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RESEARCH ARTICLE

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Leverage, Liquidity, and Firm Size on Financial Performance: Evidence from Indonesia's Property and Real Estate Sector, 2020–2024

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Purpose This study examines the effects of leverage, liquidity, and firm size on the financial performance of property and real estate firms listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024, a period marked by the COVID-19 shock, tighter interest rates, and distress cases such as PT PP Properti Tbk.

Design/Methodology This quantitative causal associative study uses purposive sampling, resulting in 69 firms and 345 firm-year observations. Financial performance is measured by return on assets (ROA), leverage by the debt to equity ratio (DER), liquidity by the current ratio (CR), and firm size by the natural logarithm of total assets. The data come from audited financial statements and are analyzed with multiple linear regression (pooled OLS) using heteroskedasticity-consistent robust standard errors.

Findings The research findings indicate that leverage has a negative and significant effect on ROA. Firm size has a positive and significant effect. Liquidity has no significant effect. The model is jointly significant, but the adjusted R^2 of shows 0.051 (5.1%) that these firm-level ratios explain only a small share of the variation in profitability.

Practical Implications The implication of this study is that corporate management needs to be more precise in optimizing long-term debt levels and large-scale asset management to maintain profitability.

Originality/Value This study offers recent evidence on the determinants of ROA among listed Indonesian property firms over a five-year panel that covers the pandemic and its aftermath. It shows that leverage and size matter for profitability while liquidity does not, and that firm-level ratios alone leave most of the variation unexplained, which points future research toward macroeconomic and non-financial factors.

Keywords: Leverage; Liquidity; Firm Size; Financial Performance; Property Firms

JEL Classification: G32, L25, R30

SDG: SDG 8; SDG 11, SDG 9

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1. Introduction

The fundamental objective of establishing a company is to increase the wealth owned by shareholders through an increase in company value or the growth of the business entity. To achieve this objective, management needs to effectively optimize financial performance, which represents the company's capacity to execute comprehensive governance over every production factor and resource it possesses. Precise control over these internal elements is a key pillar for the company to continuously generate competitive profit levels and ensure the creation of sustainable business growth. This performance evaluation becomes highly crucial when applied to industries that are capital-intensive and sensitive to macroeconomic dynamics. In the context of the national economy, the property and real estate sector stands as one of the main driving forces with high resilience amid the potential for a global slowdown.

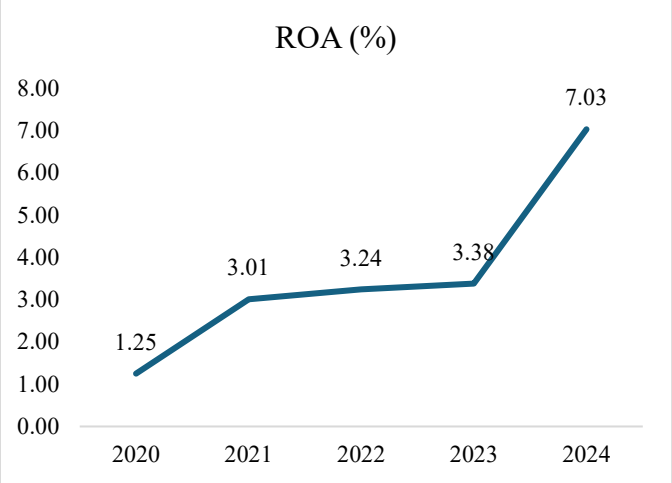


Figure 1. Average ROA growth in property and real estate sector companies

Source: Processed data, 2026

Viewed from Figure 1, although showing a positive growth trend through a drastic surge in the average Return on Assets (ROA) from 1.25% in 2020 to 7.03% in 2024, this sector faces a paradoxical phenomenon gap. The high ROA value fails to reflect the actual health of cash flow conditions, as evidenced by the emergence of a bond interest default crisis by PT PP Properti Tbk (PPRO) and the suspension of its stock trading at the end of 2024 (Wareza, 2020). The fragile financial posture of issuers in this sector is further pressured by macroeconomic conditions and monetary dynamics that directly affect liquidity conditions in Indonesia (Rahmatullah, 2025), reflected in the slowdown of the Home Ownership Credit (KPR) growth rate, which slowed significantly to 6.83% due to interest rate tightening and weakening purchasing power (Haryono, 2024).

The urgency of this research is reinforced by the inconsistency of previous findings (research gap) regarding the determinants of company performance. Regarding the leverage variable, Dalci (2018) provides empirical evidence of its influence on performance, which is supported by Samo & Murad (2019). However, studies by Cahyana & Suhendah (2020) and Krismiaji (2017) show the opposite results. In the aspect of liquidity, Sudiyatno & Suwarti (2022) conclude that there is an influence on performance, but through a review of related literature, the author finds a contradictory view from Dirmansyah et al. (2022), who provide empirical arguments that the liquidity factor has no meaningful impact on company performance at all. Furthermore, when examining the literature on the firm size dimension, the

