

Research Article

Can Liquidity, Profitability, and Leverage Predict Financial Distress?

Amelia Oktrivina^{1*}, Kurnia Heriansyah², Fiona Almyra Fryenddisca³

^{1,2,3} Faculty of Economics and Business, University of Pancasila, Jakarta

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Abstract

This study analyzes the influence of liquidity, profitability, and leverage on financial distress among manufacturing firms in the basic and chemical industry sectors listed on the Indonesia Stock Exchange (IDX) during 2019–2022. Using purposive sampling, 48 firms were selected, producing 192 observations. The results show that liquidity and leverage do not significantly affect financial distress, while profitability has a significant impact. These findings underscore the crucial role of profitability in maintaining financial stability. Managerially, firms should prioritize profitability improvement through operational efficiency, cost control, and revenue diversification to avoid financial distress, especially during economic downturns. Although liquidity and leverage were not significant, maintaining prudent management of both remains essential for long-term resilience. This study's originality lies in examining the combined effects of liquidity, profitability, and leverage in Indonesia's post-pandemic basic and chemical manufacturing sectors, using logistic regression as a predictive tool. In contrast to prior research conducted before crises or using single-variable approaches, this study provides new empirical evidence that profitability serves as the key determinant of financial distress under unstable macroeconomic conditions, offering valuable insights for both researchers and industry practitioners.

Keywords: Liquidity, Profitability, Leverage, Financial Distress

JEL Classification: G33, G32, M41

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Corresponding author: Amelia Oktrivina (ameliaoktrivina@univpancasila.ac.id)



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1. Introduction

The issue of financial distress has gained significant traction in recent years, particularly amid economic volatility and industrial transformation. The swift changes in business dynamics compel firms to uphold financial stability to thrive in a competitive landscape (Santosa et al., 2020). Platt and Platt (2008) describe financial distress as a deterioration in financial performance before bankruptcy, marked by liquidity shortages and an inability to fulfill debt obligations. Similarly, Kalimah (2017) highlights that a continuous decline in profits alongside rising liabilities may trigger financial distress, potentially leading to corporate failure. This scenario is particularly critical in manufacturing industries, which depend heavily on capital and external financing, as their financial frameworks are more vulnerable to market fluctuations.

In Indonesia, manufacturing firms play a crucial role in bolstering national economic growth. However, numerous firms within the basic and chemical industries have recently encountered financial challenges, as evidenced by negative earnings and elevated leverage ratios. The COVID-19 pandemic has exacerbated these issues, causing many firms to experience diminished demand and disrupted supply chains, which in turn led to liquidity pressures and heightened financial risks. Agustini and Wirawati (2019) and found that declining financial ratios particularly those relating to profitability and leverage significantly increase the likelihood of financial distress in manufacturing firms. Similarly, Sudaryanti and Dinar (2019) identified liquidity and cash flow constraints as key indicators of a firm's ability to sustain operational continuity during crisis conditions.

Liquidity is one of the fundamental measures of a firm's short-term financial health. It reflects the firm's ability to meet its short-term liabilities with current assets. According to Kasmir (2019), a firm with strong liquidity can prevent financial distress because it has sufficient cash or liquid assets to cover its immediate obligations. Conversely, firms with low liquidity ratios face a higher risk of insolvency because their working capital cannot cover operational needs. Empirical findings from Nisa (2020) also support this argument, stating that liquidity management plays a vital role in minimizing the likelihood of financial distress by efficiently utilizing cash and assets. Therefore, liquidity serves as a protective buffer against unexpected financial shocks (Zulfahmi & Subing, 2025).

Profitability, another crucial indicator of financial strength, determines how effectively a firm generates income from its operations. Firms with higher profitability are generally more resilient in the face of economic downturns, as they can reinvest profits and sustain operations even under pressure. Wiratna (2017) and (Panjaitan & Supriyati, 2023) notes that profitability ratios, such as Net Profit Margin and Return on Assets, directly influence a firm's ability to maintain solvency and avoid financial difficulties. Moreover, Atina and Rahmi (2019) found that profitability negatively correlates with financial distress, suggesting that a decline in profitability serves as an early warning signal of potential financial instability. Consistent profitability thus reflects managerial effectiveness and financial discipline, which are essential to prevent corporate crises.

