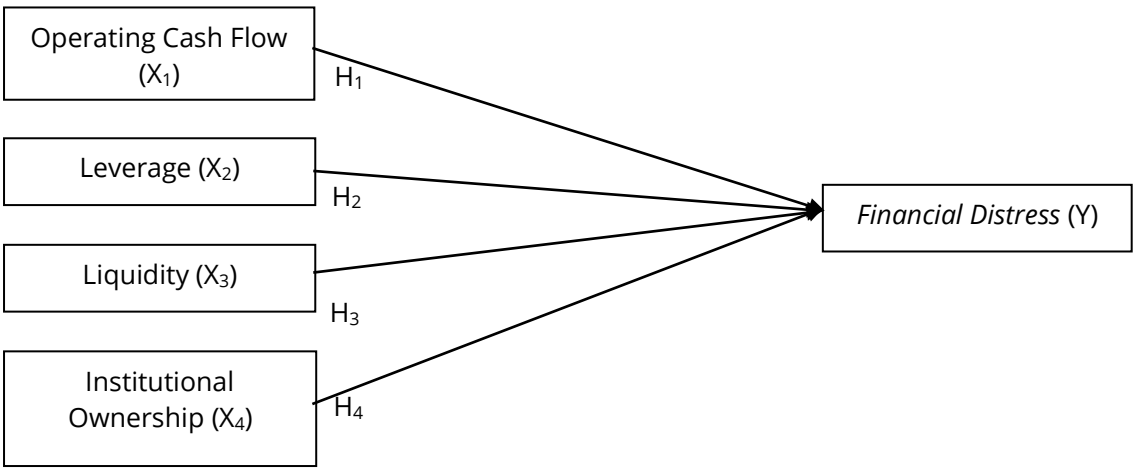
Liquidity measures the extent to which a firm can cover its short-term commitments with its current assets. In line with signaling theory, strong liquidity serves as a positive indicator of financial resilience, which in turn decreases the probability of financial distress. Setiawan & Suryono (2022) state that liquidity helps companies reduce the potential for financial disruption.
H3: Liquidity affects financial distress.

The Influence of Institutional Ownership on Financial Distress

Institutional ownership acts as a monitoring mechanism that can reduce opportunistic behavior by management. In the context of agency theory, strong monitoring by institutional investors can improve the quality of decision-making and maintain the financial stability of the company. Widhiadnyana & Ratnadi (2019) found that institutional ownership has an effect in reducing the risk of financial distress.
H4: Institutional ownership affects financial distress.

Referring to the theoretical discussion and hypothesis development above, the research framework of this study is structured as follows:

Figure 1. Conceptual Framework



Processed Data, 2026

METHODS

This study employs a quantitative research design to examine the effect of operating cash flow, leverage, liquidity, and institutional ownership on financial distress among coal companies listed on the Indonesia Stock Exchange during the 2022–2024 period. To ensure clarity and consistency in variable measurement, each research variable is defined operationally based on its conceptual meaning and measurement indicators. Financial distress is measured using the continuous version of the Emerging Market Altman Z-Score Model (2019 modification), while operating cash flow, leverage, liquidity, and institutional ownership are measured using financial ratios derived from firms' annual reports. The detailed operational definitions and measurement methods of all variables used in this study are presented in Table 1.

Table 1. Operational Definition and Measurement of Research Variables

Variable	Definition	Measurement	Source
Financial Distress (FD)	Financial distress refers to deteriorating financial conditions that indicate a firm's declining ability to sustain operations and meet financial obligations, potentially leading to bankruptcy. It is commonly associated with declining profitability, weakening liquidity, reduced cash flow, and increasing leverage.	Emerging Market Altman Z-Score Model (2019 modification) $\mathbf{FD = \alpha + \beta_1 OCF + \beta_2 DER + \beta_3 CR + \beta_4 IO + e}$ score is treated as a continuous variable to capture varying degrees of financial vulnerability. **Interpretation** Z > 2,99: Safe Zone 1,81 < Z < 2,99: Grey Zone Z ≤ 1,81: Distress Zone	Altman (1968); Rahmayanti & Hadromi (2017); Altman et al. (2019); Almamy et al. (2019); Kliestik et al. (2020)
Operating Cash Flow (OCF)	Operating cash flow reflects a firm's ability to generate cash from its core business activities and serves as a primary internal financing source. Stable operating cash flow enhances financial resilience, while weak cash flow increases susceptibility to financial distress, particularly in volatile industries such as coal industry.	Operating Cash Flow **Ratio OCF = Cash Flow from Operating Activities / Current Liabilities**	Hery (2015); Blanc & Setzer (2015); Sukamulja & Sari (2021)
Leverage (DER)	Leverage indicates the extent to which a	Debt to Equity Ratio (DER) **DER = Total Liabilities / Total Equity**	Fahmi (2010);

