



Solvency, cash flow, and financial distress: A moderation analysis of company size

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ABSTRACT

This study investigates the impact of solvency and cash flow ratios on the likelihood of financial distress, while also examining the moderating effect of company size. The research focuses on firms in the property and real estate subsector listed on the Indonesia Stock Exchange (IDX) during the 2016–2020 period. Using a purposive sampling method, 57 firms were selected, resulting in 285 firm-year observations. Logistic regression analysis was employed to test the hypotheses. The results show that solvency has a significant positive effect on financial distress, indicating that higher levels of debt increase the likelihood of financial difficulties. In contrast, cash flow does not exhibit a significant influence on financial distress. Furthermore, company size fails to moderate the relationship between both solvency and financial distress, as well as cash flow and financial distress. These findings suggest that large company size does not necessarily mitigate the adverse effects of financial structure or liquidity on financial health within the property and real estate sector in Indonesia.

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1. INTRODUCTION

The prolonged COVID-19 pandemic has significantly impacted the financial stability of companies in Indonesia, including those listed on the Indonesia Stock Exchange (IDX). Several listed companies (issuers) have come under scrutiny for potential delisting due to failure to meet the minimum public ownership (free float) requirements and deteriorating financial conditions (Sandria, 2021). According to IDX Regulation No. I-I concerning Delisting and Relisting, the Exchange has the authority to delist a company if it experiences conditions or events that negatively and significantly affect its business continuity, and the company is unable to demonstrate sufficient signs of recovery (Ramadhani, 2022).

This situation is evident in several real estate sector companies facing potential delisting, such as PT Plaza Indonesia Realty Tbk (PLIN), PT Cowell Development Tbk (COWL), and PT Hanson International Tbk (MYRX). PLIN failed to meet the free float requirement as of January 2021, with only 2.99% of its shares held by the public (Rahmawati, 2021; Sandria, 2021). Meanwhile, COWL faced bankruptcy due to accumulated debt (Prasetyo, 2020), and MYRX was involved in the Jiwasurya corruption scandal, which resulted in state losses of approximately IDR 16 trillion and led to a 24-month trading suspension (Ramadhani, 2022). These cases confirm that bankruptcy is a major factor contributing to delisting on the IDX (Safitri, 2016).

Financial distress is understood as the preliminary stage before bankruptcy and can be identified through a careful analysis of a company's financial statements (Mangindaan, 2021). It may occur at any stage of a company's life cycle and has (Avramov et al., 2013) direct implications for future business performance. According to (Altman et al., 2020), the primary causes of financial distress include declining operational performance, high financial leverage, lack of technological innovation, and liquidity constraints. Hence, predicting financial distress is essential to provide early warning signals for company management, investors, and other stakeholders (Bateni & Asghari, 2020; Chaudhuri & Ghosh, 2017).

Prior studies have shown that financial ratios are effective tools in predicting financial distress, particularly leverage measured by the Debt to Asset Ratio (DAR), cash flow to total assets, profitability, and liquidity ratios. However, findings regarding the influence of leverage on financial distress remain inconclusive (Aisyah. N, 2017; Chrissentia & Syarief, 2018; Faradila & Aziz, 2016). Cash flows from operating activities are also considered critical in forecasting financial distress, especially concerning short-term debt obligations (Karas & Reznakova, 2020). Profitability—such as Return on Assets (ROA)—has consistently shown a negative effect on financial distress (Chrissentia & Syarief, 2018), while liquidity plays a key role in short-term risk assessment (Purnomo, 2018).

In addition to financial ratios, firm size is believed to serve as a moderating variable that influences the relationship between leverage and financial distress. Larger firms typically possess greater asset bases and funding capabilities to respond to financial pressures compared to smaller firms (Putu et al., 2017; Robert, 2017; Walela et al., 2022). Considering the potential delisting of real estate companies presumed to be in financial distress and the inconsistent results of previous studies (research gap), this study aims to examine the effect of solvency and cash flow on financial distress, with firm size as a moderating variable.