author identifies an academic debate (research gap). On one hand, Budiadnyani & Dewi (2023) provides strong justification that the escalation of an entity's operational scale can serve as a positive catalyst for improving company performance achievement. However, on the opposing side, this argument is firmly refuted by the research results of Dwiastari et al. (2024), which instead prove the reality that the posture of a corporation's size does not play a crucial role in determining the level of company performance.To bridge the theoretical gap and these empirical phenomena, this study re-examines the interaction of leverage, liquidity, and firm size on firm performance. While prior studies such as Dalci (2018) and Harsono & Pamungkas (2020) have examined an identical combination of these three variables, this research offers a unique contextual novelty by investigating the structural mechanism specific to the property and real estate sector during the post-pandemic recovery period (2020–2024). Unlike general manufacturing or non-financial sectors, the property industry operates under a capital-intensive business cycle where the majority of current assets are tied up in illiquid forms, such as extensive landbank reserves, ongoing construction projects, and unsold housing units. Mathematically, this physical inventory accumulation inflates short-term liquidity ratios on paper, yet creates a condition of pseudo-excess liquidity that fails to generate immediate operational revenue. By integrating this sector-specific asset structure mechanism into the empirical model, this study provides deeper insights into why conventional financial ratios, particularly liquidity, exhibit unconventional behavior in determining corporate profitability within capital-intensive property markets.

2. Literature Review and Hypothesis Development

This section outlines five core concepts that form the theoretical foundation of this study: Agency Theory, firm performance, leverage, liquidity, and firm size. Each concept is thoroughly discussed as a conceptual basis to explain the internal financial dynamics of the property and real estate sector, before being synthesized into an integrated empirical research framework and hypothesis development at the end of the section.

2.1 Agency Theory

The fundamental concept of agency theory proposed by Jensen & Meckling (2019) states that there is a separation between the ownership function and the control function through a contractual relationship between shareholders as capital owners (principal) and management as managers (agent). The delegation of operational tasks along with full decision-making authority from the principal to the agent forms the primary foundation of this relationship, with the expectation that the agent can run the business entity professionally in order to maximize profits and increase company value. Although this delegation is crucial for business operational efficiency, the absence of direct involvement by shareholders in day-to-day managerial activities often creates a gap in the form of information asymmetry. This imbalance occurs because the agent has access to, mastery of operational data, and a far more comprehensive understanding of the corporation's internal capabilities compared to the principal.

Agency conflict has a high potential to arise within an organization's governance structure, especially when management begins to exhibit opportunistic behavior by prioritizing their personal interests or managerial utility above the company's primary objectives. The misalignment of orientation between the two parties directly contradicts the initial mandate to protect and increase the wealth of capital owners. In order to reduce conflict and realign the interests of the principal and agent, the company must implement strict oversight mechanisms that ultimately demand the consequence of incurring agency costs. In the context of the property industry, management is required to establish sound funding governance through

leverage management, maintaining liquidity stability, and aligning policies with company size so as to minimize agency costs while simultaneously boosting financial performance.

2.2 Company Performance

Financial performance acts as a fundamental parameter that projects the extent to which corporate management achieves precision and optimization. It specifically highlights the competence of a business entity in utilizing the entire operational capital structure under its control to convert it into maximum net profit over a single accounting cycle or a predetermined observation period. According to Danso et al. (2021), financial performance is measured by the ability of internal financial governance to achieve stable profitability and sustainable growth in corporate value for shareholders. In this study, Return on Assets (ROA) serves as the projection for measuring financial performance. The analytical basis for selecting this ratio rests on its ability to dissect the quality of overall capital utilization performance. This ratio functions as the primary parameter for examining the extent to which the aggregate wealth of the company essentially formed from the integration of equity capital and liability instruments can be managed efficiently. Ultimately, the level of optimization in managing the combination of these financial resources will be the main determinant of the business entity's success in recording net income on the income statement. The level of ROA represents the competence of operational management in executing business strategies in capital-intensive industries.

2.3 Leverage

Theoretically, the leverage variable serves as a primary indicator for dissecting the anatomy of a company's capital structure, particularly in showing the percentage of the entity's dependence on fund injections from creditors, whether through short-term or long-term debt schemes used to acquire total assets. Companies with a solid profitability track record generally exhibit more conservative financial behavior toward debt. They tend to avoid liability-based financing and prioritize the principle of financial independence by maximizing the absorption of internal funds, namely through the utilization of retained earnings from operations in prior periods. (Samo & Murad, 2019). Excessively aggressive use of leverage can increase the risk of fixed financial costs, which in turn has the potential to erode the company's net profitability. The assessment of the capital structure ratio in this study is projected through the Debt to Equity Ratio (DER) to see how much of the total assets of property issuers are financed by debt obligations.

2.4 Liquidity

In the context of financial management, liquidity describes the extent of a corporation's resilience and capability in settling each of its short-term liabilities or debt obligations precisely by the agreed-upon deadline. Achieving a proportional liquidity ratio will transmit positive fundamental indications to capital market participants. This represents that the financial posture of the entity in question is classified as prime, supported by adequate cash flow circulation to independently execute various operational initiatives and projects (Sudiyatno & Suwarti, 2022). On the other hand, a lack of current asset availability will expose the company to the threat of default risk, a distress situation that directly has the potential to destroy investor confidence. To measure this phenomenon, this study applies the Current Ratio (CR) instrument as the primary proxy variable, where this ratio is calculated through direct comparison between the aggregate of current assets held and the total current liabilities borne by the company.