	firm's assets are financed through debt. Higher leverage increases fixed financial obligations and financial risk, particularly in capital-intensive industries where revenue volatility amplifies exposure to financial distress.		Amna et al. (2021)
Liquidity (CR)	Liquidity represents a firms ability to meet short-term obligations using current assets. Adequate liquidity reflects operational resilience and reduces financial distress risk, although excessively high liquidity may indicate inefficient asset utilization, especially in industries with long cash conversion cycles.	Current Ratio (CR) **CR = Current Assets / Current Liabilities**	Fahmi (2010); Carolina et al. (2017); Rahmadani et al. (2025); Setiawan & Suryono (2022)
Institutional Ownership (IO)	Institutional ownership refers to the proportion of company shares held by institutional investors. These investors generally possess superior monitoring capabilities that can reduce agency problems and improve long-term financial performance, thereby potentially mitigating financial distress risk.	Institutional Ownership Ratio **IO = Institutional Shares / Total Outstanding Shares**	Khurshid et al. (2018); Elyasian et al. (2010); Humairoh et al. (2022); Poaler & Laturette (2025)

RESULTS

Descriptive Statistical Analysis

Table 2. Descriptive Statistics Test Results

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev
Financial distress	75	2.34	27.00	10.1627	4.91607
Operating Cash Flow	75	-.29	4.50	1.1182	1.02138
Leverage	75	.19	19.41	2.9646	3.48230
Liquidity	75	.34	12.98	2.6043	2.50161
Institutional Ownership	75	.06	.99	.7469	.21946
Valid N (listwise)	75				

Processed data using SPSS version 27 (2026)

Referring to the descriptive statistics in Table 2, the financial distress variable shows a minimum value of 2.34 and a maximum value of 27.00, with a mean of 10.1627 and a standard deviation of 4.91607. Operating cash flow varies from –0.29 to 4.50, with an average of 1.1182 and a standard deviation of 1.02138. Leverage values range between 0.19 and 19.41, yielding a mean of 2.9646 and a standard deviation of 3.48230. Liquidity records a minimum of 0.34 and a maximum of 12.98, with an average value of 2.6043 and a standard deviation of 2.50161. Meanwhile, institutional ownership spans from 0.06 to 0.99, with a mean of 0.7469 and a standard deviation of 0.21946.

Classical Assumption Test

Classical Assumption tests covering normality, multicollinearity, heteroscedasticity, and autocorrelation are carried out prior to regression estimation to verify model reliability.

Table 3. Classical Assumption Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			75
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		2.04312315
Most Extreme Differences	Absolute		.078
	Positive		.078
	Negative		-.051
Test Statistic			.078
Asymp. Sig. (2-tailed)[c]			.200[d]
Monte Carlo Sig. (2-tailed)[e]	Sig.		.310
	99% Confidence Interval	Lower Bound	.298
		Upper Bound	.322
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. This is a lower bound of the true significance.			
e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.			

Processed data using SPSS version 27 (2026)

Referring to Table 3, the Kolmogorov–Smirnov test produces an Asymp. Sig. (2-tailed) value of 0.200, which is above the 0.05 threshold, confirming that the regression residuals are normally distributed.

Table 4. Multicollinearity Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	5.510	.879			
	Operating Cash Flow	1.877	.338	.390	.501	1.995
	Leverage	.536	.115	.380	.371	2.693
	Liquidity	.514	.145	.262	.451	2.219
	Institutional Ownership	-.501	1.136	-.022	.960	1.042
a. Dependent Variable: Financial distress						

Processed data using SPSS version 27 (2026)

Referring to Table 4, the multicollinearity diagnostics reveal tolerance values above 0.10 and VIF values below 10 for all variables, confirming the absence of multicollinearity in the regression model.

