

The Effect of Operating Cash Flow and Asset Growth on Financial Distress

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ABSTRACT

This study was motivated by inconsistencies in previous research findings regarding the effect of operating cash flow and asset growth on the probability of financial distress in infrastructure sector companies in Indonesia. This study aims to examine the influence of these two variables on infrastructure companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The research employed a quantitative method with an associative causal approach. Using purposive sampling, 49 companies were selected, resulting in 147 observations. Statistical analysis was conducted using logistic regression, with financial distress measured by the Zmijewski score. The results indicate that operating cash flow and asset growth each have a negative and significant effect on the probability of financial distress. These findings imply that companies with strong operating cash flow generation and higher asset growth tend to face a lower risk of financial distress. In conclusion, both indicators serve as important signals in detecting potential financial distress in Indonesian infrastructure companies.

Keywords: Financial Distress, Operating Cash Flow, Asset Growth, Infrastructure Sector, Logistic Regression.

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INTRODUCTION

The infrastructure sector plays a strategic role in driving national economic growth through development across various fields, including transportation, utilities, telecommunications, energy, and construction. Nevertheless, the unique characteristics of this sector—particularly its capital-intensive nature, long project cycles, and heavy dependence on external financing—make it highly vulnerable to financial risk.

During the 2022–2024 period, several infrastructure companies experienced significant financial pressure due to increasing debt burdens, difficulties in generating operating cash flows, and a post-pandemic economic recovery that had not yet fully materialized. This condition is exemplified by PT Waskita Karya (Persero) Tbk, which restructured bank debt amounting to IDR 26.3 trillion while still reporting a net loss in 2024, as disclosed in the company's annual financial statements. In addition to PT Waskita Karya (Persero) Tbk, several other infrastructure companies also encountered financial difficulties stemming from the sector's inherent characteristics, such as high capital requirements, long project cycles, and substantial reliance on external financing. These conditions suggest that financial distress within the infrastructure sector is not merely an issue affecting individual companies but rather reflects broader structural challenges faced by the industry. Furthermore, this phenomenon indicates an imbalance between companies' ability to generate operating cash flows and their aggressive asset expansion, which may ultimately increase the likelihood of financial distress. Financial distress is defined as a condition in which a company's ability to meet its financial obligations deteriorates before ultimately leading to bankruptcy (Santoso et al., 2024). Early detection of this condition is crucial because it affects business continuity, investor confidence, and the stability of the broader economic sector. In infrastructure companies, this risk becomes more complex due to the substantial need for long-term investment, which is generally financed through debt and external funding. Therefore, identifying the factors influencing financial distress in this sector is an important area of study.

Operating cash flow reflects a company's ability to generate sufficient cash from its main operating activities to support financial sustainability. A company with stronger operating cash flow has greater flexibility in managing operational needs, fulfilling financial obligations, and reducing reliance on external sources of financing. Consequently, a stable operating cash flow position may lower the probability of financial distress, while inadequate cash generation from operations may increase financial pressure on the company.

Furthermore, asset growth represents changes in a company's resources that are associated with expansion activities and future business prospects. The increase in assets can provide opportunities to enhance operational capacity, improve revenue generation, and strengthen long-term performance. However, asset expansion that relies heavily on debt financing may create additional financing obligations and increase exposure to financial risk. Therefore, the impact of asset growth on financial distress depends on the company's ability to manage investment decisions and financing strategies effectively.

Numerous studies on financial distress have been conducted; however, inconsistencies in the findings remain. Miswaty & Novitasari (2023) and Sembiring (2022) demonstrated a negative effect of operating cash flow on financial distress. In contrast, the findings of Annabila & Rasyid (2022) indicate that operating cash flow has no significant effect. Furthermore, Nurizka (2023) concluded that asset growth negatively contributes to financial distress, although the study was not conducted in the infrastructure sector. These inconsistencies indicate the need for further investigation.

On the other hand, most studies on financial distress have primarily focused on the manufacturing, consumer goods, and other non-infrastructure sectors. Consequently, previous findings have not been sufficiently representative of the distinctive characteristics of infrastructure companies, which are characterized by high leverage, substantial investment requirements, and significant dependence on external financing. Therefore, this study contributes to the literature by focusing its analysis on infrastructure companies in the post-pandemic period of 2022–2024 using the Zmijewski financial distress model and logistic regression analysis.