One major gap in previous research is the reliance on traditional accounting-based predictive models that largely ignore market-related risk factors. Despite advances in risk management practices, market-driven risks are often excluded from financial distress models, which can limit their predictive accuracy (Krause & Tse, 2016), particularly in market-sensitive sectors such as property and real estate. Another gap lies in understanding the influence of leverage. High levels of debt accumulation can increase the risk of financial distress, but the varying effects depending on market structure and industry characteristics have not been fully studied in the context of real estate companies (Ugur et al., 2022). Cash flow, as a crucial indicator of financial health, has not received adequate attention in studies of financial distress in the real estate sector. The importance of cash flow efficiency in detecting financial distress is evident, although research examining extreme variables and fluctuations in cash flow in the property market is rare (Sahwan & Mohamed, 2020). Further research is needed to examine how cash flow volatility influences financial distress, particularly during recessionary situations.

2. RESEARCH METHOD

This study adopts a quantitative approach with a causal-comparative research design, aiming to investigate the effect of solvency and cash flow on financial distress, and to examine the moderating role of company size. The population consists of firms in the property and real estate sub-sector listed on the Indonesia Stock Exchange (IDX) from 2016 to 2020. Using purposive sampling, firms were selected based on the following criteria: (1) listed continuously during the observation period, (2) categorized under the property and real estate sub-sector, and (3) disclosed complete financial statement data related to all research variables. Out of 82 firms, 25 were excluded due to incomplete data, resulting in a final sample of 57 firms, observed over 5 years, yielding 285 firm-year observations.

Variables and Measurement

Financial Distress (FD) / Dependent Variable. Measured as a binary variable using a modified Altman Z-Score or other threshold-based classification. Firms are coded as "1" if classified as financially distressed, and "0" otherwise.

$$Z\text{-Score} = 3.25 + 6.56(\text{TAWC}) + 3.26(\text{TARE}) + 6.72(\text{TAEBIT}) + 1.05(\text{BVTLBVE})$$

Where:

WC/TA = Working Capital / Total Assets
 RE/TA = Retained Earnings / Total Assets
 EBIT/TA = Earnings Before Interest and Taxes / Total Assets
 BVE/BVTL = Book Value of Equity / Book Value of Total Liabilities

Based on the Z-Score, firms are categorized as follows:

$Z < 4.50 \rightarrow$ Distressed (1)
 $4.50 \leq Z < 5.85 \rightarrow$ Grey Area
 $Z \geq 5.85 \rightarrow$ Healthy (0)

Solvency / Independent Variable. Solvency (Debt Ratio) is the ratio between total liabilities and total assets. A lower ratio indicates a better financial position for the company. An insolvent company is one whose total debts exceed its assets (M.Hanfi & Halim, 2016).

DAR = Debt / Total Asset.

Cash Flow / Independent Variable. The objective of the statement of cash flows is to provide information on the cash effects of a company's operating, investing, and financing activities over a specific period (Mamduh M. Hanafi, 2016).

CF2TA = Cash Flow / (Total Asset) X 100

Size / Moderation Variable. Firm size is measured by the total assets owned by the company, which is calculated as the sum of current assets and fixed assets (Mamduh M. Hanafi, 2016).

Profitability / Control Variable. The company's ability to generate profit is measured using the total assets it owns. A high ratio indicates efficient asset management (M.Hanfi & Halim, 2016). This metric also reflects the effectiveness of asset utilization in generating returns (Warren et al., 2014).

ROA = (Profit after Interest and Tax but before Extraordinary Items/Total Asse) \times 100

Liquidity / Control Variable. Measures a company's short-term liquidity capability by utilizing its total assets as a basis of assessmen (Warren et al., 2014). Short Debt to total Asset= Short Debt / Total Asset X100.

This study employs logistic regression analysis as the primary statistical technique to test the proposed hypotheses. Logistic regression is particularly appropriate when the dependent variable is binary or dichotomous, such as the occurrence or non-occurrence of financial distress. In this context, logistic regression facilitates the examination of how independent variables, including solvency and cash flow, affect the likelihood of a company experiencing financial distress, while also assessing the moderating role of firm size (Hosmer et al., 2013; Menard, 2002). The logistic regression equation is specified as follows:

$$\text{Logit}(P(\text{Financialdistress})) = \beta_0 + \beta_1\text{Solvency} + \beta_2\text{CashFlow} + \beta_3\text{FirmSize} + \beta_4(\text{Solvency}\times\text{FirmSize}) + \beta_5(\text{CashFlow}\times\text{FirmSize}) + \beta_6\text{Profitability} + \beta_7\text{Liquidity} + \epsilon$$

3. RESULTS AND DISCUSSIONS

Descriptive Statistics

Table 1 summarizes the descriptive statistics of all variables. Financial distress is measured as a binary variable, with a mean value of 0.11, indicating that approximately 11% of the sampled firms experienced financial distress during the observation period. This suggests that financial distress was present but not pervasive.

