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# The Effect of Profitability, Liquidity, and Leverage on Financial Distress in Property and Real Estate Companies Listed on the IDX

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**ABSTRACT**
This study examines the effect of profitability, liquidity, and leverage on the probability of financial distress in property and real estate companies listed on the Indonesia Stock Exchange (IDX) for the period 2022–2024. Employing a quantitative approach with a causal design, this study uses secondary data drawn from annual and financial reports of 75 companies, yielding 225 panel observations. Financial distress is measured using the modified Altman Z-Score, transformed into a binary dummy variable, while profitability is proxied by Return on Assets (ROA), liquidity by the Current Ratio (CR), and leverage by the Debt-to-Assets Ratio (DAR). The data are analysed using binary logistic regression with panel data, estimated via EViews 10. The results reveal that profitability has a significant negative effect on financial distress, confirming that higher asset returns reduce distress risk. Liquidity also exerts a significant negative effect, indicating that adequate current assets protect companies from short-term payment failure. In contrast, leverage has a significant positive effect, demonstrating that a greater reliance on external debt amplifies financial vulnerability. Collectively, the three variables explain 55.96% of the variation in financial distress probability, with an overall model prediction accuracy of 87.56%. These findings provide practical guidance for management, investors, and regulators in assessing financial health risks within Indonesia's property and real estate sector.

**Keywords:** Financial Distress, Profitability, Liquidity, Leverage, Property Sector.
**JEL Code:** G01, G32, G33, L85.

## I. Introduction

Indonesia's property and real estate sector is strategically vital to the national economy, generating a broad multiplier effect across approximately 174 supporting industries, from construction to building materials (Kementerian Koordinator Bidang Perekonomian Republik Indonesia, 2023). During the post-pandemic recovery phase, the sector encountered severe macroeconomic pressure as Bank Indonesia raised its benchmark rate from 3.50% in early 2022 to 6.25% by April 2024, a cumulative increase of 275 basis points (Bank Indonesia, 2022, 2024). These rapid adjustments suppressed consumer demand through rising mortgage costs, strained operational cash flows, and expanded corporate debt burdens simultaneously. The IDX Property index recorded among the steepest sectoral declines on the Indonesian capital market during 2022 and 2023, contracting while the broader composite index posted gains over the same years (Otoritas Jasa Keuangan, 2023), with several listed issuers reporting significant profit declines and mounting leverage ratios, and some subjected to trading suspensions following bond payment defaults (Nityakanti, 2024).

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Financial distress, defined as a condition in which a company becomes unable to meet its obligations to creditors as they fall due, frequently precedes bankruptcy and requires early detection to enable timely corrective action (Purwanti & Sari, 2023). The urgency of detection is particularly acute in the property sector, where extended cash conversion cycles, heavy debt reliance, and pronounced macroeconomic sensitivity render companies structurally more vulnerable than firms in most other industries (Dwiantari & Artini, 2021). Profitability, liquidity, and leverage have been the most consistently examined determinants, yet the existing literature has not reached convergent conclusions. Dwiantari & Artini (2021) found that profitability and liquidity reduced financial distress probability while leverage increased it, whereas Purwanti and Sari (2023) found liquidity and leverage to be insignificant while profitability showed an unexpected positive direction. Afgani et al. (2023) identified leverage as the only significant variable, and Setyawati et al. (2025) produced entirely contrasting results across all three variables. These inconsistencies, compounded by the absence of studies covering the critical 2022–2024 period of monetary tightening in Indonesia, present a clear empirical gap. Motivated by this gap, the present study empirically examines the effects of profitability, liquidity, and leverage on financial distress among property and real estate companies listed on the IDX for the period 2022–2024, contributing more contextualised evidence that better reflects the macroeconomic realities the sector has faced in recent years.

## II. Literature Review and Hypothesis Development

### 2.1. Theoretical Framework

This study draws on two complementary theoretical perspectives. Agency Theory (Jensen & Meckling, 1976) explains financial distress as a consequence of the principal-agent relationship: when managers fail to deploy resources efficiently, maintain adequate liquidity, or exercise responsible borrowing, the resulting financial deterioration amplifies distress risk. Signalling Theory (Spence, 1973) extended to corporate finance by subsequent scholars, holds that publicly disclosed financial ratios function as observable signals that reduce information asymmetry between management and external stakeholders, with strong profitability and liquidity ratios signalling financial health while high leverage signals elevated risk. Together, these frameworks provide the conceptual basis for examining how profitability, liquidity, and leverage influence financial distress.