Table 5. Heteroscedasticity Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.994	.462		4.315	.000
	Operating Cash Flow	-.174	.178	-.163	-.979	.331
	Leverage	-.019	.061	-.062	-.321	.749
	Liquidity	.060	.076	.139	.790	.432
	Institutional Ownership	-.245	.597	-.049	-.410	.683
a. Dependent Variable: ABS_RES						

Processed data using SPSS version 27 (2026)

Referring to Table 5, the Glejser test results demonstrate significance values above 0.05 for all variables, confirming that the regression model is free from heteroscedasticity issues.

Table 6. Autocorrelation Test Results

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.910[a]	.827	.817	2.10069	1.775
a. Predictors: (Constant), Institutional Ownership, Liquidity, Operating Cash Flow, Leverage					
b. Dependent Variable: Financial distress					

Processed data using SPSS version 27 (2026)

Referring to Table 6, the Durbin–Watson statistic of 1.775 is within the acceptable range (dU < dW < 4 − dU), confirming that the model does not exhibit autocorrelation and is appropriate for regression analysis.

Table 7. Multiple Linear Regression Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.510	.879		6.269	.000
	Operating Cash Flow	1.877	.338	.390	5.557	.000
	Leverage	.536	.115	.380	4.662	.000
	Liquidity	.514	.145	.262	3.535	.001
	Institutional Ownership	-.501	1.136	-.022	-.441	.660
a. Dependent Variable: Financial distress						

Processed data using SPSS version 27 (2026)

The results were then entered into a multiple linear regression equation to obtain the following equation:

$$Z\text{-}Score = 5.510 + 1.877\,OCF + 0.536\,DER + 0.514\,CR - 0.501\,IO + e$$

Referring to Table 7, the constant value of 5.510 implies that financial distress equals 5.510 when all independent variables are zero. The t-test results indicate that operating cash flow, leverage, and liquidity significantly affect financial distress, with coefficients of 1.877, 0.536, and 0.514, respectively, and significance values below 0.05. Conversely, institutional ownership does not show a significant effect, as its significance value exceeds 0.05, despite having a negative coefficient.

Hypothesis Testing

Table 8. Simultaneous Test Results (F Test)

ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1479.514	4	369.879	83.818	.000[b]
	Residual	308.902	70	4.413		
	Total	1788.417	74			
a. Dependent Variable: Financial Distress						
b. Predictors: (Constant), Institutional Ownership, Liquidity, Operating Cash Flow, Leverage						

Processed data using SPSS version 27 (2026)

Based on the results presented in Table 8, the F-test yields a significance level of 0.000 (p < 0.05) with an F-statistic of 83.818, which indicates that operating cash flow, leverage, liquidity, and institutional ownership simultaneously exert a significant influence on financial distress (Z-Score). Accordingly, the regression model is deemed statistically valid and suitable for examining the effect of the independent variables on the dependent variable.

Table 9. Partial Test (t-test)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.510	.879		6.269	.000
	Operating Cash Flow	1.877	.338	.390	5.557	.000
	Leverage	.536	.115	.380	4.662	.000
	Liquidity	.514	.145	.262	3.535	.001
	Institutional Ownership	-.501	1.136	-.022	-.441	.660
a. Dependent Variable: Financial Distress						

Processed data using SPSS version 27 (2026)

Referring to Table 9, the t-test results show that operating cash flow, leverage, and liquidity significantly influence financial distress, with p-values of 0.000, 0.000, and 0.001 (< 0.05). However, institutional ownership does not show a significant effect, as its p-value is 0.660 (> 0.05).

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

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.910[a]	.827	.817	2.10069
a. Predictors: (Constant), Institutional Ownership, Liquidity, Operating Cash Flow, Leverage				

Processed data using SPSS version 27 (2026)

Referring to Table 10, the Adjusted R Square value of 0.817 implies that 81.7% of changes in financial distress can be explained by operating cash flow, leverage, liquidity, and institutional ownership, whereas the remaining 18.3% is influenced by variables outside the scope of this study.

DISCUSSION

The Influence of Operating Cash Flow on Financial Distress

The regression results show that operating cash flow has a significance value of 0.000 with a coefficient of 1.877, indicating a statistically significant relationship with financial distress; therefore, H_1 is supported. Higher operating cash flow contributes to an increase in the Z-Score, which implies a lower probability of experiencing financial distress, as it reflects a stronger ability to fulfill short-term financial obligations. From a signaling perspective, stable and sufficient operating cash flow represents a positive signal regarding a firm's financial strength, particularly within capital-intensive industries such as coal industry.