Table 1. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Financial Distress	285	0	1	.11	.307
Solvency	285	.0100	1.1190	.377067	.2219224
Cash Flow	285	-18.8420	36.3000	.494891	5.5716374
Company Size	285	0	4.E+13	3.16E+12	5.051E+12
Profitability	285	-37.5160	60.5930	2.020723	7.6710256
Liquidity	285	.8390	111.6310	18.598242	14.2878939
Valid N (listwise)	285				

Solvency shows a mean of 0.377, indicating that firms financed about 37.7% of their assets through liabilities, with notable variation across companies. Cash flow exhibits substantial

dispersion, ranging from negative to highly positive values, reflecting heterogeneous operating liquidity conditions. Profitability (ROA) also varies widely, with both significant losses and high returns observed. Liquidity displays a relatively high mean, suggesting that some firms held excess short-term assets. Overall, the descriptive results indicate substantial heterogeneity in financial structure, performance, and risk exposure among firms, justifying further multivariate analysis.

Logistic Regression Model Fit

Logistic regression analysis was conducted using the maximum likelihood estimation (MLE) method. The estimation process converged successfully, indicating stable and reliable parameter estimates.

In the baseline model (Block 0), which includes only the constant term, the -2 Log Likelihood ($-2LL$) value is 191.803. After including the explanatory variables—solvency, cash flow, company size, profitability, and liquidity—the full model (Block 1) yields a final $-2LL$ value of 126.247. The reduction of 65.556 indicates a substantial improvement in model fit, demonstrating that the independent variables significantly enhance the model's ability to predict financial distress.

The estimation process converged after seven iterations, with parameter changes below the convergence threshold of 0.001, confirming the stability of the maximum likelihood solution. The progressive decline in $-2LL$ across iterations reflects increasing explanatory power as the model incorporates firm-specific financial characteristics.

Goodness-of-Fit Assessment

The adequacy of the logistic regression model was further evaluated using the Hosmer and Lemeshow goodness-of-fit test, as shown in Table 2. The test yields a chi-square value of 6.508 with 8 degrees of freedom and a significance level of 0.591. Since the p-value exceeds the conventional 0.05 threshold, the null hypothesis of good model fit cannot be rejected. This result indicates that there is no statistically significant difference between the observed and predicted classifications of financial distress, suggesting that the model fits the data well and provides reliable probability estimates.

Table 2. Model fit and goodness-of-fit summary

Indicator	Value
-2 Log Likelihood (Null Model)	191.803
-2 Log Likelihood (Full Model)	126.247
Hosmer–Lemeshow χ^2	6.508
Sig.	0.591

Multicollinearity Diagnostics

To assess potential multicollinearity among independent variables, a correlation matrix (Table 3) was examined. All pairwise correlation coefficients are well below the critical threshold of ± 0.80 . The highest observed correlation is between solvency and liquidity ($r = -0.338$), which remains within acceptable limits. These results indicate that multicollinearity is not a concern in the regression model and that the estimated coefficients can be interpreted reliably without distortion from excessive intercorrelations.

Table 3. Correlation matrix

		Constant	Solvency	Cash Flow	Company Size	PROFITABILITY	LIQUIDITY
Step 1	Constant	1.000	-.684	.094	-.191	.090	-.356
	Solvency	-.684	1.000	.003	.018	-.029	-.338
	Cash Flow	.094	.003	1.000	-.054	-.075	-.119
	Company Size	-.191	.018	-.054	1.000	-.119	-.058
	PROFITABILITY	.090	-.029	-.075	-.119	1.000	-.012
	LIQUIDITY	-.356	-.338	-.119	-.058	-.012	1.000

Logistic Regression Results and Hypothesis Testing

Table 4 reports the estimated coefficients, standard errors, Wald statistics, and significance levels for the logistic regression model. Solvency exhibits a positive and statistically significant coefficient ($B = 3.547$, $p = 0.005$), indicating that firms with higher leverage are significantly more

likely to experience financial distress. The odds ratio ($\text{Exp}(B) = 34.700$) suggests that an increase in solvency substantially raises the probability of distress.