Theoretically, this study is based on two main theoretical frameworks, namely trade-off theory and pecking order theory. Trade-off theory explains that the use of debt provides benefits in the form of tax savings (tax shield), but excessive debt also increases financial distress costs. Meanwhile, pecking order theory asserts that companies prioritize internal sources of financing over external financing. Within the framework of this study, operating cash flow reflects the company's internal financing capacity, while asset growth represents the company's level of expansion, which is directly related to its financing needs.

Based on this background, this study aims to analyze the effect of operating cash flow and asset growth on financial distress among infrastructure companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The findings of this study are expected to provide an empirical contribution to the development of the financial distress literature while also serving as a reference for investors, creditors, management, and regulators in identifying the risk of corporate financial distress.

THEORETICAL BASIS

Trade-Off Theory

The trade-off theory was developed by Kraus & Litzenberger (1973). This theory argues that the use of debt provides benefits in the form of a tax shield; however, the use of debt beyond its optimal level increases the costs of financial distress. In the context of this study, asset growth represents the development and expansion of a company's business capacity. Well-managed asset growth can strengthen the company's operational capacity and business prospects, thereby potentially reducing the risk of financial distress. The relationship between asset growth and financial distress can be understood through the balance between the benefits and potential costs associated with financial decisions. In infrastructure companies, asset expansion generally requires significant investment and appropriate financing strategies. Effective asset growth can support revenue generation, improve financial performance, and strengthen the company's ability to meet its obligations, thereby reducing the possibility of financial distress. However, asset growth financed by excessive debt may increase financial burdens, such as interest expenses and repayment obligations, which can weaken financial stability and increase the likelihood of financial distress. Yuniarwati (2022) states that a company's

financial condition, particularly that related to operating cash flow and leverage, can influence the risk of financial distress. Furthermore, Zulfani et al. (2023) found that a healthy financial condition can reduce the probability of financial distress.

Pecking Order Theory

The pecking order theory was introduced by Stewart C. Myers (Myers & Majluf, 1984). This theory explains that companies prioritize internal financing before resorting to external financing due to information asymmetry and financing costs. In the context of this study, operating cash flow reflects the extent to which a company is able to generate internal funds to finance its operational activities and investment needs. Companies with high operating cash flow are more likely to meet their financing needs without increasing their debt burden, thereby minimizing the risk of financial distress. Astutik & Aditya (2023) state that companies tend to utilize internal financing before accessing external financing. In addition, Venisa & Widjaja (2022) found that a company's cash flow condition is closely associated with the probability of financial distress.

Financial Distress

According to Dosinta & Yunita (2024), information contained in financial statements can be used to evaluate a company's financial condition and business continuity, enabling the potential for financial distress to be detected at an early stage.

Financial distress is a condition of deteriorating financial health characterized by a company's inability to meet its financial obligations on time (Nurizka, 2023; Santoso et al., 2024). This study adopts the Zmijewski (1984) model to measure financial distress because the model is relevant for detecting financial distress in companies with high leverage and is capable of classifying distress and non-distress conditions more accurately.

The Zmijewski model is formulated as follows:

$$X = -4.3 - 4.5ROA + 5.7LEV - 0.004CR$$

Information:

ROA = Return on Assets

LEV = Leverage

CR = Current Ratio

A company is classified as experiencing financial distress if its X-value is ≥ 0 , whereas a company with an X-value < 0 is classified as non-distress

Operating Cash Flow

Operating cash flow reflects a company's ability to generate cash from its core operating activities. From the perspective of the pecking order theory, high operating cash flow enables a company to meet its financing needs internally, thereby reducing its dependence on external debt.

Previous studies have consistently shown that operating cash flow has a negative effect on financial distress. Miswaty & Novitasari (2023), Sembiring (2022), and Yuniarwati (2022) found that companies capable of generating strong operating cash flows tend to have a lower probability of experiencing financial distress. Halim (2024) revealed that operating cash flow affects financial distress, where companies with healthy operating cash flows tend to face a lower risk of financial distress. In addition, Driani & Munghiyati (2024) stated that operating cash flow can reduce the potential for financial distress because a company's ability to generate cash from its operating activities enables it to meet its financial obligations.

