

The Effect of Debt to Equity Ratio and Total Asset Turnover on Financial Distress

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Submitted: 11/05/2026; Revision Accepted: 22/09/2026; Published: 30/09/2026

How to cite this paper:

The Effect of Debt to Equity Ratio and Total Asset Turnover on Financial Distress. (2026). *Proceedings of International Conference on Agro and Marine Industry*, 2(1).

<https://journal.utu.ac.id/index.php/ICONAMI/article/view/316>

Abstract

This study aims to examine the effect of Debt to Equity Ratio and Total Assets Turnover on financial distress. The population in this study consists of infrastructure sector companies listed on the Indonesia Stock Exchange over a five-year period (2020–2024). The data used in this study are secondary data in the form of financial statements of infrastructure companies from 2020 to 2024, obtained from the official website of the Indonesia Stock Exchange and the companies' official websites. The sample was selected using a purposive sampling method, resulting in 40 companies that met the criteria. The data analysis method used is binary logistic regression with the assistance of IBM SPSS Statistics 25 software. The results of the study indicate that the Debt to Equity Ratio variable has a significant effect on financial distress, while Total Assets Turnover has no effect on financial distress.

Keywords: DER, TATO, Financial Distress.

Introduction

Financial health serves as the foundation for a company's long-term sustainability, reflecting its ability to meet its obligations and maintain operational stability. This is supported by the importance of efficient financial management, a company's ability to maintain stable cash flow, and control over financial risk factors that may affect business sustainability (Mondayri & Tresnajaya, 2022). However, not all companies are able to maintain these conditions consistently; as a result, companies face financial pressures that can lead to financial distress. Financial distress is a condition of deteriorating financial health characterized by an inability to meet financial obligations, both short-term and long-term, which, if left unaddressed, can escalate into bankruptcy (Sudarno et al., 2022).

PT Waskita Karya (Persero) Tbk is a state-owned construction company operating in the infrastructure sector. In recent years, PT Waskita Karya (Persero) Tbk has experienced significant financial pressure due to high debt levels in 2023, reaching Rp84.31 trillion, resulting in substantial interest expenses. Additionally, PT Waskita Karya (Persero) Tbk is facing a liquidity crisis, leading to defaults on several obligations. This situation is exacerbated by ongoing losses and an unsustainable funding structure, where long-term infrastructure projects are largely financed using short-term funding. These conditions indicate that the company is experiencing financial distress. As a result of these conditions, PT Waskita Karya (Persero) Tbk faces the threat of delisting from the Indonesia Stock Exchange if it is unable to improve its financial performance in accordance with applicable regulations (Idris, 2023)

Financial distress does not occur suddenly but is influenced by various factors related to a company's financial performance (Revanza & Wahyuni, 2023) . Financial performance reflects a company's ability to manage and utilize its resources effectively and efficiently (Hidar, 2025) . An assessment of financial performance can be conducted through the analysis of financial ratios derived from a company's financial statements. These financial ratios can serve as tools to detect a company's financial condition and assess the likelihood of financial distress (Wilasittha & Sadzili, 2024) . In this study, the financial performance indicators used include the Debt to Equity Ratio and Total Assets Turnover.

The Debt to Equity Ratio provides an overview of a company's capital structure, level of financial risk, and its ability to meet its obligations (Sudarno et al., 2022) . The Debt to Equity Ratio refers to the proportion of total assets financed by debt and equity, both short-term and long-term (Hery, 2016) . A high level of corporate debt indicates an increased risk of financial distress (Ningsih et al., 2024) . Research by 2022 , Revanza & Wahyuni (2023) , and Oktaviani & Zaretta (2024) states that the Debt to Equity Ratio influences financial distress. However, according to (Oktariyani, 2019) the Debt to Equity Ratio does not influence financial distress.

Total Assets Turnover is a ratio used to measure how effectively a company utilizes its total assets to generate sales. This ratio indicates the number of times total assets are

turned over in a single period (Kasmir, 2019) . A high Total Assets Turnover value indicates that the company is able to manage its assets efficiently, thereby increasing revenue and strengthening the company's financial position. Conversely, a low Total Assets Turnover value indicates inefficiency in asset management, which can reduce the company's revenue and increase the risk of financial distress. Additionally, operating cash flow serves as a crucial indicator as it reflects the company's ability to generate cash from operational activities to meet obligations and sustain business operations (Oktariyani, 2019) . Research by Kartika & Hasanudin (2019) , Kartika & Hasanudin (2019) , Sari et al. (2025) , Kartika & Hasanudin (2019) , Rahma & Efendi (2023) , and Diana & Yudiantoro (2023) indicates that Total Assets Turnover has a significant effect on financial distress. However, the results of a study conducted by Yoyo & Priyowidodo (2024) indicate that Total Assets Turnover does not have a significant effect on financial distress.