### 2.2. Financial Distress

Financial distress describes a condition in which a firm's cash flows are insufficient to cover its financial obligations, frequently preceding bankruptcy or liquidation if left unaddressed (Altman dkk., 2017; Dwiantari & Artini, 2021). This study measures financial distress using the Modified Altman Z-Score, developed specifically for non-manufacturing firms and therefore well suited to the property and real estate sector. Firms scoring below 1.10 are classified as distress, between 1.10 and 2.60 as grey, and above 2.60 as safe. Following Dwiantari and Artini (2021), both grey-zone and distress-zone firms are assigned a dummy value of 1 given their shared financial vulnerability, while safe-zone firms receive a value of 0.

### 2.3. Profitability and Financial Distress

Profitability measures a firm's ability to generate earnings relative to its resource base and is proxied in this study by Return on Assets (ROA), calculated as net income divided by total assets (Kieso et al., 2018). Under Agency Theory, a high ROA reflects management's success in converting entrusted resources into returns, while under Signalling Theory it conveys a positive market signal that reinforces creditor confidence. The dominant empirical evidence supports a negative relationship, with Dwiantari and Artini (2021), Runis et al. (2021), Sukarno et al. (2023), and Savery et al. (2024) consistently reporting that higher ROA significantly

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reduces distress probability. Anomalous positive associations reported by Purwanti and Sari (2023) and Setyawati et al. (2025) are likely attributable to differences in proxy selection and sample composition. Drawing on the theoretical arguments and the weight of prior empirical evidence, this study proposes the following hypothesis:

*Ha1: Profitability has a significant negative effect on the probability of financial distress.*

### 2.4. Liquidity and Financial Distress

Liquidity refers to a firm's capacity to meet short-term obligations as they fall due and is measured by the Current Ratio (CR), defined as current assets divided by current liabilities (Kieso et al., 2018). Under Agency Theory, prudent liquidity management is a core managerial responsibility, while under Signalling Theory a high CR signals to creditors that the firm can honour near-term obligations without resorting to distress-inducing measures. Empirically, Dwiantari and Artini (2021), Runis et al. (2021), Sanjaya and Wijaya (2024), and Savery et al. (2024) confirm a significant negative liquidity-distress relationship. Dissenting findings from Purwanti and Sari (2023) and Afgani et al. (2023) may reflect the paradox whereby distressed property firms accumulate illiquid current assets such as unsold inventory while still failing to service short-term liabilities. The foregoing theoretical and empirical reasoning leads to the following hypothesis:

*Ha2: Liquidity has a significant negative effect on the probability of financial distress.*

### 2.5. Leverage and Financial Distress

Leverage measures the proportion of a firm's assets financed through external debt and is proxied by the Debt-to-Assets Ratio (DAR), calculated as total liabilities divided by total assets (Kieso et al., 2018). Under Signalling Theory, a high DAR constitutes a negative market signal that raises borrowing costs and restricts capital market access. Under Agency Theory, excessive borrowing without commensurate income generation transfers financial risk onto creditors and elevates default probability (Jensen & Meckling, 1976). Empirically, Dwiantari and Artini (2021), Runis et al. (2021), Sukarno et al. (2023), and Savery et al. (2024) confirm a significant positive leverage-distress relationship. Grounded in these theoretical and empirical considerations, this study proposes the following hypothesis:

*Ha3: Leverage has a significant positive effect on the probability of financial distress.*