H1: Operating Cash Flow has a negative effect on financial distress.

Asset Growth

Asset growth describes the rate of increase in a company's total assets from one period to the next. In infrastructure companies, asset growth generally requires substantial financing and is often funded through debt. From the perspective of the trade-off theory, companies that are able to manage asset growth optimally will benefit from increased capacity and improved corporate performance without excessively increasing the risk of financial distress. Therefore, high asset growth may reflect business expansion, increased operational capacity, and favorable corporate prospects, enabling companies to better maintain financial stability and reduce the risk of financial distress. These conditions may improve

operational efficiency, increase revenue-generating capacity, and support profitability and operating cash flow. As a result, companies have a stronger ability to fulfill financial obligations and maintain financial stability, thereby reducing the risk of financial distress. However, if asset growth is financed through excessive debt, it may increase financial obligations and financial risk, which can potentially increase the likelihood of financial distress.

Nurizka (2023) found that asset growth affects financial distress. In the infrastructure sector, high asset growth may indicate business expansion, increased operational capacity, and favorable corporate prospects, thereby enabling companies to better maintain financial stability and reduce the risk of financial distress.

H2: Asset Growth has a negative effect on financial distress.

The following conceptual framework was developed based on the proposed hypotheses and previous studies:

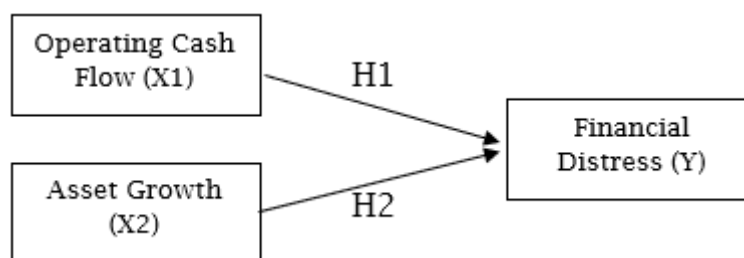


Figure 1. Conceptual Framework

RESEARCH METHODS

This study employs a quantitative approach with a causal associative research design. According to Sugiyono (2018), quantitative research is used to examine the relationships among variables through statistical data analysis. This study aims to examine and analyze the effect of the independent variables, namely operating cash flow and asset growth, on the dependent variable, financial distress.

The data used in this study consist of secondary data in the form of annual financial statements of infrastructure sector companies obtained from the official website of the Indonesia Stock Exchange and the official websites of the respective companies. The research data are panel data, combining cross-sectional and time-series data over the 2022–2024 period.

The population of this study comprises all infrastructure sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The infrastructure sector was selected based on its characteristics as a capital-intensive sector that requires substantial financing and exhibits high sensitivity to macroeconomic conditions and government policies.

The sampling technique used in this study is purposive sampling. Purposive sampling is a sampling technique in which samples are selected based on specific considerations or criteria in accordance with the research objectives. The sample selection criteria are as follows:

Table 1. Research Sample Criteria

No	Criteria	Total
1.	Infrastructure sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022-2024 period	56
2.	Infrastructure sector companies that did not publish or provide complete annual financial statement as of December 31 for the 2022-2024 period	(3)
3.	Infrastructure sector companies that did not use the Indonesian Rupiah (IDR) as their reporting currency	(4)
Total Sample		49
Total Research Observations (49 Companies × 3 Years)		147

Data were collected using the documentation technique by gathering and recording quantitative data obtained from the annual financial statements of the sample companies. The data collected include cash flow statements for the operating cash flow variable, statements of financial position for the asset growth variable, and the data required to calculate the Zmijewski score, namely ROA, leverage, and the current ratio.

Operational Definition of Variables

Table 2. Operational Definitions of the Variables

Variable	Measurement	Scale	Source
Financial Distress (Y)	$X = -4.3 - 4.5ROA + 5.7LEV - 0.004CR$	Nominal (Dummy)	Santoso et al. (2024)
Operating Cash Flow (X1)	$OCF = \frac{\text{Operating Cash Flow}}{\text{Total Liabilities}}$	Ratio	Sembiring (2022)
Asset Growth (X2)	$AG = \frac{\text{Total Asset}_t - \text{Total Asset}_{t-1}}{\text{Total Asset}_{t-1}}$	Ratio	Nurizka (2023)

A company is classified as experiencing financial distress if its X-value ≥ 0 , whereas a company is classified as non-distress if its X-value < 0 .