The issue of financial distress experienced by companies requires serious attention so that remedial measures can be taken immediately before the situation escalates into more severe financial difficulties. Therefore, this study aims to examine the influence of the Debt to Equity Ratio and Total Asset Turnover on financial distress in infrastructure sector companies listed on the Indonesia Stock Exchange for the period 2020–2024.

Literature Review

Agency Theory

The agency theory proposed by Jensen & Meckling in 1976 describes the relationship between the principal (shareholders) and the agent (managers) as an employment contract, in which shareholders delegate some decision-making authority to managers to run the company. This contract aims to ensure that managers act in the best interests of shareholders; however, in practice, there is often an information imbalance known as information asymmetry a condition where managers possess more comprehensive information regarding the company's financial condition, risks, and opportunities than shareholders do. This information asymmetry creates an opportunity for managers to make

decisions that benefit themselves but potentially harm shareholders, a phenomenon known as an agency conflict (Cahyani & Hartono, 2024).

In agency theory, the Debt to Equity Ratio is viewed as an indicator reflecting a company's financing policy through the use of debt. A high Debt to Equity Ratio indicates that the company is heavily reliant on debt, which can increase interest expenses and the risk of default. This situation can trigger conflicts among management, shareholders, and creditors due to the increased risk of financial distress if the company is unable to meet its financial obligations. Meanwhile, Total Asset Turnover in agency theory is viewed as an indicator of management's effectiveness in managing and utilizing the company's assets to generate sales. A high Total Asset Turnover value indicates that management is able to manage assets efficiently, thereby increasing revenue and strengthening the company's financial position. Conversely, a low Total Asset Turnover value reflects suboptimal management performance in utilizing the company's assets, which can lead to a decline in revenue and increase the risk of financial distress.

Financial Distress

Financial distress is a condition of declining financial health in a company characterized by an inability to meet financial obligations, both short-term and long-term, which, if left unaddressed, can lead to bankruptcy. Financial distress can be caused by cash flow difficulties, high debt levels, and losses in operational activities (Sudarno et al., 2022).

Model Zmijewski

The Zmijewski Model is a bankruptcy or financial distress prediction model developed by Zmijewski in 1984. In his research, Zmijewski used a probit approach to analyze the relationship between a company's financial condition and the likelihood of bankruptcy. This model was developed based on testing several financial ratios deemed capable of reflecting a company's condition, namely profitability, leverage, and liquidity. Based on the results of these tests, a financial distress prediction model was derived, which is now known as the Zmijewski model (Prabowo, 2019). The formulation of the Zmijewski model is as follows:

$$X\text{-Score} = -4.3 - 4.5X_1 + 5.7X_2 - 0.004X_3 \quad (1)$$

Notes:

X_1 = EAT/Total assets

X_2 = Total liabilities/Total assets

X_3 = Current assets/ Current liabilities

The Zmijewski model produces the following X-Score:

1. If $X < 0$ or negative, the company is categorized as healthy or not experiencing financial distress
2. If $X > 0$ or positive, the company is unhealthy or experiencing financial distress

Debt to Equity Ratio

The Debt to Equity Ratio is a ratio used to measure the proportion of debt relative to equity, serving to determine how much of every rupiah of equity is used as collateral for debt. The Debt to Equity Ratio refers to the extent to which total assets are financed by debt and equity, both short-term and long-term (Hery, 2016). The formula used is as follows:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \quad (2)$$

Total Asset Turnover

Total Asset Turnover is a ratio used to measure how effectively a company utilizes all of its assets to generate sales. This ratio indicates the turnover rate of total assets over a given period (Kasmir, 2019). The formula for Total Asset Turnover is as follows:

$$\text{Total Assets Turnover} = \frac{\text{Sale}}{\text{Total Assets}} \quad (3)$$

The Effect of the Debt to Equity Ratio on Financial Distress

The Debt to Equity Ratio provides insight into a company's capital structure, level of financial risk, and ability to meet its obligations (Sudarno et al., 2022). A high level of corporate debt indicates an increased risk of financial distress (Ningsih et al., 2024). A high Debt to Equity Ratio value indicates that the company has a significant reliance on debt financing, thereby increasing interest expenses and debt repayment obligations. This

situation can intensify the company's financial pressure and amplify the risk of financial distress if the company fails to meet its financial obligations on time.