Leverage also plays a significant role in determining a firm's exposure to financial distress. Excessive debt use increases interest burdens and financial obligations, reducing a firm's cash flow flexibility (Sihombing et al., 2024). Kartika et al. (2020) explain that firms with high leverage ratios are more vulnerable to financial distress, particularly when profitability and liquidity weaken simultaneously. Nevertheless, moderate leverage can enhance profitability through the tax shield effect if managed prudently. Supporting this, Yusnita (2022) found that firms maintaining balanced debt levels and stable earnings are less likely to experience financial distress, underscoring the importance of effective debt management strategies for sustaining corporate health.

Despite extensive prior research, inconsistencies remain regarding how liquidity, profitability, and leverage simultaneously affect financial distress in manufacturing firms. For instance, Abbas (2019) found that liquidity and leverage do not significantly influence financial distress, whereas profitability has a substantial adverse effect. In contrast, Azalia and Rahayu (2019) reported that all three variables liquidity, profitability, and leverage significantly impact the likelihood of financial distress. This divergence in findings suggests a research gap that warrants further investigation, particularly in the context of Indonesian manufacturing industries. The variations in results may arise from differences in measurement proxies, observation periods, or sectoral characteristics.

Given these inconsistencies, this study aims to analyze the influence of liquidity, profitability, and leverage on financial distress conditions in manufacturing firms, specifically in the basic and chemical industry sectors listed on the Indonesia Stock Exchange (IDX) during 2019–2022. The research is motivated by the need to provide empirical evidence on how financial ratios reflect a firm's financial resilience during the post-pandemic recovery. By identifying key financial

indicators that signal distress, this study is expected to contribute to both the academic literature and managerial practices. The findings will help management anticipate early signs of financial difficulties and support investors and creditors in making more informed decisions regarding financial risk assessment (Pranata & Murni, 2022; Suryani & Aminah, 2019).

The main problem in this research is the persistent inconsistency in empirical findings on the influence of liquidity, profitability, and leverage on financial distress among manufacturing firms in Indonesia. Some studies indicate that these three financial ratios significantly influence financial distress, while others find different results, creating a research gap that requires further study. The urgency of this research is further heightened by the impact of the COVID-19 pandemic, which has led to declining financial performance and high liquidity pressures in the basic and chemical industries, which play a crucial role in the national economy. Therefore, this study presents a novel approach by analyzing the influence of liquidity, profitability, and leverage on financial distress in a post-pandemic context, using data from 2019–2022 and focusing on the basic and chemical industries, to provide new insights into the financial factors that influence the financial resilience of firms in Indonesia.

2. Literature Review and Hypothesis

Literature Review

Liquidity

Liquidity denotes a firm's capacity to meet its short-term obligations through current assets and serves as a vital indicator of short-term solvency. Kasmir (2019) highlights that achieving optimal liquidity is crucial for firms to sustain operational stability and reduce the risk of default. Conversely, excessive liquidity may suggest ineffective asset utilization, potentially hindering profitability. Nisa (2020) and Utami (2021) argue that robust liquidity enhances a firm's resilience during uncertain times, particularly in manufacturing sectors that are heavily reliant on working capital. At a global level, Kumar and Rao (2020) and Lin et al. (2022) have demonstrated that liquidity ratios, including the current and quick ratios, are dependable predictors of financial distress. Additionally, Tascón et al. (2019) revealed that low liquidity levels significantly elevate the likelihood of early distress among European firms, underscoring the necessity of maintaining a sufficient liquidity buffer in volatile market conditions. Therefore, sustaining an optimal liquidity level remains a crucial aspect of financial sustainability (Santosa, Budiantoro, et al., 2022).