Data Analysis Technique

The data in this study were analyzed using logistic regression. Logistic regression is employed when the dependent variable is binary categorical. It was selected because the dependent variable in this study is classified into distress and non-distress conditions and therefore does not satisfy the assumptions of ordinary linear regression.

Logistic regression is used to estimate the probability of a company experiencing financial distress based on the values of the independent variables used in this study. The logistic regression model employed is as follows:

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 OCF + \beta_2 AG + e$$

Description:

p = probability of the company experiencing financial distress

α = constant

β_1, β_2 = regression coefficients

OCF = operating cash flow

AG = asset growth

e = error term.

RESULTS AND DISCUSSION

Results

Table 3. Descriptive Statistics

Variabel	N	Minimum	Maksimum	Mean	Std. Deviation
Operating Cash Flow	147	-1.04	1.31	0.1681	0.28396
Asset Growth	147	-1.58	1.16	0.0167	0.28341
Financial Distress	147	0.00	1.00	0.1633	0.37087

Based on Table 3, the operating cash flow variable has a minimum value of -1.04 and a maximum value of 1.31 , with a mean value of 0.1681 . This indicates that most companies have relatively healthy operating cash flows.

The asset growth variable has a mean value of 0.0167 , indicating that most companies experienced asset growth during the study period.

The financial distress variable has a mean value of 0.1633 , indicating that approximately 16.33% of the companies in the sample experienced financial distress.

Table 4. Omnibus Test of Model Coefficients

Chi-square	df	Sig.
18.501	2	0.000

Based on Table 4, the significance value is 0.000, which is lower than 0.05. This result indicates that operating cash flow and asset growth simultaneously affect financial distress, suggesting that the logistic regression model is appropriate for use in this study.

Table 5. Model Summary

-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
112.342	0.118	0.201

Based on **Table 5**, the Nagelkerke R Square value is **0.201**. This indicates that operating cash flow and asset growth explain **20.1%** of the variation in financial distress, while the remaining **79.9%** is explained by other variables not included in this study.

The relatively low Nagelkerke R Square value indicates that operating cash flow and asset growth are not sufficient to explain the overall variation in corporate financial distress. This suggests that financial distress is also influenced by other factors, such as leverage, profitability, liquidity, corporate governance, and the company's macroeconomic conditions (Nurizka, 2023; Santoso et al., 2024).

Table 6. Hosmer and Lemeshow Test

Chi-square	df	Sig.
8.154	8	0.419

Based on Table 6, the significance value is 0.419, which is greater than 0.05. This result indicates that the logistic regression model has good predictive ability for the research data, meaning that the model is considered well-fitted and suitable for use.

Table 7. Classification Table

Observed	Predicted Non-Distress	Predicted Distress	Percentage Correct
Non-Distress	120	3	97.6%
Distress	22	2	8.3%
Overall Percentage			83.0%

Based on Table 7, the logistic regression model has an overall classification accuracy of 83.0%. This indicates that the model has reasonably good predictive performance in classifying companies experiencing financial distress and non-financial distress.

Although the model achieves an overall accuracy of 83.0%, its ability to predict companies experiencing financial distress remains relatively low, as indicated by a classification accuracy of only 8.3% for the distress category. This suggests that the model is more effective in classifying non-distress companies than distress companies. This limitation is likely due to the imbalance in the number of observations between the distress and non-distress categories in the research sample, causing the model to exhibit classification bias toward the majority class.

Therefore, the classification results should be interpreted with caution, particularly when identifying companies that are genuinely experiencing financial distress.

Table 8. Logistic Regression Results

Variabel	B	Wald	Sig.	Exp(B)
Operating Cash Flow	-3.023	7.718	0.005	0.049
Asset Growth	-2.828	9.602	0.002	0.059
Constant	-1.372	29.794	0.000	0.254

Based on the logistic regression analysis, the following equation was obtained:

$$\ln\left(\frac{p}{1-p}\right) = -1.372 - 3.023OCF - 2.828AG$$

The Exp(B) value of 0.059 indicates that an increase in asset growth tends to reduce the probability of a company experiencing financial distress.

