TESTING TRADE-OFF THEORY IN CORPORATE FINANCIAL DISTRESS: A RANDOM EFFECTS PANEL APPROACH

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ABSTRACT

Drawing on Trade-Off Theory, this study examines corporate financial distress in an emerging economy by examining how firms balance the tax benefits of debt against the costs of distress. It analyses the effects of leverage, liquidity, institutional ownership, while assessing whether operational efficiency moderates these relationships. The sample comprises 153 firms listed on the Indonesia Stock Exchange over 2023–2024, generating 306 firm-year observations from S&P Capital IQ. Panel regression analysis was conducted using Chow, Lagrange-Multiplier, Hausman tests, with the Random Effects model selected as the preferred estimator. The findings show that leverage and liquidity significantly influence financial distress, supporting the risk–return trade-off in capital structure decisions. However, institutional ownership has no significant direct effect, operational efficiency does not moderate relationships. Overall, the results highlight the importance of prudent capital structure and liquidity management and provide evidence of the relevance of Trade-Off Theory in an emerging market context.

Keywords: Trade-off Theory; Financial Distress; Institutional Ownership; Leverage, Efficiency

1. INTRODUCTION

Global economic turbulence has persisted in the post-COVID-19 period, despite expectations of recovery. Ongoing global shocks such as geopolitical tensions, wars, natural disasters, and regional disruptions continue to create uncertainty for firms (Kushermanto et al., 2023). These conditions directly affect corporate financial stability and increase the relevance of financial distress as a key concern in corporate finance. Global economic growth is projected to slow, (PricewaterhouseCoopers, 2024) with estimating growth at 2.9% in 2024, down from 3.2% in 2023. Tighter monetary policy and reduced fiscal support have contributed to this slowdown. Although emerging economies are expected to remain relatively stable, firms across industries continue to face financial pressure (Maulidya et al., 2023). An unsuccessful business has been defined in various ways to describe either the formal processes faced by a firm or the economic difficulties it experiences. Four general terms frequently used in the literature are failure, insolvency, default, and bankruptcy. Although these terms are sometimes used interchangeably, each has a distinct meaning in its formal context (Altman & Hotchkiss, 2005). Financial distress prediction becomes increasingly important due to ongoing changes in business sectors and the broader economic environment. Creditors, investors, regulators, central banks, auditors, and supervisors all require timely information about a company's financial condition (Malakauskas & Lakstutiene, 2021).

Under these conditions, liquidity can no longer be viewed as a reliable indicator of financial health. Firms may appear liquid while simultaneously relying on debt financing, indicating underlying vulnerability related to leverage and operational efficiency (Chai & Sudirgo, 2021). Similar patterns are observed in Asian economies, where firms often prioritise short-term survival over long-term efficiency. Institutional ownership, while associated with stronger

governance, does not always effectively mitigate financial pressure during periods of economic stress. In Indonesia, these challenges became more visible during 2023–2024, when several listed companies experienced financial restructuring, debt renegotiation, and legal payment disputes. Financial distress has affected not only smaller firms but also large and established companies, suggesting that corporate vulnerability reflects broader structural conditions involving liquidity management, financing decisions, operational efficiency, and ownership structure.

Despite these developments, many empirical studies still examine liquidity, leverage, institutional ownership, and efficiency separately. This study therefore adopts an interactive framework to analyse corporate financial distress among companies listed on the Indonesia Stock Exchange during 2023–2024. By examining the combined effects of financial flexibility, governance mechanisms, and operational performance, the research aims to provide a more comprehensive understanding of financial distress in an emerging market context. Finally, this section concludes by presenting the research problems and objectives in a systematic manner, along with an explanation of the study's novelty and its contribution to the existing literature.

2. LITERATURE REVIEW

From a theoretical perspective, financial distress is closely related to Trade-Off Theory, which explains how firms balance the benefits and costs of debt in determining their capital structure(Liu, 2017). The theory posits that firms seek an optimal leverage level by weighing the tax advantages of debt against the expected costs of financial distress, including bankruptcy costs, agency conflicts between shareholders and creditors, and loss of financial flexibility. Excessive leverage increases the probability of financial distress due to higher financial risk and fixed interest obligations, particularly when firms experience declining cash flows or adverse macroeconomic conditions. Within this framework, financial distress emerges when firms exceed their optimal debt capacity and the marginal costs of debt outweigh its marginal benefits .