Profitability

Profitability represents the firm's efficiency in generating income from its assets and operations. According to (Santosa et al., 2022), profitability ratios such as Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM) illustrate managerial effectiveness and the firm's ability to sustain operations internally. Agustini and Wirawati (2019) and Atina and Rahmi (2019) found that profitability negatively affects financial distress, indicating that higher profitability decreases the likelihood of corporate failure. Globally, Li et al. (2020) discovered that consistent profitability significantly mitigates the risk of financial distress in Asian manufacturing industries. Similarly, Tian and Yu (2021) demonstrated that profitability serves as a primary financial health indicator in emerging markets, providing a cushion against earnings volatility. Kumar and Gaikwad (2023) also showed that declining profitability is an early warning signal of potential distress, supporting the notion that profit generation capacity remains central to financial stability across different economic environments.

Leverage

Leverage reflects the extent to which a firm uses debt financing to enhance returns. According to Kartika et al. (2020) and Yusnita (2022), leverage can either strengthen or weaken a firm's financial position, depending on the balance between debt benefits and distress costs. Excessive leverage magnifies financial risks, while moderate leverage can increase profitability through a tax shield effect. International studies echo similar findings. Li and Wang (2020) and Nguyen et al. (2022) reported that high leverage increases the probability of financial distress in both developed and emerging markets. However, Tahir et al. (2023) observed that firms with efficient debt management and steady cash flows can maintain stability even at higher leverage levels. These results imply that

the relationship between leverage and distress is context-dependent and influenced by management capability and economic environment.

Hypothesis

Liquidity and Financial Distress

Liquidity is a fundamental determinant of a firm's short-term financial health and its ability to survive under adverse economic conditions. A firm with strong liquidity can effectively meet its current liabilities using available current assets, thereby reducing the probability of insolvency. According to Kasmir (2019) and Utami (2021), adequate liquidity ensures operational continuity and protects firms from sudden liquidity shocks. In the Indonesian context, Agustini and Wirawati (2019) and Azalia and Rahayu (2019) found that firms with higher current ratios are better able to maintain solvency during crisis periods, suggesting that liquidity serves as a preventive mechanism against distress. From a global perspective, Tascón et al. (2019) and Lin et al. (2022) demonstrated that liquidity ratios remain robust predictors of corporate failure in both developed and emerging markets. During the COVID-19 pandemic, firms with greater liquidity buffers showed stronger resilience to revenue contraction and supply chain disruptions. However, other studies, such as Abbas (2019) and Kumar & Rao (2020), argue that liquidity alone is insufficient when firms fail to manage working capital efficiently, as excessive cash holdings may signal idle resources rather than financial strength. These mixed findings suggest that liquidity's impact on financial distress depends on the efficiency of asset utilization and the firm's broader financial strategy.

H1: Liquidity has a significant effect on financial distress.

Profitability and Financial Distress

Profitability reflects a firm's internal capacity to generate earnings, which directly influences its resilience against financial distress. Profitable firms can fund operations internally, reinvest retained earnings, and reduce dependence on external financing thus lowering their exposure to insolvency. Atina and Rahmi (2019), Agustini and Wirawati (2019), and Mahaningrum and Merkusiwati (2020) consistently found that higher profitability is associated with a lower likelihood of financial distress in Indonesian firms, indicating that profitability serves as a financial safety buffer. At the international level, Li et al. (2020) and Tian and Yu (2021) provide similar evidence, highlighting profitability as a critical determinant of long-term financial sustainability. Kumar and Gaikwad (2023) also found that declining profitability ratios serve as early warning indicators of distress, especially in manufacturing sectors with high earnings volatility. These findings align with the Signaling Theory, which posits that profitability serves as a positive signal to investors and creditors about a firm's stability and managerial competence. Conversely, prolonged losses send negative signals, undermining investor confidence and triggering financial instability. Therefore, consistent profitability is not only an indicator of performance but also a protective mechanism that minimizes distress risk.

H2: Profitability has a significant negative effect on financial distress.