This relationship can also be observed among the sampled firms. For instance, ADRO in 2023 was classified in the Safe Zone, while CANI in 2024 was categorized in the Distress Zone, reflecting differences in Z-Score levels associated with operating cash flow performance. These findings are consistent with previous studies of Naibaho and Natasya (2023), Giarto & Fachrurrozie (2020), and Phan et al., (2022), which states that operating cash flow is an important indicator in predicting the risk of financial distress. These results confirm that internal company factors, particularly the ability to generate cash, play a dominant role in maintaining the financial stability of coal companies during the observation period.

The Influence of Leverage on Financial Distress

Leverage, proxied by the Debt to Equity Ratio (DER), shows a significance level of 0.000 and a regression coefficient of 0.536, indicating that leverage significantly affects financial distress and thus H_2 is accepted. The positive coefficient suggests that higher leverage is associated with an increase in Z-Score, meaning a lower level of financial distress. This outcome may be explained by the relatively favorable performance of the coal industry for much of the study period, enabling firms with higher debt levels to maintain or improve their financial condition.

In terms of agency theory, debt can function as a control mechanism through contractual commitments to creditors, although its impact depends largely on operational performance. This pattern is evident in several sample firms, such as BUMI in 2024 and CANI in 2022, where changes in capital structure were accompanied by corresponding shifts in Z-Score values. These results support the findings of Naibaho and Natasya (2023) and Phan et al., (2022), who argue that leverage does not necessarily increase financial distress risk, but rather depends on industry conditions and a firm's ability to manage its debt obligations effectively.

The Influence of Liquidity on Financial Distress

Liquidity, measured using the Current Ratio, presents a significance value of 0.001 and a coefficient of 0.514, confirming a significant influence on financial distress and supporting H_3. An improvement in liquidity raises the Z-Score and reduces the likelihood of financial distress, indicating that firms with stronger short-term solvency are better positioned to handle immediate financial commitments. In line with signaling theory, adequate liquidity signals sound working capital management and financial resilience.

This pattern is also visible among the observed companies. For example, BYAN in 2024 was categorized in the Safe Zone, while CANI in 2022 fell into the Distress Zone, reflecting contrasting liquidity conditions and corresponding Z-Score classifications. These findings align with studies of Rahmayanti & Hadromi (2017), Setiawan & Suryono (2022), and Asmarani & Purbawati (2020), which identify liquidity as a crucial determinant of corporate financial stability, particularly in sectors characterized by high income volatility such as coal industry.

The Influence of Institutional Ownership on Financial Distress

Institutional ownership shows a significance value of 0.660, indicating that it does not have a statistically significant effect on financial distress; therefore, H_4 is rejected. This suggests that institutional ownership has not functioned effectively as a monitoring mechanism in reducing financial distress risk among coal companies, while internal financial indicators remain more influential in determining corporate financial conditions.

This outcome may be associated with passive monitoring practices and the dominance of controlling shareholders within the ownership structure of coal firms. Evidence from the sample supports this interpretation, as CANI in 2024 maintained high institutional ownership yet remained in the Distress Zone, whereas ADRO in 2023 was categorized in the Safe Zone despite relatively stable institutional ownership levels. These findings are consistent with Elyasiani et al., (2010) and Valentina & Jin (2020), who emphasize that the effectiveness of institutional investors depends heavily on the extent of their active involvement in corporate oversight.

CONCLUSION

This study finds that operating cash flow, leverage, and liquidity have a significant impact on financial distress in coal companies listed on the Indonesia Stock Exchange during the 2022–2024 period. Higher levels of operating cash flow and liquidity are shown to improve the Z-Score, thereby reducing the likelihood of financial distress. Leverage also demonstrates a significant effect, indicating that debt-oriented capital structures in the coal industry do not necessarily

weaken financial conditions and, under certain operational circumstances, may contribute positively to firm performance.

Conversely, institutional ownership does not exhibit a significant influence on financial distress, suggesting that external monitoring is not always effective in alleviating financial problems in firms with relatively concentrated ownership structures. Overall, the regression model shows strong explanatory power, with an Adjusted R^2 value of 81.7%, indicating that the majority of variation in financial distress can be explained by operating cash flow, leverage, liquidity, and institutional ownership.

Future research is recommended to extend the study period, include additional variables such as profitability, sales growth, and firm size, and employ alternative financial distress proxies in order to obtain more comprehensive and robust results.