However, empirical evidence regarding Trade-Off Theory remains mixed. While some studies support the existence of target leverage ratios consistent with the trade-off framework, other research finds limited evidence that firms actively rebalance toward such targets (Voutsinas & Werner, 2025). In certain contexts, leverage appears to be driven more by historical financing decisions or market timing considerations than by deliberate optimisation. Moreover, in emerging economies, institutional weaknesses, limited access to capital markets, and higher refinancing constraints may distort the traditional cost–benefit trade-off predicted by the theory. These contradictions suggest that the relationship between leverage and financial distress may be conditional rather than universal.

At the same time, Liquidity Management Theory suggests that firms maintain sufficient liquid assets to meet short-term obligations and reduce the likelihood of financial failure. Adequate liquidity can function as a buffer against temporary shocks, potentially mitigating the costs of financial distress predicted by Trade-Off Theory. Nevertheless, maintaining liquidity alone does not guarantee financial stability if firms rely heavily on external financing or operate inefficiently. In fact, excessive reliance on short-term liquidity without structural balance in capital structure may merely postpone, rather than prevent, financial distress.

The role of ownership structure in financial distress can be explained through Agency Theory (Jensen & Meckling, 1976), which emphasises conflicts of interest between managers and shareholders. Effective governance mechanisms may reduce excessive risk-taking and improve monitoring, thereby lowering the likelihood of financial distress. However, corporate governance mechanisms, ethical standards, and legal systems used to address financial distress vary across countries. Therefore, extending research to different geographic contexts and to financial distress conditions beyond bankruptcy can help enrich and complement the existing literature (Manzaneque et al., 2016). The determinants of particular ownership structures, as well as the interaction between ownership structures and a country's institutional environment—including how ownership structures influence institutional environments and how institutional environments shape ownership structures (Roche, 2005) remain important considerations. Nevertheless, the effectiveness of institutional monitoring may depend on the firm's financial condition and governance environment (Handriani et al., 2021). During periods of financial pressure, institutional investors may prioritise risk minimisation rather than long-term operational improvement, thereby potentially weakening their monitoring role. Corporate governance issues are not new, and the economic crisis that affected many countries, including Indonesia in the mid-1997 period, is often viewed as a major turning point. The crisis revealed several underlying problems, such as weak institutional oversight, inadequate business practices—particularly in the banking sector where risk management was not properly implemented—and funding and investment decisions that were often influenced by hidden interests rather than sound economic considerations. These conditions reflected the presence of poor corporate governance practices (Handriani et al., 2021). Inefficient operations can weaken profitability and cash flow generation, increasing vulnerability to financial distress. In this context, efficiency may interact with financial indicators such as liquidity and leverage in shaping corporate resilience.

Despite these theoretical developments, much of the literature continues to analyse financial distress through relatively narrow lenses. Many empirical studies focus on identifying dominant predictors, such as liquidity ratios, leverage levels, or profitability measures. While this approach has generated valuable insights, it often overlooks the interconnected nature of corporate financial decisions. Firms do not manage liquidity, capital structure, and operational efficiency in isolation. Rather, these elements interact continuously, particularly during periods of economic stress. This limitation has become increasingly apparent in recent years, as firms with seemingly adequate liquidity have nonetheless entered financial distress.

2.1 Trade-Off Theory

Trade-Off Theory posits that firms determine their optimal capital structure by balancing the tax advantages of debt against the expected costs of financial distress. Building upon the foundational work of Franco Modigliani and Merton Miller (1963), the theory recognises that interest payments generate tax shields which enhance firm value. However, as leverage increases, so too does the probability of financial distress and the associated direct and indirect costs, including legal expenses, reputational damage, operational disruption, and agency conflicts. Consequently, firms are expected to borrow up to the point where the marginal benefit of additional debt equals the marginal cost arising from heightened distress risk, thereby reaching an optimal capital structure. Subsequent developments in the literature extend the Trade-Off framework by incorporating firm-specific characteristics that influence distress costs and debt capacity. Liquidity is viewed as a critical buffer mitigating short-term financial pressure, implying that firms with weak liquidity positions face amplified distress risk when

highly leveraged. Similarly, institutional ownership may reduce agency problems through enhanced monitoring, potentially lowering the expected costs of distress. Operational efficiency also plays a conditioning role, as firms with stronger and more stable cash flows are theoretically better positioned to sustain higher leverage without significantly increasing their vulnerability to financial distress.