2.5 Company Size

The dimension or size of a company essentially acts as a classification parameter specifically used to map the stratification of a business entity's operational capacity. The determination of a corporation's scale level is measured through a series of objective fundamental indicators, encompassing the accumulated aggregate of total assets held, the valuation level of stock market capitalization, to the track record of accumulated gross sales volume successfully realized by the company in a reporting cycle. Based on the scale of economics perspective, large-scale companies are assumed to have broader ease of access to capital markets, strong bargaining power, as well as mature operational diversification to drive cost efficiency (Budiadnyani & Dewi, 2023). This structural advantage provides opportunities for large companies to record more stable profitability performance compared to small-scale companies. To avoid bias from fluctuations in the very large absolute figures of total assets, the company size variable in this study is transformed using the natural logarithm of total assets (Ln Total Assets).Click or tap here to enter text.

2.6 Research Hypotheses

The empirical model formulation in this study was developed based on the reconstruction of previous research findings that examined the determinants of financial performance both partially and simultaneously. In testing the leverage variable, inconsistent results were found where Ibhagui & Olokoyo (2018); Samo & Murad (2019) and Widjanarko (2026) demonstrated a significant influence between debt structure and return on assets profitability. However, this conclusion contradicts the findings of Cahyana & Suhendah (2020), who stated that the magnitude of operational debt burden does not contribute to influencing the rise and fall of a business entity's financial performance.

H1: Leverage affects company performance.

In testing the liquidity variable, Sudiyatno & Suwarti (2022) provided empirical evidence that the ability to meet short-term obligations in a liquid manner has a strong influence on the stability of a company's operating profit achievement. Conversely, Dirmansyah et al. (2022) refuted this premise through their observational findings, which concluded that the current liquidity component does not affect company performance at all.

H2: Liquidity affect company performance.

Meanwhile, inconsistency was also found in testing the company size variable. Budiadnyani & Dewi (2023) provided justification that the scale of company size is a primary driver in achieving cost efficiency to optimize financial returns. This view contradicts the analysis of Dwiastari et al. (2024), which demonstrated that massive total asset ownership is not a guarantee for issuers to produce superior financial performance. The presence of various contradictory findings (research gap) from previous researchers underlies the urgency of retesting in this study.Click or tap here to enter text.

H3: Company size affects company performance.

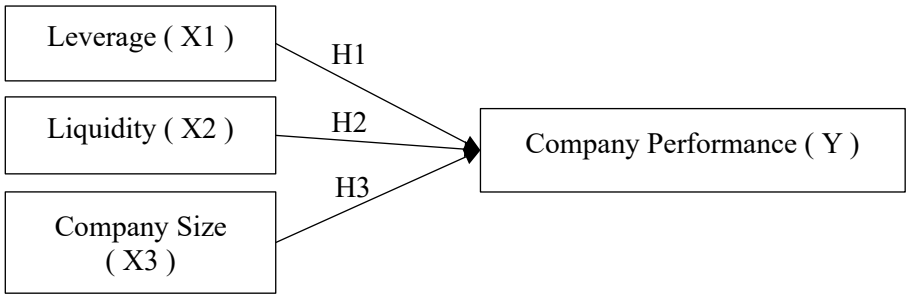


Figure 2. Research Framework

Source: Processed by the researchers, 2026

3. Research Method

3.1 Research Approach

Methodologically, the design framework applied by the author in this study is grounded in a quantitative paradigm combined with a causal associative approach. The selection of this design was specifically implemented by the author with the primary aim of conducting empirical verification in the field. The testing focused on examining the probability of interaction, interrelation, and significant influence from the group of independent variables represented by leverage structure, operational liquidity level, and firm size proxy. These three predictor factors were then analyzed for their direct implications on the dependent variable, namely the financial performance achievement of corporate entities. The use of quantitative-based associative instruments provides the author with the space to formulate patterns of inter-variable relationships mathematically and in a structured manner. In the implementation process, computational calculations and statistical testing play a crucial role as the primary foundation for formulating the basis for drawing final conclusions that are entirely objective, precise, and free from subjective bias.

3.2 Population and Sample

As the target population boundary, the author designated all corporate entities operating in the property and real estate industry sector that have been listed and officially registered on the Indonesia Stock Exchange (IDX). The empirical observation timeframe selected by the author covers a period of five consecutive years, starting from the 2020 fiscal year through the close of 2024. In order to reduce bias and ensure data relevance, the author adopted a non-probability sampling design, in which the observation unit selection process was specifically executed through a purposive sampling approach. The observation window spanning from 2020 to 2024 was specifically selected to represent the most recent five-year financial reporting period available at the time of study execution. Utilizing this modern five-year historical panel dataset provides an adequate longitudinal timeframe to capture the latest financial dynamics, capital structure adjustments, and operational performance trends across listed property and real estate firms in Indonesia.