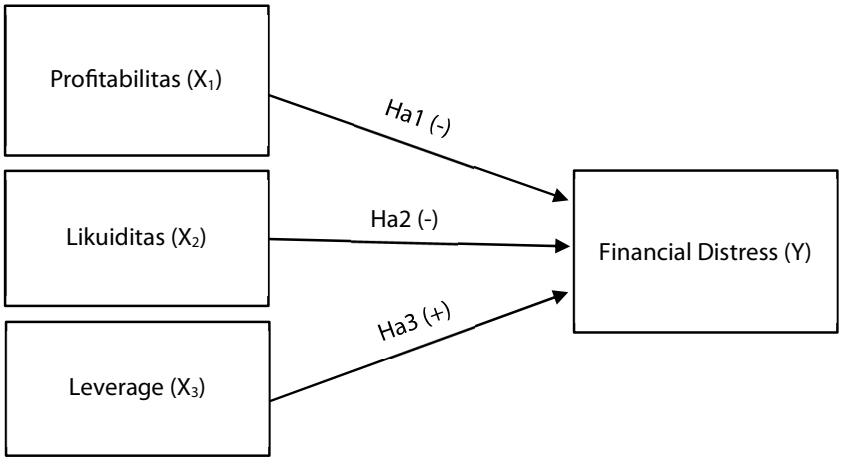


**Figure 1. Conceptual Framework**

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## III. Research Method

This study employs a quantitative approach with a causal design to examine the relationship between the independent and dependent variables. The selection of quantitative methods is justified by the numerical nature of the research data, which are processed and interpreted through structured statistical procedures (Sugiyono, 2023). Data are collected from secondary sources consisting of annual reports and financial statements of property and real estate issuers listed on the IDX for the period 2022–2024, accessible through the official IDX portal (www.idx.co.id) and individual company websites. The data structure combines time-series and cross-sectional observations, forming a panel dataset. Microsoft Excel 2021 and EViews 10 are used for data compilation, calculation, and statistical analysis. The population in this study is property and real estate companies listed on the IDX. The research sample was drawn using a purposive sampling method, which involves selecting participants based on specific criteria.

**Table 1. Sample Selection Criteria**

| Criteria | Totals |
|---|---|
| Property and real estate companies listed on the IDX, 2022–2024 | 90 |
| Companies delisted or newly listed (IPO) during 2022–2024 | (8) |
| Companies subject to trading suspension | (7) |
| **Sample (companies)** | **75** |
| **Total observations (3 years)** | **225** |

This study utilizes four variables, consisting of financial distress as the dependent variable, along with profitability, liquidity, and leverage as the independent variables. The operationalization of variables and the corresponding mathematical formulations for each framework component are presented in the table below.

**Table 2. Operationalization of Variables**

| Variable | Proxy | Formula | Scale |
|---|---|---|---|
| Financial Distress (Y) | Modified Altman Z-Score | $Z' = 6.56(A) + 3.26(B) + 6.72(C) + 1.05(D)$<br>Where:<br>A = Working capital / Total Assets<br>B = Retained Earnings / Total Assets<br>C = EBIT / Total Assets<br>D = Book Value of Equity / Total Liabilities<br><br>Then transformed into a dummy variable:<br>1 = distress ($Z' \leq 2.60$); 0 = healthy ($Z' > 2.60$) | Nominal |
| Profitability ($X_1$) | Return on Assets (ROA) | $\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$ | Ratio |
| Liquidity ($X_2$) | Current Ratio (CR) | $\text{CR} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$ | Ratio |
| Leverage ($X_3$) | Debt-to-Assets Ratio (DAR) | $\text{DAR} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$ | Ratio |

The data analysis method in this study used binary logistic regression, appropriate given that the dependent variable is dichotomous. Logistic regression estimates the probability of financial distress as a function of the independent variables without requiring normality assumptions in the residuals (Ghozali, 2018). The logistic regression model is specified as follows:

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 ROA + \beta_2 CR + \beta_3 DAR + \varepsilon$$

Where $p$ is the probability of financial distress, and α and $\beta_1$–$\beta_3$ are the intercept and regression coefficients, respectively. Model evaluation follows four sequential steps: (1) overall model fit assessment, comparing the −2 Log-Likelihood (−2LL) values before and after variable inclusion; (2) goodness-of-fit assessment using the Hosmer–Lemeshow test; (3) classification accuracy analysis through an expectation-prediction matrix; and (4) coefficient of determination analysis using McFadden R-squared. Hypothesis testing employs the z-statistic for individual (partial) significance and the Likelihood Ratio (LR) statistic for joint (simultaneous) significance, both evaluated at a 5% significance level. Given the use of logistic regression, classical assumption tests for normality, heteroscedasticity, and autocorrelation are not required. Thus, this research performs only the multicollinearity test for its classical assumption.