2.2 Liquidity and Financial Distress

Liquidity has traditionally been viewed as one of the most important safeguards against financial distress. Classical financial theory suggests that firms with higher liquidity are better positioned to absorb shocks and meet short-term obligations, thereby reducing the likelihood of distress. Empirical evidence generally supports this view, with many studies reporting a negative relationship between liquidity measures and financial distress indicators (Brédart, 2014). However, more recent findings complicate this relationship. Several studies note that liquidity can have ambiguous effects, depending on how it is generated and maintained. For example, firms may increase liquidity by accumulating short-term debt or delaying payments to suppliers, practices that may temporarily improve liquidity ratios while increasing underlying risk. In such cases, liquidity may reflect short-term financial engineering rather than genuine financial strength. Some scholars argue that excessive liquidity may even signal inefficient asset utilisation or managerial risk aversion, which can indirectly contribute to long-term financial distress. These mixed findings suggest that liquidity alone may not provide a reliable signal of financial health. Instead, its role in financial distress should be examined in relation to other financial and governance variables. This perspective is particularly relevant in periods of tight monetary conditions, when access to external financing becomes more constrained.

2.3 Leverage and Financial Distress

Leverage is widely recognised as a key determinant of financial distress. High leverage increases fixed financial obligations and amplifies firms' exposure to economic downturns. Numerous studies document a positive association between leverage and the likelihood of distress or bankruptcy (Abubakar & Anyonje, 2025). From this perspective, leverage acts as a primary transmission channel through which adverse shocks affect corporate solvency. Nevertheless, the relationship between leverage and financial distress is not uniform across contexts. Some studies suggest that moderate levels of leverage can discipline management and improve operational efficiency, potentially reducing distress risk. The trade-off theory of capital structure implies that firms balance the benefits of debt against its costs, including the risk of financial distress. Empirical evidence indicates that this balance varies across industries, institutional environments, and stages of the economic cycle. Importantly, leverage interacts closely with liquidity. Firms with high leverage but sufficient liquidity may avoid immediate distress, while firms with low leverage but poor liquidity management may still experience financial difficulties. This interaction has received limited attention in the literature, despite its practical significance.

2.4 Institutional Ownership, Monitoring and Financial Distress

Institutional ownership is often associated with improved corporate governance and enhanced monitoring. Theoretically, institutional investors possess both the resources and incentives to oversee management effectively, thereby reducing agency problems and mitigating financial distress risk. However, this issue is generally considered less severe compared to the problem associated with using the proportion of shares owned by management as a measurement

(Demsetz & Villalonga, 2001). However, this relationship is not universally observed. Some studies find that institutional ownership has a negative effect on financial (Septiani & Dana, 2019),while others report mixed results depending on the type of institutional investor involved . Passive institutional investors, for example, may lack the incentives to engage actively in monitoring, particularly during periods of financial stress. Moreover, institutional investors may prioritise short-term performance, potentially encouraging risk-taking behaviour that increases financial vulnerability. Certain corporate governance characteristics can be explained through incentive-based economic models of managerial behavior. In general, these models are grouped into two main categories. Agency theory models suggest that conflicts of interest between managers and shareholders may lead managers to make decisions that harm shareholders. Because shareholders cannot always directly monitor managerial actions, contractual arrangements alone may not fully prevent such behavior. Therefore, managerial ownership can serve as a mechanism to align managers' interests with those of shareholders, encouraging decisions that support shareholder value.

2.5 Efficiency and Operational Performance

Operational efficiency reflects a firm's ability to generate output from its available resources. Inefficient operations can erode profitability, reduce cash flows, and ultimately contribute to financial distress. Prior studies consistently find that lower efficiency is associated with higher distress risk, particularly in competitive industries. Efficiency also plays a critical role in shaping how firms respond to financial constraints(Gill et al., 2014). Firms with efficient operations may be better able to adapt to adverse conditions by reallocating resources or adjusting cost structures. Conversely, inefficient firms may struggle to respond effectively, even when liquidity is available. This dynamic suggests that efficiency can either amplify or mitigate the effects of liquidity and leverage on financial distress. Despite its importance, efficiency is often treated as a control variable rather than a central component of financial distress analysis. This treatment may underestimate its role in shaping financial vulnerability, particularly in periods of economic adjustment.