To obtain the most ideal sample representation, the author formulated three highly stringent screening criteria. First, issuers in the property sector must be actively operating and consistently listed on the stock exchange without interruption throughout the 2020 to 2024 period. Second, each company is required to have published annual financial reports that have undergone a continuous independent audit verification process over the five observation periods. Third, the relevant business entities must provide adequately complete financial history publications containing all numerical components forming the theoretical variables

with precision. Through the series of purposive selection stages conducted by the author, a final sample of 69 companies was assembled. By multiplying the number of issuers by the observation period span (five years), the author obtained a total of solid, ready-to-process panel data-based analysis units, amounting to 345 observation data points.

3.3 Operational Definition of Variables

To facilitate the process of empirical data measurement, the author carried out a strict classification of all parameters involved within the research model framework. This categorization fundamentally separates the main constructs into two core groups, namely the dependent variable, which acts as the object of observation being influenced, and a series of independent variables, which function as predictor factors. In order for each theoretical indicator to be evaluated precisely and objectively using statistical instruments, the author formulated the boundaries of their operational definitions through the following elaboration:

The author designates firm performance as the dependent variable (Y), which is empirically projected through the Return on Assets (ROA) metric. This indicator was selected by the author due to its comprehensive capacity to represent the level of managerial competence of a corporation when converting the entire aggregate of assets under its control into maximum net profit. To measure and obtain this profitability ratio, the author applies the following mathematical formulation approach:

$$Return\ on\ Assets = \frac{Annual\ Net\ Income}{Total\ Asset}$$

To project the first independent variable, namely leverage (X1), the author designates the use of the Debt to Equity Ratio (DER) instrument. The selection of this capital structure ratio is intended to enable the author to carry out accurate calculations regarding the proportion of total assets or wealth of a business entity whose financing is supported through the issuance of debt instruments. In order to obtain the value of this external financing ratio, the author applies the following mathematical calculation steps:

$$DER = \frac{Total\ Debt}{Total\ Equity}$$

With regard to the second independent variable, namely liquidity (X2), the author uses the Current Ratio (CR) instrument as a measurement proxy. The application of this financial ratio is intended to enable the author to conduct an empirical assessment of how robust the capacity of a corporate entity is in settling all of its short-term liabilities or debt obligations that are soon maturing. The level of repayment resilience is evaluated by comparing it against the availability of the aggregate current assets ready to be liquidated by the company. The mathematical formulation structure adopted by the author to quantify this proxy is elaborated as follows:

$$Current\ Ratio = \frac{Current\ Asssets}{Current\ Liabilities}$$

For the third independent variable, namely firm size (SIZE) (X3), the author defines it as a parameter representing the classification of the scale, posture, and operational capacity of a business entity. To avoid statistical bias due to excessive fluctuations in the absolute figures of total assets among issuers, the author measures this variable by transforming the financial

data. This transformation is executed by the author through calculating the natural logarithm (Ln) of the entire aggregate of corporate assets at the end of the reporting period. The equation is formulated as follows:

$$Firm\ Size = Ln\ (Total\ Assets)$$

4. Results And Discussion

4.1 Results

4.1.1 Descriptive Statistical Test

The descriptive statistical test is used to present a general overview of the basic characteristics of all the variables studied. The total number of observations analyzed amounts to 345 data points, obtained from the accumulation of the company sample multiplied by the research period. A summary of the descriptive statistical analysis results can be observed in Table 1 below:

Table 1. Results of descriptive statistical analysis

VAR	N	Min	Max	Mean	Std. Deviation
DER	345	0.0020	3.7404	0.6940	0.6768
CR	345	0.0275	492.40742	8.8353	40.0122
SIZE	345	18.4024	31.9622	28.3621	1.8846
ROA	345	-0.1858	0.3482	0.0153	0.0607

Source: Data processed, 2026

Based on Table 1, the leverage variable or debt to equity ratio (DER) recorded a mean value of 0.6940, with a minimum value range of 0.0020 at PT Royalindo Investa Wijaya Tbk in 2021 and a maximum value reaching 3.7404 at PT PP Properti Tbk in 2024. The liquidity variable or current ratio (CR) has a mean value of 8.8353, with the lowest value of 0.0275 at PT Maha Properti Indonesia Tbk in 2023 and the highest value of 492.40742 at PT Royalindo Investa Wijaya Tbk in 2021. For the firm size variable (SIZE), calculated using the natural logarithm of total assets, the mean value stands at 28.3621, with the smallest value of 18.4024 at PT Pantai Indah Kapuk Dua Tbk in 2020 and the largest value of 31.9622 at PT Bumi Serpong Damai Tbk in 2024. Meanwhile, the company performance variable or return on assets (ROA) has a mean of 0.0153, with the lowest achievement of -0.1858 at PT Lippo Karawaci Tbk in 2020 and the highest of 0.3482 in 2024.