## IV. Results and Discussion

### 4.1. Descriptive Statistical Analysis Result

Of the 225 total observations, 67 (29.78%) are classified as financially distressed (Category 1), while the remaining 158 (70.22%) are classified as financially healthy (Category 0). This distribution indicates that a substantial proportion of property and real estate issuers experienced financial pressure during the 2022–2024 period.

**Table 3. Descriptive Statistics of Independent Variables**

| Statistic | ROA (X1) | CR (X2) | DAR (X3) |
|---|---|---|---|
| Mean | 0.0178 | 9.3020 | 0.7591 |
| Median | 0.0102 | 1.9400 | 0.3000 |
| Maximum | 0.4283 | 360.8300 | 38.1600 |
| Minimum | −0.1881 | 0.0010 | 0.0020 |
| Std. Deviation | 0.0630 | 37.5640 | 3.6811 |
| Observations | 225 | 225 | 225 |

The ROA variable shows a mean of 0.0178, with values ranging from −0.1881 (PT Bliss Properti Indonesia Tbk in 2023) to 0.4283 (PT Pudjiadi Prestige Tbk in 2022), and a standard deviation of 0.0630 that exceeds the mean, reflecting considerable heterogeneity in profitability across the sample. The CR variable displays an extreme right-skew, with a maximum of 360.83 (PT Royalindo Investa Wijaya Tbk in 2022) and a minimum of 0.001 (PT Duta Anggada Realty Tbk in 2022). The wide gap between mean (9.3020) and standard deviation (37.5640) underscores the significant liquidity disparities among issuers. The DAR variable averages 0.7591, indicating that, on average, approximately 75.91% of sample company assets are financed by external debt, a level that signals substantial leverage exposure across the sector.

### 4.2. Multicollinearity Test Results

**Table 4. Correlation Matrix**

| Correlation | | | |
|---|---|---|---|
| | ROA | CR | DAR |
| ROA | 1.000000 | 0.011186 | -0.125282 |
| CR | 0.011186 | 1.000000 | -0.040096 |
| DAR | -0.125282 | -0.040096 | 1.000000 |

The correlation matrix among the independent variables reveals the following pairwise coefficients: ROA and CR = 0.0112; ROA and DAR = −0.1253; CR and DAR = −0.0401. All values are substantially below the threshold of 0.90, confirming the absence of multicollinearity in the model (Ghozali, 2018). ROA, CR, and DAR are therefore appropriate for joint inclusion in the logistic regression.

4.3. Result of Overall Model Fit Test

**Table 5. Overall Model Fit Test Results**

| Testing Indicator (EViews Output) | Value |
|---|---|
| Initial -2 Log Likelihood (Restricted Deviance) | 274.0363 |
| Final -2 Log Likelihood (Deviance) | 120.6790 |
| Reduction in -2 Log Likelihood (LR Statistic) | 153.3573 |

The overall model fit is assessed by comparing the −2LL values before and after the inclusion of independent variables. The initial −2LL (restricted deviance) is 274.0363. After incorporating ROA, CR, and DAR, the final −2LL (deviance) decreases to 120.6790. The reduction of 153.3573 corresponds to the LR statistic, which has a probability of 0.0000, confirming that the model with the three independent variables provides a significantly better fit than the baseline model.

4.4. Goodness of Fit Test Result

The Hosmer–Lemeshow goodness-of-fit test yields a Chi-Square value of 3.0683 with a probability of 0.9300 (> 0.05), indicating no significant discrepancy between the model's predicted probabilities and the observed outcomes. The model is therefore deemed well-calibrated to the sample data.