Cash flow shows a negative but statistically insignificant coefficient ($B = -0.043$, $p = 0.478$), implying that although higher cash flow may reduce distress risk, the effect is not strong enough to be statistically confirmed in this model. Company size also does not exhibit a significant effect ($p = 0.537$), indicating that firm scale alone does not explain variations in financial distress.

Profitability demonstrates a negative and significant effect ($B = -0.115$, $p = 0.002$), suggesting that more profitable firms are less likely to experience distress. Liquidity shows a positive and significant coefficient ($B = 0.058$, $p = 0.002$), indicating that excessively high liquidity may be associated with financial inefficiencies or structural imbalance.

Based on testing the logistic regression equation, the following logistic regression model was obtained:

$$Y = -5.335 + 3.547 \text{ Solvency} - 0.043 \text{ Cash Flow} - 0.115 \text{ Profitability} + 0.058 \text{ Liquidity} + \varepsilon$$

The results indicate that Solvency has a significant effect on financial distress, as shown by a significance value of 0.005, which is below the 0.05 threshold. Therefore, H1 is accepted. In contrast, Cash Flow does not have a significant effect on financial distress. The significance value for Cash Flow is 0.478, exceeding the 0.05 level, leading to the rejection of H2.

Table 4. Logistic regression results

Variable	B	Sig.	Exp(B)
Solvency	3.547	0.005	34.700
Cash Flow	-0.043	0.478	0.958
Company Size	0.000	0.537	1.000
Profitability	-0.115	0.002	0.891
Liquidity	0.058	0.002	1.059
Constant	-5.335	.000	.005

Explanatory Power of the Model

The explanatory power of the model is assessed using the Nagelkerke R Square as shown in Table 5, which yields a value of 0.420. This indicates that approximately 42% of the variation in financial distress can be explained by the independent variables included in the model, while the remaining 58% is attributable to factors outside the scope of this study. Secara praktis, ini berarti bahwa model tersebut efektif untuk identifikasi risiko dan tujuan peringatan dini, khususnya dalam membedakan perusahaan dengan probabilitas kesulitan keuangan yang tinggi dari perusahaan yang stabil secara finansial. Dalam pengaturan terapan—seperti penyaringan kredit, pemantauan peraturan, atau penilaian risiko investor—daya penjabar pada tingkat ini dianggap kuat, terutama ketika model tersebut terutama bergantung pada variabel berbasis akuntansi. Practically, this means that the model is effective for risk identification and early warning purposes, particularly in distinguishing firms with elevated distress probability from financially stable firms. In applied settings such as credit screening, regulatory monitoring, or investor risk assessment an explanatory power at this level is considered robust, especially when the model relies primarily on accounting-based variables.

Table 5. Model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	126.247*	.205	.420

Moderation Analysis

M1: Solvency * Company Size, table 6 summarizes the interaction between solvency and company size is not statistically significant, with a significance value of 0.382, which exceeds the 0.05 threshold. Accordingly, H3 is rejected, indicating that company size does not strengthen the effect of solvency on financial distress. Instead, the result suggests that company size weakens the relationship between solvency and financial distress.

Table 6. M1: solvency * company size

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Solvency	2.918	.1.400	4.346	1	.037	18.509
	Company Size	.000	.000	.765	1	.382	1.000
	M1	.000	.000	1.076	1	.300	1.000
	PROFITABILITY	-.115	.038	9.228	1	.002	.891
	LIQUIDITY	.053	.019	7.929	1	.005	1.054
	Constant	-4.853	.836	33.707	1	.000	.008

a. Variable(s) entered on step 1: Solvency, Company Size, M1, PROFITABILITY, LIQUIDITY

M2: Cash Flow * Company Size, table 7 summarizes the interaction between cash flow and company size is not statistically significant, as indicated by a significance value of 0.552, which exceeds the 0.05 level. Therefore, H4 is rejected, suggesting that company size does not strengthen the effect of cash flow on financial distress and instead weakens this relationship.

Table 7. M2: cash flow * company size

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Cash Flow	-.028	.058	.232	1	.630	.972
	Company Size	.000	.000	.353	1	.552	1.000
	M2	.000	.000	.258	1	.611	1.000
	PROFITABILITY	-.122	.035	12.507	1	.000	.885
	LIQUIDITY	.083	.017	24.587	1	.000	1.086
	Constant	-4.208	.530	62.959	1	.000	.015

a. Variable(s) entered on step 1: Cash Flow, Company Size, M2, PROFITABILITY, LIQUIDITY

Overall, the moderation hypotheses are rejected, suggesting that firm size does not play a conditioning role in the relationship between financial indicators and financial distress within the sampled firms.