As observed in Table 1, the Current Ratio (CR) displays a remarkably wide empirical range, spanning from a minimum of 0.0275 (PT Maha Properti Indonesia Tbk in 2023) to an extreme maximum of 492.4074 (PT Royalindo Investa Wijaya Tbk in 2021). In this study, these extreme values were deliberately retained in their raw form rather than subjected to data trimming or winsorization. The rationale behind this decision rests on preserving the authentic operational realities of the property sector. Highly elevated liquidity ratios frequently occur in micro-cap or newly listed property firms holding substantial unutilized cash reserves immediately following equity issuance, whereas extremely low values reflect severe operational distress and cash flow illiquidity. Retaining these actual data points ensures full empirical transparency across the panel dataset without introducing artificial data smoothing. Furthermore, to prevent potential statistical distortion caused by these extreme variances during regression inference, the model applies Robust Standard Error estimation, ensuring that the empirical conclusions remain statistically sound and robust.

4.1.2 Classical Assumption Tests

Normality Test

To ensure the reliability of the regression model constructed, the author conducted a normality test as a prerequisite stage of analysis. This testing procedure is specifically intended by the author to observe and validate whether the distribution of the residual values produced follows the assumption of a normal distribution curve or otherwise. To execute this test, the author applied a non-parametric statistical approach based on the Kolmogorov-Smirnov (K-S) test. The detailed parameters of these computational results have been fully summarized and presented by the author in Table 2 below:

Table 2. Normality Test Results (Kolmogorov-Smirnov)

N	345
Asymp. Sig. (2-tailed)	.000[c]

Source: Data processed, 2026

Based on the statistical results in Table 2, the Kolmogorov-Smirnov test yields a significance value of 0.000, which is below the standard tolerance threshold of 0.05. This indicates that the regression residuals do not strictly adhere to a theoretical normal distribution. In econometric modeling, non-normal residual distributions can typically be addressed through data transformation techniques (e.g., logarithmic, square root, or Box-Cox transformations) or by trimming extreme statistical outliers. However, applying further transformations to ratio-based financial variables like DER and CR could distort their direct economic interpretation and financial meaningfulness.

Referring to the Central Limit Theorem (CLT), when a research sample is sufficiently large ($N > 30$), the distribution of the sample mean asymptotically approaches normality, making the standard regression estimation robust against normality assumption violations (Levine et al., 2016). Given that this study utilizes a substantial panel dataset of 345 observation units, the linear regression model remains statistically reliable and valid for hypothesis testing. Nonetheless, the non-normal residual distribution is explicitly acknowledged as a minor analytical limitation of this empirical study.

Multicollinearity Test

As a further diagnostic stage, the author applies a multicollinearity test to examine the feasibility of the regression model constructed. This test is specifically carried out by the author to detect whether there are indications of intercorrelation or an excessively strong linear relationship among the independent (explanatory) variables. To establish that the equation is free from multicollinearity bias, the author adheres strictly to standard statistical threshold parameters. These feasibility criteria require that the tolerance value obtained must be above 0.10, and the accumulated Variance Inflation Factor (VIF) score must be confirmed to be less than 10. A comprehensive presentation of the calculation results of this assumption test has been structurally summarized by the author in Table 3 below:

Table 3. Multicollinearity Test Results

VAR	Tolerance	VIF	Description
DER	0.923	1.084	No symptoms of multicollinearity are present
CR	0.969	1.032	No symptoms of multicollinearity are present
SIZE	0.945	1.059	No symptoms of multicollinearity are present

Source: Processed data, 2026

Heteroscedasticity Test

Based on the empirical calculation results presented in Table 3, all independent variables meet the established feasibility criteria for the multicollinearity test. Specifically, the leverage variable (DER) recorded a tolerance value of 0.923 and a VIF of 1.084. The liquidity variable (CR) obtained a tolerance score of 0.969 with a VIF of 1.032. Meanwhile, the firm size variable (SIZE) demonstrated a tolerance value of 0.945 and a VIF of 1.059. Because every independent variable exhibits a tolerance value well above the 0.10 threshold and a VIF score substantially below the maximum limit of 10, it can be concluded that the regression model is completely free from symptoms of multicollinearity and intervariable linear correlation.. The detailed elaboration regarding the test result parameters at this initial stage has been comprehensively presented by the author in Table 4 below:

Table 4. Heteroscedasticity Test Results (Glejser Test)

VAR	Sig.	Result
DER	0.007	Failed the Heteroskedasticity Test
CR	0.295	Passed the heteroskedasticity test
SIZE	0.582	Passed the heteroskedasticity test

Source: Processed data, 2026

Referring to the empirical parameters in Table 4, the leverage variable (DER) is proven to experience a heteroscedasticity violation problem because its significance value is 0.007 < 0.05. To overcome this variance bias so that the estimation parameters remain accurate, consistent, and valid, adjustments were made through a comparative statistical testing procedure using the Robust Standard Error method to produce heteroscedasticity-consistent covariance estimates (Gujarati & Porter, 2009; White, 1980).The results of the re-estimation calculation are presented in Table 5 below:

Table 5. Robust Standard Error Results

Model	*Robust Std. Error*[a]	t	Sig.
DER	.005	-3.095	.002
CR	7.439E-5	.890	.374
SIZE	.002	3.311	.001