2.6 Interactive Effects and Gaps in the Literature

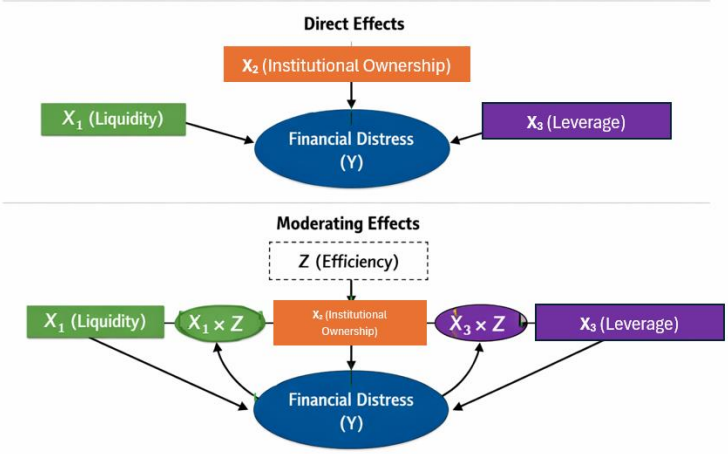
A recurring limitation in the existing literature is the tendency to analyse financial distress determinants independently. While this approach simplifies empirical modelling, it does not fully capture the complexity of corporate financial decision-making. In reality, liquidity, leverage, institutional ownership, and efficiency are interdependent. Their effects on financial distress are likely to be conditional rather than additive. A small but growing body of research has begun to explore interaction effects in distress models. These studies suggest that the impact of liquidity on distress risk may depend on leverage levels, and that governance mechanisms may be more effective in certain financial environments than others. However, such studies remain relatively scarce, particularly in emerging market contexts. Moreover, much of the existing evidence is derived from developed markets, where institutional frameworks and financial systems differ significantly from those in emerging economies. This raises concerns regarding the generalisability of existing findings. Emerging markets often exhibit higher ownership concentration, different governance practices, and greater sensitivity to external shocks, all of which may influence financial distress dynamics (Bhagat & Bolton, 2008) .

2.7 Emerging Economy and the Indonesian Context

Research on financial distress in emerging markets has expanded in recent years, yet significant gaps remain. Studies focusing on Indonesia often examine specific sectors or limited samples, which may not capture broader market dynamics. Additionally, many studies rely on pre-pandemic data, limiting their relevance to current economic conditions. The period 2023–2024 represents a particularly important context for examining financial distress in Indonesia. During this time, firms faced the combined effects of global monetary tightening and domestic economic challenges. Analysing financial distress during this period provides an opportunity to observe how firms respond to sustained financial pressure, rather than temporary shocks. Importantly, Indonesia's diverse corporate landscape allows for the examination of heterogeneity in financial distress dynamics. When a company's shares are held by another firm, as is frequently the case, the ownership structure of that holding company is further examined, and this process is continued until the final controlling owners are identified. For most countries, this approach represents the only effective way to clearly understand the link between ownership and control. The resulting data allow for a comparative analysis that captures broad patterns in ownership structures and control mechanisms across firms (La Porta et al., 1988). Overall, the literature suggests that financial distress is a complex and context-dependent phenomenon. While liquidity, leverage, institutional ownership, and efficiency have each been shown to influence distress risk, their effects are not independent. The limited attention to interaction effects represents a significant gap in the literature, particularly in emerging market settings. By examining the interactive effects of these variables within the Indonesian context during 2023–2024, this study responds directly to this gap. Rather than treating financial distress as the outcome of isolated financial indicators, it adopts a more integrated perspective that reflects the realities of corporate financial management. This approach not only extends existing research but also offers insights that are relevant to current economic conditions.

3. RESEARCH METHOD

This study adopts a quantitative research design to examine the determinants of corporate financial distress and, more specifically, the interactive effects among key financial and governance variables. A quantitative approach is considered appropriate given the objective of testing statistically observable relationships across a large population of firms. The study relies on secondary data, which allows for consistent measurement across firms and over time, while minimizing subjectivity in data collection. The empirical strategy is grounded in moderated regression analysis (MRA), which enables the examination of whether the relationship between liquidity and financial distress varies depending on firms' leverage, institutional ownership, and operational efficiency. This approach is particularly suitable for capturing the conditional nature of financial distress, where the impact of one financial characteristic may depend on the presence or intensity of others. Figure 1 displays the conceptual framework of this research.



Figures 1. Conceptual Framework

3.1 Data Collection and Instrument Tests

This study adopts a quantitative research design using secondary data obtained from S&P Capital IQ, which provides standardized firm-level financial and ownership information. The sample consists of companies listed on the Indonesia Stock Exchange (IDX) over the 2023–2024 period. The dataset includes financial statements, ownership structure variables, and efficiency indicators. To ensure consistency and comparability, firms with incomplete observations were excluded, resulting in a balanced panel dataset. All data processing and statistical analyses were conducted using Stata.