This study provides empirical evidence on the determinants of financial distress in Indonesian property and real estate companies by examining the roles of solvency and cash flow, with firm size as a moderating variable. The results demonstrate that solvency is a statistically significant predictor of financial distress, while cash flow and firm size—both directly and as moderators—do not exhibit significant effects. These findings offer important insights into the financial vulnerability of capital-intensive firms operating in emerging markets and contribute to the ongoing debate on financial distress prediction.

The positive and significant relationship between solvency and financial distress confirms Hypothesis 1 (H1) and underscores the critical role of capital structure in determining corporate financial stability. Solvency, proxied by the Debt to Assets Ratio (DAR), reflects the extent to which a firm relies on external financing to support its asset base. A higher DAR implies greater leverage, which increases fixed financial obligations in the form of interest and principal repayments. When firms experience revenue declines or delays in cash inflows, these obligations can rapidly erode financial flexibility and increase the likelihood of distress. This mechanism is particularly relevant in the property and real estate sector, where projects typically involve long development cycles, substantial upfront investment, and delayed revenue realization.

The findings are consistent with prior empirical studies showing that higher leverage significantly increases the probability of financial distress across various sectors and contexts. Research focusing on Indonesian property and real estate firms highlights that heavy reliance on debt financing exposes companies to heightened default risk, especially during periods of economic contraction or declining property demand (Hidayat & Bintara, 2025; Saraswati et al., 2024). Similar conclusions have been drawn in manufacturing and hospitality industries, where high leverage magnifies financial vulnerability when operating performance deteriorates (Maulida et al., 2018; Santoso & Aritonang, 2023). From an agency theory perspective, excessive debt may exacerbate agency conflicts between shareholders and creditors, as firms face incentives to undertake riskier projects to meet debt obligations, further increasing distress risk.

The real estate sector presents unique structural characteristics that intensify the leverage–distress relationship. Property firms often hold a large proportion of illiquid assets, such as land and unfinished buildings, which cannot be readily converted into cash to meet short-term

obligations. During economic downturns, declining purchasing power and reduced investment appetite can sharply reduce property sales, while debt servicing requirements remain unchanged. As a result, firms with weak solvency positions become highly susceptible to financial distress. This structural imbalance explains why solvency emerges as a dominant predictor in the present study.

Despite the strong empirical support for the positive solvency–distress relationship, the literature also reports mixed evidence. Some studies document a negative or insignificant relationship between solvency and financial distress, suggesting that leverage may not always exacerbate financial risk if managed prudently (Maximillian & Septina, 2022; Putri & Hendayana, 2022). These contrasting findings imply that the impact of leverage depends on contextual factors such as industry structure, macroeconomic conditions, and debt management practices. In sectors with stable cash flows or conservative financing policies, higher leverage may not necessarily translate into distress. However, in capital-intensive and cyclical industries such as real estate, the present findings suggest that high leverage remains a critical source of financial vulnerability.

In contrast to solvency, cash flow does not exhibit a statistically significant effect on financial distress, leading to the rejection of Hypothesis 2 (H2). This result diverges from signaling theory, which posits that strong and stable cash flows convey positive information about a firm's financial health and reduce perceived distress risk (Scott, 2009). Prior studies emphasize operating cash flow as a leading indicator of financial distress because it is less susceptible to accounting manipulation compared to accrual-based earnings (Karas & Reznakova, 2020). From this perspective, weak cash flows should signal impending liquidity problems and elevate distress risk.

The insignificance of cash flow in this study may be explained by sector-specific dynamics in the property and real estate industry. Cash inflows in this sector are often volatile and unevenly distributed over time, as revenues depend on project completion stages, sales timing, and installment-based payment schemes. Consequently, short-term fluctuations in operating cash flow may not accurately reflect underlying financial health or long-term distress risk. Firms may report negative operating cash flow during development phases while remaining financially viable due to access to external financing or future sales prospects. Empirical evidence in the literature supports this interpretation. Some studies find that total cash flow or financing cash flow, rather than operating cash flow alone, is more informative in predicting financial distress (Marheni et al., 2022; Yuniar et al., 2024). These findings suggest that comprehensive liquidity conditions, including financing activities, may better capture a firm's capacity to sustain operations and meet obligations in capital-intensive industries. The present study focuses on aggregate cash flow measures, which may dilute the predictive power of specific cash flow components. As such, the lack of significance does not necessarily negate the theoretical importance of cash flow but highlights the need for more granular analysis.