Source: Data processed, 2026

4.1.3 Hypothesis Testing

Multiple Linear Regression Analysis

In order to estimate the complex causal relationships within the model, the author operationalizes the multiple linear regression analysis instrument. The selection of this statistical approach is intended by the author to forecast the direction of theoretical expectations, while precisely measuring the magnitude of the influence exerted by a set of independent variables simultaneously (together) when intervening on the dependent variable. As the foundation for calculation, the author formulates the mathematical architecture of the regression equation developed in this empirical study through the following function breakdown:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Based on the data computation results from the empirical manuscript, the formulation of the multiple regression coefficient values formed is:

$$Y = -0.172 - 0.014 X_1 + 0{,}00006621 X_2 + 0.07 X_3 + \varepsilon$$

The model formulation above indicates that the constant parameter value is -0.172, which means that if the leverage, liquidity, and company size variables are absolutely zero, then the ROA achievement level is predicted to be at the index limit of -0.172. The leverage regression coefficient is negative at 0.014, illustrating an opposing directional correlation pattern. The liquidity coefficient is positive at 0.00006621, indicating a unidirectional contribution. Meanwhile, the company size variable coefficient is positive at 0.07, signifying the most dominant unidirectional stimulus force within the structure of this regression model.

t-Test

As a stage of hypothesis verification, the author conducts a t-test (partial) to evaluate the significance level of each predictor. This test is specifically directed by the author to measure how much real influence contribution is given by each independent variable individually toward the movement or fluctuation of its dependent variable. In the process of drawing conclusions, the author adheres to a tolerance limit of an α error rate of 5%. The comprehensive details regarding the statistical output of this partial test have been systematically summarized by the author in Table 6 below:

Table 6. t-Test Results

Coefficients[a]			
Model		**t**	**Sig.**
1	DER	-3.095	.002
	CR	.890	.374
	SIZE	3.311	.001

Source: Data processed, 2026

It is important to explicitly clarify that the empirical hypothesis testing results presented in Table 6 (*t* Test Results) are directly derived using the heteroscedasticity-consistent standard errors obtained from the Robust Standard Error estimation shown in Table 5. By incorporating these adjusted robust standard errors into the calculation of the *t*-statistics and corresponding *p*-values, the standard error biases caused by non-constant error variances are fully corrected. Consequently, the statistical significance tests and hypothesis decisions detailed in Table 6 are robust, unbiased, and valid for drawing empirical conclusions.

Based on the empirical statistical testing, the leverage variable measured by Debt to Equity Ratio (DER) recorded a significance value of 0.002, which is below the 0.05 threshold, validly proving that leverage significantly affects company performance and leading to the acceptance of Hypothesis 1. In contrast, the liquidity variable measured by Current Ratio (CR) obtained a significance value of 0.374, exceeding the 0.05 limit, which indicates that current debt management does not have a statistically significant effect on company performance, resulting in the rejection of Hypothesis 2. Lastly, the company size variable (SIZE) demonstrated a significance value of 0.001, well below 0.05, confirming that firm scale significantly influences financial performance and confirming that Hypothesis 3 is accepted.

F-Test

As an instrument for evaluating the overall feasibility of the model, the author applies the F-statistical test procedure or simultaneous testing. This analytical step is specifically utilized by the author to gauge the probability of the presence or absence of a collectively integrated influence from all predictor (independent) variables when intervening on the dependent variable within a regression equation. Through this joint testing, the author can conclude whether these explanatory variables simultaneously possess valid capability in

predicting fluctuations in company performance. Comprehensive details regarding the recapitulation of the simultaneous statistical data processing results have been documented by the author in Table 7 below:

Table 7. F-Test Results

ANOVA[a]

Model		F	Sig.
1	Regression	7.107	.000[b]
	Residual		
	Total		

Source: Data processed, 2026

Based on the data presented in Table 7, the author finds that the calculated F-value reaches 7.107. This figure is accompanied by a probability or significance level of 0.000, which is mathematically far below the maximum error tolerance threshold of 0.05. Grounded in these statistical parameters, the author can draw an empirical conclusion affirming that the integration of all independent variables—namely leverage structure, liquidity availability, and company size scale—collectively or jointly exerts a very strong and significant influence on fluctuations in financial performance achievement among business entities in the property and real estate sector.

Coefficient of Determination Test

As an instrument for gauging the accuracy level of the regression model, the author applies the coefficient of determination (R Square) test. This analytical step is specifically utilized by the author to evaluate the extent to which the percentage of variation or fluctuation occurring in the dependent variable can be logically explained by the series of explanatory (independent) variables involved in the model. In other words, this test serves as a benchmark for the author to assess the collective ability of the predictors in projecting the dynamics of company performance. Detailed statistical metrics related to the results of this test have been summarized by the author in Table 8 below:

Table 8. Coefficient of Determination Test Results

Model Summary

R	R Square	Adjusted R Square
.243[a]	.059	.051

Source: Data processed, 2026

As presented in Table 8, the Adjusted R^2 value is 0.051 (5.1%), indicating that 5.1% of the variation in firm performance (ROA) is explained by the combination of leverage (DER), liquidity (CR), and firm size (SIZE). The remaining 94.9% of the variance is driven by unmodeled external and internal factors. While an Adjusted R^2 of 5.1% appears modest, it must be evaluated alongside the highly significant *F*-test result ($F = 7.107, p = 0.000$). This statistical combination confirms that although the explanatory scope of the three financial metrics is selective, the overall linear specification of the empirical model is mathematically valid and non-random.