4.5. Classification Accuracy Analysis Result

**Table 6. Expectation-Prediction Matrix**

| | **Estimated Equation** | | | **Constant Probability** | | |
|---|---|---|---|---|---|---|
| | **Dep=0** | **Dep=1** | **Total** | **Dep=0** | **Dep=1** | **Total** |
| P(Dep=1)<=C | 144 | 14 | 158 | 158 | 67 | 225 |
| P(Dep=1)>C | 14 | 53 | 67 | 0 | 0 | 0 |
| Total | 158 | 67 | 225 | 158 | 67 | 225 |
| Correct | 144 | 53 | 197 | 158 | 0 | 158 |
| **% Correct** | **91.14** | **79.10** | **87.56** | 100.00 | 0.00 | 70.22 |
| % Incorrect | 8.86 | 20.90 | 12.44 | 0.00 | 100.00 | 29.78 |
| Total Gain* | -8.86 | 79.10 | 17.33 | | | |
| Percent Gain** | NA | 79.10 | 58.21 | | | |

The matrix reveals that the model correctly classifies 144 of the 158 non-distress observations (91.14% accuracy) and 53 of the 67 distress observations (79.10% accuracy). The overall prediction accuracy is 87.56% (197 correct out of 225), demonstrating strong discriminatory power.

4.6. Coefficient of Determination Result

The McFadden R-squared value is 0.5596, indicating that the model explains approximately 55.96% of the variation in financial distress probability. The remaining 44.04% is attributable to factors which not included in this model.

4.7. Logistic Regression Results

Based on binary logistic regression estimation using panel data in EViews 10, the fitted model is expressed as follows:

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$$\ln\left(\frac{p}{1-p}\right) = -2.3849 - 21.2630\ ROA - 0.9951\ CR + 8.4937\ DAR + \varepsilon$$

The constant value of −2.3849 represents the baseline log-odds of financial distress when all independent variables are zero. The negative coefficient for ROA (−21.2630) indicates that a one-unit increase in profitability, holding other variables constant, reduces the log-odds of financial distress by 21.2630. The negative coefficient for CR (−0.9951) indicates that a one-unit increase in liquidity reduces the log-odds of distress by 0.9951. Conversely, the positive coefficient for DAR (+8.4937) indicates that a one-unit increase in leverage increases the log-odds of distress by 8.4937.

**Table 7. Logistic Regression Estimation Results**

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | −2.3849 | 0.6220 | −3.8342 | 0.0001 |
| ROA | −21.2630 | 6.3900 | −3.3275 | 0.0009 |
| CR | −0.9951 | 0.2655 | −3.7478 | 0.0002 |
| DAR | 8.4937 | 1.4598 | 5.8183 | 0.0000 |

4.8. Hypothesis Test Results (z-Statistic)

**Table 8. Summary of Hypothesis Testing Results**

| Hypotesis | Regression Coefficient Value (β) | Prob. | Results | |
|---|---|---|---|---|
| Ha1 | Profitability has a significant negative effect on financial distress | −21.2630 | 0.0009 | Accepted |
| Ha2 | Liquidity has a significant negative effect on financial distress | −0.9951 | 0.0002 | Accepted |
| Ha3 | Leverage has a significant positive effect on financial distress | +8.4937 | 0.0000 | Accepted |

4.9. Discussion of Research Results

a. Effect of Profitability on Financial Distress

The results show that profitability (ROA) has a significant negative effect on financial distress (β = −21.2630; p = 0.0009), supporting Ha1. This finding indicates that companies generating higher asset returns face a substantially lower probability of financial distress. The logic is straightforward: high profitability reflects sound operational efficiency—the company not only sustains its operations independently but also accumulates sufficient retained earnings to service creditor obligations without financial strain. In contrast, persistently unprofitable companies that must rely on external debt to cover operating costs face a considerably higher distress risk. This result aligns with both Signalling Theory and Agency Theory. From the perspective of Signalling Theory, a high ROA conveys a positive signal of financial health to investors and creditors, enhancing the company's access to capital and market confidence. From the perspective of Agency Theory, strong profitability signals that management has efficiently deployed the resources entrusted to it, minimising agency conflicts and reinforcing the firm's financial resilience.

These findings are consistent with those of Dwiantari and Artini (2021), Runis et al. (2021), Sukarno et al. (2023), Savery et al. (2024), and Wijaya et al. (2024), all of whom conclude a significant negative relationship between profitability and financial distress. Notwithstanding, some studies report contrasting results: Pratiwi and Sudiyatno (2022) find no significant effect, while Purwanti and Sari (2023) and Setyawati et al. (2025) report a positive effect of profitability on financial distress. These divergent findings may reflect differences in sample composition, measurement of the dependent variable, or the specific economic conditions characterising each study period.