Leverage and Financial Distress

Leverage plays a dual role in determining corporate performance it can enhance profitability through the tax shield effect but also heighten financial risk when debt levels become excessive. The Trade-Off Theory posits that firms must balance the benefits of debt against the potential costs of financial distress. Empirical findings in Indonesia by Kartika et al. (2020) and Yusnita (2022) confirm that excessive leverage increases vulnerability to distress, particularly when firms experience profit declines or liquidity shortages. Globally, Nguyen et al. (2022) and Tahir et al. (2023) reported that leverage significantly increases the probability of default in both developed and emerging economies, underscoring that firms with high debt ratios are more sensitive to external shocks, such as interest rate fluctuations or market downturns. However, Ayuningtiyas and Suryono (2019) and Oktrivina et al. (2025) observed that firms with efficient debt management and stable profitability can sustain high leverage without entering financial distress. These findings suggest that the leverage distress relationship is context-dependent, moderated by firm size, industry characteristics, and managerial competence. In essence, while moderate leverage can optimize capital efficiency, excessive dependence on debt financing exposes firms to severe distress risks when earnings decline or financing costs increase. Therefore, prudent debt management and

maintaining a balanced capital structure are essential strategies to minimize financial distress.

H3: Leverage has a significant positive effect on financial distress.

Conceptual Framework

Figure 1 illustrates the conceptual framework underlying this study, showing the relationships among liquidity, profitability, and leverage as independent variables influencing financial distress as the dependent variable. Liquidity represents a firm's capacity to meet short-term obligations, profitability reflects its ability to generate earnings efficiently, and leverage indicates the extent of debt used to finance operations. The framework assumes that higher liquidity and profitability reduce the likelihood of financial distress, while excessive leverage increases it. This model provides a theoretical foundation for testing how key financial ratios collectively determine the financial stability of manufacturing firms listed on the Indonesia Stock Exchange during 2019–2022.

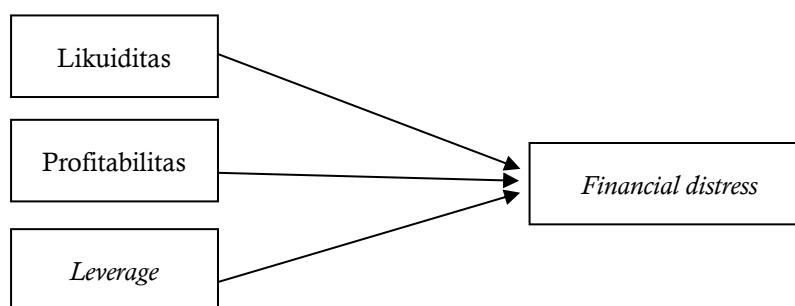


Figure 1. Conceptual Framework

3. Data and Method

Data collection methods included articles, journals, and literature from previous research, as well as written media related to the topic. This study used secondary data to address the issues identified in the documents. The primary data source was the annual financial reports of basic and chemical manufacturing firms published by the Indonesia Stock Exchange (IDX) from 2019 to 2022, obtained from the official website www.idx.co.id.

The sampling method used in this study was purposive sampling, in which samples were selected based on specific criteria relevant to the research objectives or problems being studied. The population studied consisted of manufacturing firms in the basic and chemical industry sectors listed on the Indonesia Stock Exchange during the 2019-2022 period. A total of 48 firms were successfully sampled and met the criteria. This study spanned four years, from 2019 to 2022, yielding a total of 192 datasets. The analytical methods used in this study were descriptive statistics and logistic regression. The research tool used was EViews 12 software.

The analytical model used in this study employs a quantitative approach via logistic regression, which is considered appropriate for examining the probability of financial distress as a binary dependent variable. Logistic regression is selected because it can identify the effect of several independent variables namely liquidity, profitability, and leverage on the likelihood that a firm will experience financial distress. This technique is commonly used in financial research because it allows the estimation of non-linear relationships between continuous predictors and categorical outcomes, providing robust and interpretable results (Hosmer et al., 2019; Kliestik et al., 2020). The model assumes that higher liquidity and profitability reduce the probability of financial distress, while excessive leverage increases it. Similar analytical models have been employed in previous studies by Kartika et al. (2020) and Yusnita (2022) in Indonesia, as well as by Lin et al. (2022) and Tahir et al. (2023) in global contexts to assess how key financial ratios can predict corporate distress across sectors. Therefore, logistic regression was chosen in this study because it offers statistical accuracy, reliability, and comparability with prior research, making it suitable to test the proposed hypotheses regarding the effects of liquidity, profitability, and leverage on financial distress in manufacturing firms listed on the Indonesia Stock Exchange during the 2019–2022 period.