Theoretical Contribution

This study contributes to the financial distress literature by showing that in industries with high volatility, such as coal industry, leverage does not always increase the risk of distress, but its effect is highly dependent on the company's operational ability to generate cash flow. This finding enriches the perspective of capital structure theory and agency theory, which have thus far emphasized the negative impact of debt on bankruptcy risk. In addition, the use of the Altman Z-Score in its continuous form provides a more sensitive approach to capturing changes in a company's level of financial vulnerability compared to categorical approaches.

Practical Contributions

For company management, the results of this study emphasize the importance of maintaining stable operating cash flow and liquidity, as well as carefully managing the funding structure in the face of industry fluctuations. For investors, these findings can be used as a starting point in assessing the risk of financial distress through the company's internal financial indicators. Meanwhile, for regulators, this research can provide input for the development of an early warning system in the coal industry, which has a high level of financial risk.

REFERENCES

Almamy, J., Aston, J., & Ngwa, L. N. (2019). An Evaluation Of The Altman Z-Score Model In Predicting Financial Distress: Evidence From The UK. Journal Of Accounting And Management Information Systems, 18(4).

Altman, E. I. (1968). Financial Ratios, Discriminant Analysis And The Prediction Of Corporate Bankruptcy. The Journal Of Finance, 23(4), 589–609. Https://Doi.Org/10.1111/J.1540-6261.1968.TB00843.X

Altman, E. I. ., Hotchkiss, Edith., & Wang, Wei. (2019). Corporate Financial Distress, Restructuring, And Bankruptcy : Predict And Avoid Bankruptcy, Analyze And Invest In Distressed Debt. 370.

Amna, L., Aminah, A., Soedarsa, H. G., & Pribadi, H. (2021). Pengaruh Profitabilitas, Likuiditas Dan Leverage Terhadap Financial Distress. Jurnal Akuntansi Dan Keuangan, 12, 88–99.

Anisa, S., Shafitranata, S., Azizah MT, R., & Octavia, R. (2023). Pengaruh Rasio Keuangan Terhadap Financial Distress Perusahaan Makanan Dan Minuman Di Indonesia Sebelum Dan Saat Covid-19. Nominal Barometer Riset Akuntansi Dan Manajemen, 12(2), 166–176. Https://Doi.Org/10.21831/Nominal.V12i2.58346

Asmarani, F., & Purbawati, D. (2020). Pengaruh Profitability, Leverage, Dan Liquidity Terhadap Financial Distress. E-Jurnal Akuntansi Tunas Bangsa.

Azizah, Ul, & Prastiwi, A. (2025). Ekombis Review-Jurnal Ilmiah Ekonomi Dan Bisnis Corporate Governance And Market-Based Value In ESG-Adopted Firms: The Moderating Role Of Institutional Ownership. Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis, 13(4), 3847–3858. Https://Doi.Org/10.37676/Ekombis.V13i4

Bandung, P. N., Gegerkalong Hilir, J., Ciwaruga, B., & Barat, I. (2022). Effect Of Corporate Governance Mechanism And Operating Cash Flow On Financial Distress Etti Ernita Sembiring. Jurnal Bisnis Dan Akuntansi, 24(2), 205–214. Http://Jurnaltsm.Id/Index.Php/JBA

Blanc, R., & Setzer, T. (2015). When To Choose The Simple Model: The Case Of Distress Prediction With Many Accounting Ratios. Journal Of Banking & Finance, 165–176.

Carolina, Marpaung, & Pratama. (2017). Pengaruh Likuiditas, Leverage, Dan Kepemilikan Institusional Terhadap Financial Distress. Jurnal Ekonomi & Bisnis, Universitas Bung Hatta, 23(2).

Eduard Ary Binsar Naibaho, & Adeline Natasya. (2023). Ratio Analysis To Financial Distress With Profitability As A Moderation Variable. Jurnal Reviu Akuntansi Dan Keuangan, 13(2), 412–440. Https://Doi.Org/10.22219/Jrak.V13i2.24506

Elyasiani, E., Jia, & Jing. (2010). Nstitutional Ownership Stability And Earnings Management. Journal Of Banking & Finance, 34(8).

Fahmi, I. (2010). Analisis Kinerja Keuangan. Alfabeta.

Fitri, M., & Dillak, V. (2020). Arus Kas Operasi, Leverage, Sales Growth Terhadap Financial Distress. Jurnal Riset Akuntansi Kontemporer, 12(2), 60–64.