Prior to hypothesis testing, the dataset was structured as panel data by defining firm and time identifiers. Descriptive statistics were first generated to examine the distribution and general characteristics of the variables. Subsequently, a series of diagnostic tests were conducted to ensure the robustness of the regression estimates. Normality was assessed using skewness–kurtosis and Shapiro–Wilk tests, although strict normality is not a primary concern in panel data due to the central limit theorem. Multicollinearity was evaluated using the variance inflation factor (VIF), with a threshold below 10 indicating the absence of serious multicollinearity. Heteroskedasticity was tested using a modified Wald test for groupwise heteroskedasticity, while autocorrelation was examined using the Wooldridge test for serial correlation in panel data. Where violations were detected, robust standard errors were employed to correct for heteroskedasticity and autocorrelation.

The empirical analysis was conducted using panel data regression techniques, beginning with the estimation of the common effect model (pooled ordinary least squares), followed by the fixed effect model (FEM) and the random effect model (REM). Model selection was carried out through a sequence of specification tests. The Chow test was used to compare the pooled model with the fixed effect model, where a significant result indicates the superiority of FEM. The Hausman test was then employed to determine whether FEM or REM was more appropriate, with a significant p-value suggesting that FEM provides consistent and efficient estimates. Additionally, the Breusch–Pagan Lagrange Multiplier test was performed to assess whether the random effect model is preferred over the pooled model.

To examine the moderating role of institutional ownership, moderated regression analysis (MRA) was employed by constructing interaction terms between institutional ownership and

the independent variables. The final model incorporates these interaction effects within the fixed effect framework and is estimated using robust standard errors to account for potential heteroskedasticity and serial correlation. The regression results are interpreted based on coefficient signs, statistical significance, and the magnitude of the moderating effects, providing insights into the relationship between financial distress, firm characteristics, and ownership structure.

4. RESULTS

4.1 Descriptive Statistic

Table 1. Descriptive Statistic Result

Variable	Type	Mean	Std_Dev	Min	Max	N/T
finds	overall	4.045526	4.88519	0.51	34.2	N=306
	between		4.827784	-0.2255	31.3	n=153
	within		0.796243	-8.2805	13.5	T=2
lq	overall	2.388415	2.221238	0.103	15	N=306
	between		2.178338	0.214	12.5	n=153
	within		0.452167	-4.2582	6.8549	T=2
io	overall	6.301317	7.691633	0.003	59.68	N=306
	between		7.580823	-0.004	59.68	n=153
	within		0.735807	-2.4262	6.0282	T=2
lev	overall	60.16857	71.14191	0.012	385.6	N=306
	between		70.6485	0.019	342.5	n=153
	within		13.05872	-26.146	160.6	T=2
ef	overall	0.826144	0.74151	0.075	4.84	N=306
	between		0.731111	-0.0362	1.9864	n=153
	within		0.138636	-0.1981	2.0214	T=2
lq*ef	overall	2.055572	2.983266	0.025	19.37	N=306
	between		2.948282	0.041	19.37	n=153
	within		0.577533	-1.1432	5.7255	T=2
io*ef	overall	4.52501	7.078224	0.001	59.17	N=306
	between		6.898839	-0.0035	59.174	n=153
	within		1.653535	-8.7645	17.815	T=2
lev*ef	overall	47.95207	74.39134	0.008	4931.4	N=306
	between		72.45803	0.0165	471.16	n=153
	within		17.3528	-74.222	176.13	T=2
pt	overall	5.602595	4.747298	-2.72	24.1	N=306
	between		4.581916	-2.555	21.5	n=153
	within		1.269935	-0.0975	11.327	T=2
sagr	overall	0.071431	0.265708	-0.567	1.893	N=386
	between		0.262698	-0.4215	1.1719	n=153
	within		0.172198	-0.9966	1.1334	T=2
mo	overall	8.477889	13.94774	0.003	71.34	N=386
	between		13.47766	0.003	71.34	n=153
	within		1.71701	-0.8371	17.793	T=2

Source: Data Processed by Author

Table 1 summarises the statistical characteristics of all variables examined in this study. Using a total of 306 firm-year observations, the dependent variable, financial distress (findis), reports an average value of 4.04, with observed values extending from –0.51 to 34.2. This wide range indicates substantial dispersion among sample firms. The cross-sectional variation (between standard deviation = 4.88) exceeds the time-series variation within firms (0.79), implying that disparities across companies are more dominant than fluctuations over the observed period. Regarding liquidity (lq), the mean value is 2.38, with minimum and maximum figures of 0.163 and 15.00, respectively, reflecting differing levels of short-term financial capacity among

firms. Institutional ownership (io) displays an average of 6.30, spanning from 0.003 to 59.69, suggesting considerable diversity in ownership concentration and monitoring structures. Leverage (lev) records a mean of 60.16 and demonstrates substantial variability, as indicated by its large standard deviation of 71.142 and a range between 0.012 and 385.6, highlighting pronounced differences in capital structure decisions. Lastly, efficiency (ef) yields an average of 0.82, with values ranging from 0.07 to 6, signifying moderate dispersion in operational performance across the sample firms.