4. Results

Descriptive statistical analysis

The results of the descriptive analysis in this study show the mean, minimum, maximum, and standard deviation.

Table 1. Descriptive Test Results

	N	Mean	Median	Maximum	Minimum	Std. Dev.
Financial distress	192	0.109	0	1	0	0.313
Likuiditas	192	3.261	1.461	171.394	0.009	12.531
Profitabilitas	192	-0.108	0.047	0.328	-8.017	0.915
Leverage	192	0.469	0.479	1.440	0.031	0.249

Source: Processed data 2023

Based on the analysis of observational data in Table 1, the lowest liquidity value was recorded at 0.009 for PT Megalestari Epack Sentosaraya Tbk. in 2020, while the maximum value reached 171.394 for PT Satyamitra Kemas Lestari Tbk. in the same year, with a standard deviation indicating a variation that tended to be larger than the average. These findings indicate that most firms in the sample experienced highly variable liquidity, reflecting significant differences in current asset management.

Furthermore, for the profitability variable, the lowest observed value was -8.017 for PT Wilton Makmur Indonesia Tbk. in 2019, and the highest was 0.328 for PT Waskita Beton Precast Tbk. in 2022. The standard deviation values indicate significant variability, suggesting that the firms in the sample exhibit substantial fluctuations in profitability, driven by various external and internal factors.

For the leverage variable, the analysis shows that the lowest observed value was 0.031 at PT. Colorpak Indonesia Tbk. in 2022, while the highest value reached 1.440 at PT. Wilton Makmur Indonesia Tbk. in 2020, with a standard deviation smaller than the average. This finding indicates that the firms in the study sample exhibit relatively lower debt utilization variation, suggesting that most can manage their debt well, which can affect long-term financial stability.

Hypothesis Testing

Based on the test results presented in Table 4, the analysis of the liquidity variable, measured using the Current Ratio, shows a Z-Statistic value of -2.852, with a significance probability of 0.716, which is greater than the 0.05 value. These findings indicate that liquidity has no effect on financial distress, so H_0 is accepted, and H_a is rejected. It can be concluded that the liquidity variable does not affect financial distress in basic industry and chemical firms listed on the Indonesia Stock Exchange (IDX) from 2019 to 2022.

Interestingly, the same analysis of the profitability variable, measured using Net Profit Margin, yielded different results. The Z-statistic for profitability was -0.363, with a p-value of 0.002, which is less than 0.05. This result indicates that profitability has a significant negative effect on financial distress, so H_0 is rejected, and H_a is accepted.

Table 2. Hypothesis Test Results

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-4.195	1.471	-2.852	0.004
Likuiditas	-0.084	0.231	-0.363	0.716
Profitabilitas	-15.645	5.145	-3.041	0.002
Leverage	3.539	2.142	1.653	0.098
R-Squared	0.537			

Source: Processed data 2023

Based on the analysis of the leverage variable, the resulting Z-statistic is -3.041, with a p-value of 0.098, which is greater than 0.05. This finding indicates that leverage does not significantly influence financial distress, so H_0 is again accepted, and H_a is rejected. Consequently, there is no evidence of leverage's impact on the financial distress of basic industry and chemical firms listed on the IDX during the same period.

Furthermore, to better understand the relationship between the independent and dependent variables, the R-squared from Table 4 is 0.530. This finding indicates that only 53.0% of the variation in financial distress can be explained by liquidity, profitability, and leverage. In comparison, the remaining 47.0% is due to other variables not included in this study. In other words, additional factors influence financial distress, suggesting the need for further research to explore these variables.