Giarto, G., & Fachrurrozie, F. (2020). Pengaruh Growth, Liquidity, Leverage, Dan Arus Kas Operasi Terhadap Financial Distress Pada Perusahaan Manufaktur Sub Sektor Makanan Dan Minuman. Jurnal Akuntansi Dan Keuangan Publik (JAKP), 5(2).

Hapsari, D. W., Kusuma, A. R., & Nugraha, E. (2023). Impact Of Debt Financing And Interest Expense On Financial Distress: Evidence From Indonesian Coal Sector 2022–2023. Jurnal Ilmiah Akuntansi Dan Bisnis, 18(1).

Hery. (2015). Analisis Laporan Keuangan. PT Grasindo. Https://Books.Google.Co.Id/Books/About/Analisis_Laporan_Keuangan.Html?Id=Yja4EAAAQBAJ&Redir_Esc=Y

Hommes, C. (2007). The Exchange Rate In A Behavioral Finance Framework, Paul De Grauwe, Marianna Grimaldi, Princeton University Press (2006). International Review Of Economics & Finance, 16(3), 455–457. Https://Doi.Org/10.1016/J.IREF.2007.05.002

Humairoh, F., Nurulita, S., Bina Widya, K. K., Baru, S., & Tampan, K. (2022). The Effect Of Corporate Governance On Financial Distress. Jurnal Riset Akuntansi Kontemporer, 14(2), 237–242. Https://Journal.Unpas.Ac.Id/Index.Php/Jrak/Index

Jensen, & Meckling, W. (1976). Theory Of The Firm: Managerial Behavior, Agency Costs And Ownership Structure. Journal Of Financial Economics, 3(4), 305–360. Https://Doi.Org/10.1016/0304-405X(76)90026-X

Kementrian Energi Dan Sumber Daya Mineral. (2023). Laporan Kinerja Kementrian Energi Dan Sumber Daya Mineral.

Khurshid, A., Widyawati, Nurjanti, & Wahyu. (2018). Pengaruh Kepemilikan Institusional, Kepemilikan Manajerial, Dan Profitability Terhadap Nilai Perusahaan. Urnal Akuntansi, Ekonomi Dan Bisnis Islam (JAEBI).

Kliestik, T., Valaskova, K., Lazaroiu, G., Kovacova, M., & Vrbka, J. (2020). Prediction Of Financial Distress Of Enterprises With A Focus On The Context Of International Determinants. Journal Of Business Economics And Management, 21(3).

Kurniawan, A., & Hidayat, S. (2021). Analisis Kontribusi Sektor Pertambangan Terhadap Pertumbuhan Ekonomi Dan Penerimaan Negara Di Indonesia. Urnal Ekonomi Dan Kebijakan Publik.

Kusumaningrum, A. D., & Rahardjo, S. N. (2021). Pengaruh Kepemilikan Institusional, Dewan Komisaris Independen, Dan Komite Audit Terhadap Kualitas Laporan Keuangan. Diponegoro Journal Of Accounting, 10(4).

Mandala, I. G. N. A. K., Darmawan, N. A. S., & Wirama, D. G. (2017). Pengaruh Struktur Kepemilikan Pada Financial Distress Perusahaan Di Bursa Efek Indonesia. Urnal Ekonomi Dan Bisnis Universitas Udayana, 1367–1392.

Noviyana, R., Sari, W. N., & Budiman, A. (2024). Determinan Financial Distress Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia. Jurnal Akuntansi Dan Keuangan, 123–140.

Phan, A. T., Trinh, T. C. T., & Tran, T. L. (2022). Impact Of Cash Flows On Financial Distress: Evidence From Listed Companies In Vietnam. Journal Of Accounting And Finance In Emerging Economies (JAFEE).

Poaler, B., & Laturette, K. (2025). Ekombis Review-Jurnal Ilmiah Ekonomi Dan Bisnis The Role Of Institutional Ownership In Human And Structural Capital Efficiency In Increasing Firm Value ARTICLE HISTORY. Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis, 13(4), 3859–3868. Https://Doi.Org/10.37676/Ekombis.V13i4

Putra, R. A., & Nugroho, A. (2021). Analisis Pengaruh Struktur Biaya Dan Harga Komoditas Terhadap Kinerja Keuangan Perusahaan Pertambangan. Jurnal Akuntansi Dan Keuangan, 23(1).