The moderation analysis further reveals that firm size does not strengthen the relationships between solvency and financial distress or between cash flow and financial distress, resulting in the rejection of Hypotheses 3 (H3) and 4 (H4). These findings challenge the common assumption that larger firms benefit from economies of scale, diversified operations, and better access to capital, which could mitigate financial distress risk. While some studies report that firm size moderates the effects of leverage and cash flow on distress (Ramadani & Ratmono, 2023; Suharti et al., 2021), the present results suggest that size alone does not provide sufficient protection in the Indonesian property and real estate sector.

One possible explanation is that larger firms in this sector often undertake more ambitious projects and accumulate higher absolute levels of debt, offsetting the advantages typically associated with size. Large property firms may face complex organizational structures, higher fixed costs, and greater exposure to market fluctuations, which can amplify financial risk rather than reduce it. Additionally, market inefficiencies and limited economies of scale in emerging markets may constrain the ability of large firms to leverage their size into meaningful financial resilience.

These findings also align with studies showing that firm size does not significantly affect financial distress when leverage and profitability are taken into account (Purwaningsih & Safitri, 2022; Sayari & Mugan, 2013). In such cases, financial structure and performance indicators play a more decisive role than firm scale. The present study reinforces this view by demonstrating that solvency remains the dominant determinant of distress risk, irrespective of firm size.

Overall, the discussion highlights the central importance of capital structure in explaining financial distress in capital-intensive industries within emerging markets. The strong effect of solvency underscores the need for prudent leverage management and balanced financing strategies. While cash flow and firm size are theoretically relevant, their empirical effects appear to be context-dependent and shaped by industry-specific characteristics. By integrating these findings with existing literature, the study contributes to a more nuanced understanding of financial distress determinants and underscores the importance of considering sectoral dynamics when interpreting empirical results.

The results imply that funding decisions especially debt structure are the primary lever managers can control to reduce distress risk, because leverage dominates while firm size offers no protection. The most concrete managerial implications for property companies can be translated into actionable rules across the project cycle, with heightened discipline during demand downturns.

4. CONCLUSION

This study investigates the effects of solvency and cash flow on financial distress, with company size as a moderating variable, using 285 firm-year observations from Indonesian property and real estate companies over the 2016–2020 period. The findings demonstrate that solvency has a positive and significant impact on financial distress, indicating that firms with higher leverage face a greater risk of financial instability. In contrast, cash flow does not exhibit a statistically significant effect, although its negative coefficient suggests a limited protective tendency. Company size does not moderate the relationships between solvency, cash flow, and financial distress, implying that firm scale alone does not mitigate financial risk in this sector. Profitability and liquidity generally show expected directional effects, though their significance varies across models.

These results highlight the central role of capital structure in explaining corporate financial distress, particularly in capital-intensive industries. The study contributes to the financial distress literature in emerging markets by reaffirming solvency risk as a key determinant of corporate vulnerability, consistent with agency theory and financial risk perspectives. The absence of a significant cash flow effect may reflect sector-specific characteristics, such as long investment horizons and volatile revenue realization in real estate. Moreover, the insignificance of firm size as a moderating factor suggests that larger firms do not necessarily enjoy greater financial resilience, possibly due to high debt exposure and limited economies of scale.

Priority recommendations for investors are recenter risk assessment on leverage quality rather than firm size, incorporate downside-focused analysis instead of growth narratives and adjust risk premiums for capital-intensive firms regardless of scale. Priority recommendations for Corporate Management are reevaluate growth strategies driven by debt financing, reevaluate growth strategies driven by debt financing and Improve financial risk transparency and early warning mechanisms. Priority recommendations for regulators and Policymakers are Shift regulatory focus from firm size to leverage exposure, enhance disclosure requirements related to debt structure, and develop sectorspecific early warning systems.

This study has limitations, including its focus on a single industry and country, as well as the exclusion of qualitative factors such as corporate governance and managerial capability. Future research should extend the analysis across sectors, incorporate non-financial indicators (e.g., ESG measures or strategic orientation), and explore advanced analytical approaches, such as machine learning, to improve predictive accuracy.

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