5. Discussion

Liquidity and Financial Distress

The findings of this study indicate that liquidity does not have a significant impact on financial distress. This finding suggests that a firm's ability to meet its short-term obligations does not always determine whether it will experience financial distress. In many cases, firms may maintain adequate liquidity ratios while still facing structural inefficiencies, such as poor asset utilization or declining profitability, which ultimately lead to distress. This result aligns with Abbas (2019), who found that liquidity does not significantly affect financial distress because excess liquidity may reflect poor cash management. Similarly, Sudaryanti and Dinar (2019) found that the liquidity ratio alone cannot fully predict distress, as other factors, such as leverage and cash flow conditions, play a more dominant role. Furthermore, Oktrivina, Heriansyah, and Fryenddisca (2025) also found that liquidity is not significantly associated with financial distress among Indonesian manufacturing firms, suggesting that firms may remain financially stable despite variations in liquidity levels.

Profitability and Financial Distress

Profitability is negatively associated with financial distress, indicating that higher profitability is associated with lower financial distress. This result reinforces the notion that profitability serves as an internal buffer that protects firms from financial instability. When firms generate consistent profits, they can finance operations independently, reduce reliance on debt, and build financial resilience. This finding is consistent with Agustini and Wirawati (2019), who demonstrated that profitability negatively affects financial distress among retail firms listed on the Indonesia Stock Exchange. Atina and Rahmi (2019) also found that declining profits serve as an early warning indicator of potential distress, as low earnings limit firms' ability to meet obligations and invest in productive activities. Similarly, Mahaningrum and Merkusiwati (2020) found that profitability significantly mitigates distress risk, underscoring its importance as a key performance indicator for predicting financial stability.

Leverage and Financial Distress

The analysis reveals that leverage does not significantly affect financial distress, suggesting that a firm's debt level is not the sole determinant of financial failure. This result implies that some highly leveraged firms can maintain financial stability through efficient debt management and consistent cash flow generation. Properly structured debt can serve as a tool for growth rather than a burden leading to distress. This result is consistent with Ayuningtias and Suryono (2019), who found that leverage has no significant impact on financial distress when firms manage their debt efficiently and maintain sufficient earnings. Sudaryanti and Dinar (2019) also observed that leverage does not necessarily lead to financial distress, as firms with sound capital structures can optimize the benefits of debt financing. Similarly, Oktrivina et al. (2025) found that leverage does not significantly affect financial distress in the basic and chemical industry sectors, highlighting that debt management policies and profitability play a more crucial role.

6. Conclusion

Based on the analysis conducted in this study, liquidity, as indicated by the Current Ratio, and leverage, as illustrated by the Debt-to-Asset Ratio, did not have a significant impact on financial distress among basic industry and chemical firms listed on the Indonesia Stock Exchange during the period from 2019 to 2022. This finding suggests that effective debt management can enable firms to avert financial distress, even when their liquidity ratios or leverage levels fall short of ideal benchmarks. Conversely, profitability, represented by the Net Profit Margin, demonstrated a significant negative effect on financial distress, implying that declining profits heighten the risk of financial instability as firms find it more challenging to satisfy their financial obligations.

Managerial Implications: The findings of this study underscore the importance for firm management to prioritize enhancing profitability as a primary strategy to mitigate financial distress. Management should focus on implementing operational cost efficiencies, expanding market share, and optimizing asset utilization to generate sustainable profits. Additionally, while liquidity and leverage have not been shown to significantly affect financial distress, it remains essential for firms to maintain an equilibrium between current assets and short-term liabilities, as well as to adopt a sound capital structure policy. Greater transparency and diligent oversight of financial management are also necessary to ensure long-term stability and to sustain the confidence of investors and creditors.

Recommendation

Based on the study results, management of manufacturing firms especially in the basic and chemical industries should prioritize improving profitability through effective cost control, productivity enhancement, and market expansion to minimize the risk of financial distress. Financial managers are advised to maintain an optimal balance between liquidity and leverage by implementing prudent debt management policies. Investors and creditors should also consider profitability trends as a key indicator of financial stability when evaluating corporate performance and making investment or lending decisions.

Limitations and avenues for future research

This study is limited to manufacturing firms in the basic and chemical sectors listed on the Indonesia Stock Exchange from 2019 to 2022, using secondary data and logistic regression analysis. Future research could expand the sample to other industries, extend observation periods, and incorporate additional variables, such as corporate governance and macroeconomic indicators, to provide a more comprehensive understanding of the determinants of financial distress.

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