The asset growth variable has a regression coefficient value of -2.828 with a significance level of 0.002. A significance value smaller than 0.05 indicates that asset growth has a negative and significant effect on financial distress. The negative coefficient indicates that an increase in asset growth will reduce the likelihood of a company experiencing financial distress.

Discussion

The Effect of Operating Cash Flow on Financial Distress

The findings indicate that operating cash flow has a negative and significant effect on financial distress, suggesting that companies with stronger operating cash flow are less likely to experience financial difficulties. This finding is consistent with previous studies (Bachtiar & Handayani, 2022; Miswaty & Novitasari, 2023; Sembiring, 2022) and supports the Pecking Order Theory, which suggests that firms prioritize internal financing over external funding. In infrastructure companies, stable operating cash flow is essential for financing projects and meeting financial obligations, thereby reducing dependence on external debt.

From a practical perspective, managers should maintain stable operating cash flow through effective cash management. Investors and creditors may use operating cash flow as an indicator of a firm's financial health, while regulators can encourage greater transparency in cash flow reporting.

Although operating cash flow was found to be statistically significant, the Nagelkerke R Square value of 20.1% indicates that the model has limited explanatory power in predicting financial distress. This suggests that financial distress is also influenced by other factors, such as leverage, profitability, liquidity, capital structure, and macroeconomic conditions (Nurizka, 2023; Santoso et al., 2024). Therefore, the findings should be interpreted with caution despite supporting the proposed hypothesis. Accordingly, **H1 is supported.**

The Effect of Asset Growth on Financial Distress

The results show that asset growth has a negative and significant effect on financial distress, indicating that firms with higher asset growth tend to face a lower risk of financial distress. This finding is consistent with Miswaty & Novitasari (2023) and Nurizka (2023), suggesting that sustainable asset growth strengthens a company's financial condition. In the infrastructure sector, asset growth generally reflects business expansion and increased operational capacity. However, rapid asset growth should be accompanied by sound financial management to avoid excessive financing risk.

The findings imply that managers should align asset expansion with the company's financial capacity, while investors and creditors may consider asset growth when evaluating long-term business prospects and repayment ability. These results also support the Trade-off Theory. Therefore, **H2 is supported.**

CONCLUSION

This study reexamined the effect of operating cash flow and asset growth on financial distress in infrastructure companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The results of the logistic regression analysis indicate that both operating cash flow and asset growth have a negative and significant effect on financial distress. These findings suggest that companies with stronger operating cash flow and sustainable asset growth are less likely to experience financial distress.

High operating cash flow indicates the company's ability to generate cash from operating activities, enabling the company to better meet its financial obligations and maintain financial stability. Meanwhile, high asset growth reflects the company's growth and capacity development, which can strengthen the company's financial performance and reduce the risk of financial distress.

This study contributes to the financial distress literature from both theoretical and empirical perspectives. Theoretically, the findings support the Pecking Order Theory and complement the Trade-off Theory by showing that stronger operating cash flow and sustainable asset growth reduce the likelihood of financial distress. Empirically, this study extends previous evidence by confirming the role of operating cash flow and asset growth as significant predictors of financial distress in Indonesian infrastructure companies during the post-pandemic period. Therefore, companies are encouraged to maintain stable operating cash flow and manage asset growth effectively to strengthen their financial resilience.

This study has several limitations. First, only operating cash flow and asset growth were included as independent variables, resulting in limited explanatory power, as reflected by the Nagelkerke R Square value of 20.1%. Second, the analysis was limited to infrastructure companies during the 2022–2024 period. Third, financial distress was measured solely using the Zmijewski model. Fourth, the model faces a class imbalance issue due to the lower proportion of financially distressed firms, which may limit its ability to accurately identify distressed companies. Future research is encouraged to incorporate additional variables, extend the observation period and research scope, apply data balancing techniques to address class imbalance issues, and compare different financial distress prediction models to obtain more comprehensive findings.

REFERENCES

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