4.2 Correlation analysis

Table 2. Correlation analysis result

Variable	finds	lq	io	lev	ef	lq*ef
finds	1.00000					
lq	0.4327	1.00000				
io	-0.6646	-0.0572	1.00000			
lev	-0.3956	-0.4108	0.0242	1.00000		
ef	0.0184	0.0502	-0.1198	-0.0334	1.00000	
lq*ef	0.2704	0.6902	-0.1438	-0.2814	0.6142	1.00000
io*ef	-0.0738	-0.073	0.5544	0.0585	0.5569	0.192
lev*ef	0.2319	-0.2959	0.001	0.6986	0.4624	0.0647
pt	0.4265	0.1497	-0.0476	-0.2533	0.0777	0.0926
sagr	-0.0252	-0.1307	0.0419	0.055	-0.1139	-0.1825
mo	-0.0216	-0.0199	0.1104	0.0063	-0.0833	-0.0916

Variable	io*ef	lev*ef	pt	sagr	mo
finds					
lq					
io					
lev					
ef					
lq*ef					
io*ef	1.00000				
lev*ef	0.4312	1.00000			
pt	0.031	0.1392	1.00000		
sagr	0.0209	0.011	0.1193	1.00000	
mo	0.0467	-0.0412	-0.0188	0.0172	1.00000

Source: Data Processed by Author

Table 2 presents the correlation coefficients among the variables included in the analysis. In general, the magnitude of the correlations ranges from low to moderate, indicating that multicollinearity does not appear to pose a substantial problem. Financial distress (finds) exhibits a positive association with liquidity (lq) at 0.4327 and sales performance (pt) at 0.4265. In contrast, it shows negative correlations with institutional ownership (io) (−0.6646) and leverage (lev) (−0.3956). Among these relationships, the strongest coefficient is the negative correlation between financial distress and institutional ownership (−0.6646), suggesting that higher levels of institutional ownership are associated with lower levels of financial distress. Liquidity (lq) is strongly and positively correlated with its interaction term lqef (0.6902), while leverage (lev) demonstrates a similarly strong positive relationship with levef (0.6986). Efficiency (ef) is moderately associated with lqef (0.6142) and ioef (0.5569). Such patterns are theoretically reasonable, as interaction terms commonly share variance with the variables from which they are constructed. Notably, all correlation coefficients remain below the 0.80 threshold, which is commonly used as an indicator of potential multicollinearity issues. This finding suggests that the model does not suffer from serious multicollinearity, allowing the

explanatory variables to be entered jointly in the regression estimation. Overall, the correlation analysis reflects meaningful associations among the variables without indicating redundancy or instability within the regression framework.

4.3 Model Selection

Table 3. Model Selection Test Result

Model Selection Test	Result
Chow Test (CEM vs FEM)	Prob < 0.05 → FEM preferred over CEM
LM Test (CEM vs REM)	Prob = 0.0000 → REM preferred over CEM
Hausman Test (FEM vs REM)	Prob = 0.9301 (> 0.05) → REM selected
Final Model	**Random Effect Model (REM)**

Source: Data Processed by Author

Table 3 reports the results of the panel data model determination procedures, which involve the Chow test, the Breusch–Pagan Lagrange Multiplier (LM) test, and the Hausman specification test. The initial step applies the Chow test to evaluate whether the common effect model (CEM) or the fixed effect model (FEM) is more suitable. The probability value obtained is below 0.05, leading to the rejection of the common effect model in favor of the fixed effect specification. Subsequently, the Breusch–Pagan LM test is employed to assess the relative suitability of the common effect model versus the random effect model (REM). The result shows Prob > chibar2 = 0.0000, which is lower than the 0.05 significance threshold. This outcome suggests that the random effect model provides a better fit than the common effect model. In the final stage, the Hausman test is conducted to decide between the fixed effect and random effect approaches. The reported value of Prob > chi2 = 0.9301 exceeds 0.05, indicating that the coefficient differences are not statistically systematic. Consequently, the random effect model is deemed more appropriate for the data structure in this study. Based on these sequential tests, the regression estimations are ultimately carried out using the random effect model (REM).