In empirical corporate finance and cross-sectional panel studies involving highly dynamic real estate markets, low coefficients of determination are frequently encountered and widely accepted. Firm profitability (ROA) in the property sector is inherently multifaceted and heavily governed by exogenous macroeconomic determinants—such as central bank benchmark interest rates, inflationary pressure, national purchasing power, property tax incentives, and material costs—as well as non-financial internal dynamics like landbank strategic positioning and managerial efficiency. Consequently, internal financial

structure ratios capture a specific subset of firm-level variance. Crucially, in explanatory econometric modeling, a low R^2 does not impair the unbiasedness or statistical validity of the estimated regression coefficients (t-tests), ensuring that the empirical conclusions regarding leverage, liquidity, and firm size remain fully dependable.

Based on the results of the data recapitulation presented in Table 8, the author observes that the Adjusted R Square test instrument produced a score of 0.051. This empirical finding provides a strong indication to the author that the combination of predictor variables, namely leverage, liquidity, and firm size, simultaneously is only able to describe the dynamics of the rise and fall of financial performance (ROA) in property sector corporations at a percentage of 5.1%. Following up on this figure, the author concludes that the majority of the remaining portion, namely 94.9%, represents the real impact of the intervention of various external variables and other fundamental factors not accommodated within the conceptual framework of this research.

This low determination value is normal and commonly encountered in cross-sectional corporate and business data analysis, given the high complexity of internal corporate governance that cannot be absolutely projected through only three financial variables alone (Gujarati et al., 2012).

4.2 Discussion

4.2.1 The effect of leverage on firm performance

Based on the results of partial analysis, the leverage variable (DER) is proven to have a real and significant effect on the achievement of financial performance of property and real estate sector companies. The negative direction of the relationship indicates that aggressively increasing the debt ratio burden will actually have an adverse impact on the decline in the corporation's return on assets (ROA) ratio. This empirical finding provides real confirmation of the relevance of the agency theory theoretical framework. The property sector is an industrial sector that requires large-scale working capital with a very high level of dependence on long-term bank funding. When agents (management) use debt excessively beyond the optimal proportion limit, this triggers a swelling of the fixed financial cost burden that the company must bear. As a result, the interest burden cuts into the issuer's net operating profitability, thereby lowering the financial ROA performance which is essentially the right to the prosperity of the principal (shareholders). The conclusions of this research study are in line with and support previous empirical evidence proposed by Dalci (2018), Ibhagui & Olokoyo (2018), and Widjanarko (2026) which state that operational debt structure governance has a significant effect on the financial performance of business entities.

4.2.2 The effect of liquidity on firm performance

Based on the outputs of the statistical tests that have been executed, the author obtained empirical confirmation that decisively demonstrates that the liquidity aspect, which in this study is quantified through the Current Ratio (CR) instrument, is proven to have no influence. In other words, the author concludes that the high or low level of this current liquidity ratio does not at all exert any intervention in the rise and fall of financial performance achievements in business entities in the property and real estate sector listed under the Indonesia Stock Exchange (IDX). The magnitude of a company's current funds availability ratio does not serve as a linear determinant that governs the fluctuations in return on assets profitability.

This condition of liquidity having no influence occurs due to the specific operational characteristics of the property industry's business cycle, which is highly capital-intensive. In the financial statements of property issuers, the majority of current asset components are not stored in the form of ready-to-use cash, but rather held in the form of long-term inventories

such as landbank reserves, ongoing housing construction projects, and building units that have not yet been absorbed by the market. This accumulation of physical inventory mathematically increases the current ratio on paper, yet these assets are illiquid in nature and do not generate real operational revenue before a net sales transaction occurs. The impact of this accumulation creates inefficiency or pseudo excess liquidity that is incapable of boosting return on assets (ROA) profitability. The evidence from this research finding is consistent with the results of previous studies by Dirmansyah et al. (2022) and Harsono & Pamungkas (2020), which concluded that the current liquidity aspect does not have a material contribution to corporate financial performance.

4.2.3 The influence of firm size on company performance

Based on the results of partial empirical testing, the firm size variable (SIZE), proxied through the natural logarithm value of total asset holdings, is proven to have an influence on financial performance achievement (ROA). This positive relationship indicates that the expansion of asset capacity genuinely serves as a primary driver for increasing company profitability.