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b. Effect of Liquidity on Financial Distress

Liquidity (CR) is found to have a significant negative effect on financial distress (β = −0.9951; p = 0.0002), supporting Ha2. Companies with higher current ratios possess sufficient liquid assets to cover near-term obligations without resorting to asset liquidation or emergency financing, thereby substantially reducing the risk of financial distress. Conversely, companies with deteriorating liquidity are more vulnerable to payment failures, which frequently serve as the proximate trigger of financial distress. Under Signalling Theory, a favourable current ratio signals short-term financial soundness to external stakeholders, strengthening their confidence in the company's debt-service capacity. Agency Theory further underlines management's responsibility to maintain a balanced management of current assets and liabilities; failures in this dimension undermine operational stability and heighten distress risk. These findings corroborate the results of Dwiantari and Artini (2021), Runis et al. (2021), Sanjaya and Wijaya (2024), Sukarno et al. (2023), and Savery et al. (2024). However, they diverge from studies reporting no significant effect (Afgani et al., 2023; Pratiwi & Sudiyatno, 2022; Purwanti & Sari, 2023) or a positive effect (Setyawati et al., 2025). The discrepancies may be attributable to differing measurement proxies (e.g., Quick Ratio versus Current Ratio) or to the specific risk profile of the samples employed.

c. Effect of Leverage on Financial Distress

Leverage (DAR) exerts a significant positive effect on financial distress (β = +8.4937; p = 0.0000), supporting Ha3. The finding confirms that a greater reliance on external debt amplifies financial vulnerability: higher debt levels impose increasing interest and principal repayment obligations that, if not matched by stable revenues, put cash flows under severe pressure and elevate the probability of default. The property and real estate sector, characterised by large asset bases, extended asset-to-cash conversion cycles, and inherent sensitivity to borrowing costs, is particularly susceptible to these dynamics. Under Signalling Theory, a high leverage ratio is interpreted by the market as a negative signal of financial risk, reducing investor confidence and restricting future access to capital. From an Agency Theory perspective, imprudent leverage decisions by management impose disproportionate financial burdens on the firm, increase the likelihood of default, and create conditions conducive to financial distress. These findings are consistent with Dwiantari and Artini (2021), Runis et al. (2021), Sukarno et al. (2023), Savery et al. (2024), and the indirect evidence from Wijaya et al. (2024), who find that higher leverage significantly reduces the Interest Coverage Ratio, indicating greater distress risk. Conversely, Pratiwi and Sudiyatno (2022) and Sanjaya and Wijaya (2024) report insignificant leverage effects, while Afgani et al. (2023) and Setyawati et al. (2025) report negative leverage effects.

## V. Conclusion

Based on binary logistic regression analysis of 75 property and real estate companies listed on the IDX for the 2022–2024 period, yielding 225 panel observations, three conclusions can be drawn. First, profitability (ROA) has a significant negative effect on financial distress, indicating that companies generating higher returns from their asset base accumulate stronger retained earnings as a financial buffer, substantially reducing their vulnerability to financial crisis. Second, liquidity (CR) also has a significant negative effect, confirming that adequate current assets enable companies to fulfil short-term obligations on time, thereby preventing the payment failures that frequently trigger distress. Third, leverage (DAR) has a significant positive effect, demonstrating that an excessive reliance on external debt intensifies interest and repayment burdens that, when not matched by sufficient cash flows, materially increase the probability of financial distress. Collectively, these three variables explain 55.96% of the variation in financial distress probability and yield an overall model prediction accuracy of 87.56%, affirming their reliability as early-warning indicators for financial health assessment in Indonesia's property and real estate sector.

These findings offer practical implications for multiple stakeholders. Management is advised to prioritise asset utilisation efficiency, maintain adequate liquidity buffers, and adopt prudent leverage strategies—particularly under the elevated interest rate conditions of 2022–2024. Investors and capital market

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analysts may use ROA, CR, and DAR as reliable diagnostic signals when evaluating distress risk exposure in property sector portfolios. Regulatory bodies such as OJK and IDX may consider incorporating leverage concentration and liquidity adequacy thresholds into their issuer supervision frameworks.

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