4.4 Multicollinearity Test

Table 4. Multicollinearity Test Result

Variable	VIF	1/VIF
ef	9.08	0.110102
lq*ef	8.27	0.120919
lev*ef	6.8	0.147088
lg	5.41	0.184907
io*ef	5.09	0.19631
lev	4.29	0.233061
io	3.62	0.276347
pt	2.53	0.394632

mo	1.39	0.716921
sagr	1.14	0.880472
Mean VIF	**4.76**	

Source: Data Processed by Author

The Variance Inflation Factor (VIF) analysis is conducted to evaluate potential multicollinearity among the explanatory variables included in the regression model. As a commonly accepted guideline, VIF values exceeding 10 signal serious multicollinearity concerns, whereas values ranging from 5 to 10 indicate a moderate level of collinearity. Referring to Table 4, the reported average VIF is 4.76, suggesting that multicollinearity does not pose a substantial threat to the model's reliability. Although certain variables exhibit comparatively elevated VIF values — namely ef (9.08), lqef (8.27), and levef (6.80), these figures remain below the conventional critical cut-off value of 10. Hence, despite the presence of moderate intercorrelations, the explanatory variables are still considered suitable for inclusion in the regression estimation. Taken together, the VIF results confirm that the model does not suffer from serious multicollinearity issues.

4.5 Hypotheses Test (Before Moderation)

Table 5. Hypotheses (Before Moderation) Test Result

Random-effects GLS regression

		Number of obs	306
		Number of groups	153
R-sq within	0.0939	Obs per group (min)	2
R-sq between	0.3358	Obs per group (avg)	2
R-sq overall	0.3257	Obs per group (max)	2
		Wald chi2(7)	76.42
		Prob > chi2	0.0000

Variable	Coef.	Std.Err.	z	P>|z|	[95% conf.	interval]
lq	0.4733605	0.1058527	4.47	0.000	0.265893	0.6808281
io	0.0306834	0.0321715	0.95	0.34	-0.0323715	0.0937383
lev	-0.011958	0.0035403	-3.38	0.001	-0.0188968	-0.0050192
ef	0.3111142	0.332612	0.94	0.35	-0.3407932	0.9630217
pt	0.1929662	0.0434793	4.44	0.000	0.1077484	0.278184
sagr	0.2459233	0.3712115	0.66	0.508	-0.4816379	0.9734844
mo	-0.0032196	0.0201284	-0.16	0.873	-0.0426705	0.0362314
cons	2.112687	0.6764892	3.12	0.002	0.786792	3.438581
sigma_u	3.8669389					
sigma_e	1.082385					
rho	0.9273443	(fraction of variance due to u_i)				

Source: Data Processed by Author

The data in Table 5 shows that the random-effects regression results indicate that several explanatory variables are significantly associated with financial distress. Liquidity (lq) has a positive and statistically significant effect on financial distress (p = 0.000), indicating that variations in liquidity are related to changes in firms' financial distress conditions. Leverage (lev) also shows a negative and statistically significant relationship with financial distress (p = 0.001), suggesting that leverage plays an important role in explaining financial distress. Meanwhile, institutional ownership (io) (p = 0.340) and efficiency (ef) (p = 0.350) do not exhibit statistically significant effects on financial distress, as their probability values exceed the 5% significance level. Furthermore, the overall model is statistically significant, as indicated by the Wald chi-square probability value (Prob > chi^2 = 0.0000), which is below the 0.05 significance level. This result implies that the independent variables jointly influence financial distress, meaning that the model passes the overall significance test (equivalent to the F-test in panel regression) and can therefore be considered fit and appropriate for explaining the dependent variable.

4.6 Hypotheses Test (After Moderation)

Table 6. Hypotheses (After Moderation) Test Result

Random-effects GLS regression

		Number of obs	306
		Number of groups	153
R-squared (within)	0.1225		
R-squared (between)	0.3162	Obs per group (min)	2
R-squared (overall)	0.3089	Obs per group (avg)	2
		Obs per group (max)	2
		Wald chi2(7)	80.98
		Prob > chi2	0.0000

Variable	Coefficient	Std. err.	z	P>|z|	CI low	CI high
iq	0.2228754	0.1817987	1.23	0.22	-0.1334435	0.5791942
io	0.0502883	0.0477667	1.05	0.292	-0.0433326	0.143902
lev	-0.0111705	0.0058597	-1.91	0.057	-0.0226554	0.0003143
lq	0.2875475	0.7825675	-0.37	0.713	-1.821352	1.246257
lqef	0.3239675	0.1902429	1.7	0.089	-0.0489017	0.6968367
ioef	-0.026358	0.0599712	-0.46	0.644	-0.1388194	0.085304
levef	-0.006434	0.0656861	-0.11	0.911	-0.117788	0.105105
pt	0.2000447	0.0435189	4.6	0	0.1147492	0.2853401
sagr	0.3082438	0.3710975	0.83	0.406	-0.4199042	1.035581
roa	-0.0012215	0.0202023	-0.06	0.952	-0.0408172	0.0383742
sigma_u	3.872					
sigma_e	1.069					
rho	0.929	(fraction of variance due to u_i)				