Putri, D., & Ardini, L. (2020). Pengaruh Kinerja Keuangan Dan Ukuran Perusahaan Terhadap Financial Distress. Jurnal Ilmu Dan Riset Akuntansi (JIRA).

Rahmadani, M., Supardi,);, & Sriyono,); (2025). Ekombis Review-Jurnal Ilmiah Ekonomi Dan Bisnis Analysis Of The Relationship Between Liquidity And Cost Structure To Financial Efficiency With Profitability As An Intervening Factor. Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis, 13(4), 4449–4470. Https://Doi.Org/10.37676/Ekombis.V13i4

Rahmayanti, A., & Hadromi, M. (2017). Analisis Pengaruh Current Ratio, Debt To Equity Ratio, Total Assets Turnover, Return On Assets, Dan Sales Growth Terhadap Financial Distress. Management Analysis Journal, 255–268.

Rika Julitia, W., Susilo, J., & Hudzaifah, Y. (2025). Ekombis Review-Jurnal Ilmiah Ekonomi Dan Bisnis The Influencesof Investment Policy, Profitability, And Capital Structurecon Firm Value In The Energy Sectorslisted Onxthe Indonesia Stock Exchange (IDX). Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis, 13(4), 4111–4122. Https://Doi.Org/10.37676/Ekombis.V13i4

Ross, S. A. (1977). The Determination Of Financial Structure: The Incentive-Signalling Approach. . The Bell Journal Of Economics, 23–40.

Safariani, D., & Ryanto, F. (2025). The Effect Of Environmental Performance, Institutional Ownership Structure And Company Size On Company Value With ROE As An Intervening Variable In The Mining Sector Listed On The Indonesia Stock Exchange In 2021. EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis, 13(4), 13. Https://Doi.Org/10.37676/Ekombis.V13i4

Safiq, M., Manaf, A., & Budiarso, T. E. (2020). Pengaruh Capital Structure, Firm Size, Dan Arus Kas Operasi Terhadap Financial Distress. Jurnal Ilmiah Akuntansi Dan Finansial (JIAF).

Santoso, C. E. (2017). Peranan Analisis Rasio Keuangan Dalam Memprediksi Kondisi Financial Distress Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia. Jurnal Akuntansi, 1–18.

Sari, D. P., Rahmawati, E., & Utami, T. (2022). Analisis Ekspor Batu Bara Indonesia Dan Implikasinya Terhadap Neraca Perdagangan. Jurnal Ilmu Ekonomi Terapan, 7(1).

Setiawan, D., & Suryono, B. (2022). Pengaruh Rasio Keuangan Terhadap Potensi Financial Distress Pada Perusahaan Consumer Non-Cyclical Yang Terdaftar Di Bursa Efek Indonesia. Jurnal Ilmu Dan Riset Akuntansi (JIRA).

Spence, M. (1973). Job Market Signaling. The Quarterly Journal Of Economics, 87(3), 355–374. Https://Doi.Org/10.2307/1882010

Sukamulja, S., & Sari, K. A. (2021). Financial Distress And Its Determinants: A Study On Mining Companies In Indonesia. Journal Of Applied Finance And Accounting, 8(1).

Sutrisno, S., Wahyuni, S., & Lestari, H. P. (2022). Financial Resilience Of Mining Companies Amidst Global Commodity Price Volatility . Jurnal Manajemen Dan Keuangan, 11(2).

Valentina, & Jin, T. F. (2020). FINANCIAL DISTRESS: Rasio Keuangan Dan Struktur Kepemilikan Pada Perusahaan Non-Keuangan. Jurnal Bisnis Dan Akuntansi, 22(2), 347–360.

Wahyuningtiyas, S., & Retnani, E. (2019). Pengaruh Likuiditas, Leverage, Dan Profitabilitas Terhadap Financial Distress. Journal Of Accounting And Business Review (JABR).

Wibowo, S., Pratama, I. G., & Santoso, B. (2023). Determinants Of Financial Performance In Coal Mining Companies: The Role Of Fixed Costs And Capital Intensity. Urnal Riset Akuntansi Dan Bisnis, 9(2).

Widhiadnyana, I. G. S., & Ratnadi, N. M. D. (2019). Pengaruh Kepemilikan Institusional, Profitability, Dan Leverage Pada Financial Distress. E-Jurnal Akuntansi, Universitas Udayana.