The positive impact of company size provides strong justification for the applicability of the concept of economies of scale. Established property corporations with massive total asset ownership values possess significantly higher operational and financial credibility in the eyes of investors and banking institutions. This structural advantage provides large companies with easier access to raise external financing in the capital market at relatively cheaper and more efficient funding costs (cost of fund) compared to smaller companies. Furthermore, the large asset capacity supports the diversification of construction projects and triggers operational cost efficiency, thereby making the capacity to generate net operating profit margins more stable and superior. From the perspective of agency theory, the complexity of large-scale asset governance demands that management present financial reports more carefully, transparently, and accountably in order to minimize agency conflicts with the public. The results of this test are consistent with prior research evidence from Budiadnyani & Dewi (2023), which demonstrated that company size has a dominant positive effect on the financial performance of corporate entities

5. Conclusions & Recommendations

5.1 Conclusion

Examining the series of data computation results and hypothesis tests that have been elaborated in the previous chapter, the author draws the conclusion that the leverage structure quantified through the Debt to Equity Ratio (DER) instrument is empirically confirmed to have a significant impact on the dynamics of Return on Assets (ROA). This conclusion applies specifically to the constellation of property and real estate companies listed on the Indonesia Stock Exchange (IDX) throughout the observation period from 2020 to 2024. Furthermore, the author interprets this finding as a warning that an overly aggressive debt escalation strategy tends to create an excessively heavy fixed interest burden, which will ultimately reduce the net profitability of corporate entities. On the opposite side, the author finds that the liquidity proxy evaluated using the Current Ratio (CR) shows no influence whatsoever on the achievement of financial performance among the listed property issuers. This indicates that the level of availability of current funds, most of which are held in the form of short-term inventories (such as land reserves and unsold construction projects), is not a primary determinant in driving the rise and fall of asset profit returns. Meanwhile, firm size is proven to have an influence on financial performance. A large operational scale with massive asset ownership is shown to

provide a structural competitive advantage in the form of cost efficiency through economies of scale as well as easier access to cheap working capital financing in order to achieve superior ROA growth.

5.2 Limitations

Despite its empirical contributions, this study has several analytical limitations that should be acknowledged. First, the analysis is confined to a single industry the property and real estate sector over a five-year window (2020–2024). This restriction limits the generalizability of the findings to other commercial sectors and to different phases of the economic cycle. Future research should therefore replicate the model across multiple industries, extend the observation period, and compare results across distinct macroeconomic regimes.

The regression model produces a relatively modest adjusted R^2 of 5.1%, indicating that a large share of variation in firm profitability is still explained by unmodeled external, macroeconomic, and internal operational factors. Subsequent studies could incorporate additional covariates such as interest-rate movements, inflation, ESG performance, digitalization intensity, or governance quality to improve explanatory power and reduce omitted-variable bias.

The econometric specification exhibits non-normal residual distributions. Extreme values in financial metrics, notably the current ratio, were retained in their original form to preserve sector-specific realities rather than being winsorized. Inference therefore rests on large-sample asymptotic properties and robust standard errors. Future work could test the sensitivity of the results to alternative treatments of outliers (winsorization, truncation), employ robust or quantile regression, or apply bootstrap inference to assess whether the main conclusions remain stable under different distributional assumptions.

5.3 Recommendations

Based on the empirical findings and the limitations encountered in the implementation of this study, several strategic recommendations can be conveyed as follows:

From an academic perspective for the development of literature and future research, given that the coefficient of determination (adjusted R square) within this internal model framework is still relatively limited (5.1%), future researchers are advised to broaden the scope of research analysis by exploring external factors beyond the model. In-depth investigation can be directed toward the influence of macroeconomic conditions such as fluctuations in the benchmark interest rate, inflation, and loan-to-value policies, as well as the integration of other contemporary variables such as Environmental, Social, and Governance (ESG), digital transformation, green innovation, intellectual capital, or supply chain flexibility in order to obtain a more comprehensive and integrative understanding of profitability in the property sector.

Furthermore, for the management of corporations in the property and real estate sector, it is recommended to be more thorough and cautious in making capital structure policies by optimally regulating the proportion of debt and equity. Management must be able to minimize the use of debt that risks creating high fixed financial burdens, while at the same time being required to utilize total asset capacity effectively and efficiently through the diversification of productive projects. In addition, companies should build a solid risk management system to manage the impact of macroeconomic uncertainty in order to maintain the stability of real cash flows and the long-term operational sustainability of the business environment.

From a societal and broader capital market perspective, the empirical findings of this study offer critical implications for systemic market stability and retail investor protection,

particularly when contextualized against prominent corporate distress cases such as PT PP Properti Tbk (PPRO)'s bond default. PPRO's severe debt service failure underscores the catastrophic consequences when real estate developers rely excessively on high leverage to finance aggressive land acquisitions without maintaining adequate liquid buffers or generating stable operational cash flows. To prevent similar financial contagion and safeguard public retail investors who frequently bear the brunt of unexpected corporate defaults regulators such as the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX) should enforce stricter liquidity monitoring thresholds and enhanced debt-covenant transparency for listed property firms. Furthermore, capital market educators and retail investor communities must emphasize the importance of fundamental debt sustainability and liquidity ratios over simple asset growth metrics. Protecting retail capital from insolvency risks not only fosters public trust in the national capital market but also maintains long-term macroeconomic stability within Indonesia's property sector.

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