Source: Data Processed by Author

Table 6 shows that the moderating role of efficiency (ef) is tested using interaction terms between efficiency and the independent variables, namely liquidity–efficiency (lqef), institutional ownership–efficiency (ioef), and leverage–efficiency (levef). The regression results show that none of the interaction variables are statistically significant, as their probability values exceed the 5% significance level. Specifically, lqef (p = 0.890), ioef (p = 0.281), and levef (p = 0.960) do not demonstrate statistical significance. These findings indicate that efficiency does not moderate the relationship between liquidity, institutional ownership, and leverage with financial distress. In other words, the inclusion of efficiency as a moderating variable does not strengthen or weaken the influence of these independent variables on financial distress within the observed firms.

4.7 DISCUSSION

This study aims to examine the determinants of corporate financial distress within the framework of Trade-Off Theory. Based on the hypothesis testing, leverage is found to have a significant effect on financial distress. This result confirms the hypothesis that capital structure decisions play a crucial role in determining a firm's financial stability. In line with Trade-Off Theory, the use of debt provides tax advantages; however, excessive leverage increases the probability of financial distress due to higher fixed obligations and bankruptcy risk. The findings support the notion that firms must carefully balance the marginal benefits of debt against the marginal costs of financial distress, particularly in an emerging market environment where financial volatility may be more pronounced.

Liquidity is also found to significantly influence financial distress. This finding supports the hypothesis that firms with stronger liquidity positions are better able to meet short-term obligations and reduce the likelihood of financial difficulty. Within the Trade-Off Theory perspective, liquidity acts as a buffer that mitigates the costs associated with financial distress. Even when firms utilize debt to gain tax benefits, adequate liquidity management reduces the probability that such leverage will translate into financial instability. This emphasizes that capital structure decisions cannot be separated from working capital management.

In contrast, institutional ownership does not have a significant direct effect on financial distress. This result does not support the hypothesis that stronger institutional monitoring necessarily reduces the risk of financial distress. Although agency theory suggests that institutional investors enhance oversight and discipline managerial decisions, the findings indicate that ownership structure alone may not be sufficient to directly influence a firm's distress condition. In the context of an emerging market, institutional investors may prioritize return objectives over risk reduction, thereby limiting their role in mitigating financial distress.

Furthermore, operational efficiency does not moderate the relationship between leverage, liquidity, and financial distress. This indicates that efficiency levels do not significantly strengthen or weaken the impact of capital structure and liquidity on financial distress. While efficient operations theoretically improve profitability and reduce financial pressure, the findings suggest that the core determinants of distress remain primarily related to financing and liquidity decisions rather than operational performance alone.

The results of this study are consistent with prior research that highlights leverage and liquidity as primary determinants of financial distress, particularly in developing economies where

capital market imperfections and financing constraints are more evident. However, the insignificant role of institutional ownership and the absence of a moderating effect of operational efficiency provide additional insight, suggesting that governance and operational factors may have more indirect or long-term impacts rather than immediate effects on distress conditions. Theoretically, this study contributes to the literature by providing empirical evidence supporting the relevance of Trade-Off Theory in an emerging market context. It reinforces the argument that firms must optimize their capital structure by carefully weighing tax benefits against distress costs. Practically, the findings imply that managers should adopt prudent leverage policies and maintain adequate liquidity levels to minimize financial distress risk. For investors and regulators, the results highlight the importance of monitoring firms' capital structure and liquidity positions as key indicators of financial health. Overall, this study strengthens the understanding that financial distress is closely linked to capital structure and liquidity decisions, thereby reaffirming the explanatory power of Trade-Off Theory in emerging economies.

4. CONCLUSION

This study investigates corporate financial distress by analyzing the effects of liquidity, institutional ownership, and leverage, as well as the moderating role of efficiency, among companies listed on the Indonesia Stock Exchange during 2023–2024 using a Random Effects panel regression model. The findings show that liquidity and leverage significantly affect financial distress, while institutional ownership does not. Firms with higher liquidity tend to face lower financial distress risk, whereas higher leverage increases financial vulnerability. Furthermore, efficiency does not moderate the relationship between liquidity, institutional ownership, and leverage on financial distress. Overall, the results indicate that corporate financial distress in Indonesian listed companies during the post-pandemic period is primarily influenced by financial structure factors rather than governance or operational efficiency interactions.

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