From an agency theory perspective, excessive debt use may result from managerial decisions prioritizing short-term interests without considering the company's long-term risks. If managers do not manage the capital structure carefully and are not balanced by their ability to generate profits from the use of debt, then the increase in debt obligations will put pressure on the company's financial condition, causing the company to be unable to meet its financial obligations on time, which ultimately increases the likelihood of the company experiencing financial distress (Nadia et al., 2022) . Supported by the research of Setiyoharini & Taufiqurahman (2022), Oktaviani & Zaretta (2024), Nadia et al. (2022), and Revanza & Wahyuni (2023) it is stated that the Debt to Equity Ratio influences financial distress.

H1: The Debt to Equity Ratio influences financial distress

The Effect of Total Assets Turnover on Financial Distress

Total Asset Turnover is an activity ratio used to measure a company's effectiveness in utilizing assets to generate sales (Kasmir, 2019) . A high Total Assets Turnover value indicates that the company is able to manage its assets efficiently, thereby increasing revenue and strengthening the company's financial condition. Conversely, a low Total Assets Turnover value reflects inefficiency in asset utilization, which can lead to a decline in revenue and weaken the company's ability to meet its financial obligations.

From an agency theory perspective, managers are responsible for managing the company's assets efficiently to generate sales. Total Assets Turnover reflects a company's ability to utilize assets to generate sales, making it an indicator for assessing whether managers are efficient in using assets to generate sales. A high Total Assets Turnover value reflects managers' ability to manage the company's assets efficiently to generate sales. This indicates that managers act in alignment with shareholders' interests, thereby minimizing agency conflicts and reducing the risk of financial distress. However, when managers fail to manage the company's assets optimally due to conflicts of interest, this is reflected in a low.

Total Assets Turnover value, indicating that the company's assets have not been utilized efficiently to generate sales. Inefficiency in asset utilization can lead to a decline in the company's financial performance and weaken the company's ability to meet its financial obligations, thereby increasing the risk of financial distress (Rahma & Efendi, 2023) . Research by Kartika & Hasanudin (2019) , Kartika & Hasanudin (2019) , Sari et al. (2025) , Kartika & Hasanudin (2019) , Rahma & Efendi (2023) , and Diana & Yudiantoro (2023) states that Total Asset Turnover has a significant effect on financial distress.

H2: Total Asset Turnover influences financial distress.

Research Methods

This study employs a quantitative method with a causal approach aimed at testing the influence of the Debt to Equity Ratio and Total Asset Turnover on financial distress in infrastructure sector companies listed on the Indonesia Stock Exchange for the period 2020–2024. The data used in this study consists of secondary data in the form of financial statements and annual reports obtained from the official website of the Indonesia Stock Exchange and the respective companies' websites.

The population in this study consists of all infrastructure sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The sampling technique employed purposive sampling with the following criteria: (1) infrastructure sector companies listed on the Indonesia Stock Exchange consecutively from 2020 to 2024, (2) infrastructure sector companies that published complete financial statements and annual reports and provided data consistent with the study's variables from 2020 to 2024, (3) infrastructure sector companies that used the Indonesian rupiah in preparing their financial statements during 2020–2024. Based on these criteria, 40 companies were selected as the research sample, comprising a total of 200 data observations. The data analysis method used was logistic regression analysis with the assistance of IBM SPSS Statistics 25 software.

Results and Discussion

Outliers are data points that deviate significantly from the mean of the dataset. A total of 5 outliers were removed, reducing the original sample size of 200 companies to 195 companies.

Descriptive Statistics Test

Descriptive statistics is a statistical method used to describe and explain the characteristics of research data so that the data can be systematically understood through the presentation of the mean, minimum, maximum, and standard deviation (Sugiyono, 2018).

Based on descriptive statistical analysis, the average Debt-to-Equity Ratio was found to be 1.653991715. The highest Debt to Equity Ratio was recorded at 9.963154972 by PT Sarana Menara Nusantara Tbk (TOWR) in 2021, while the lowest value was -14.6708441, held by PT Centratama Telekomunikasi Indonesia Tbk (CENT) in 2023. The standard deviation of the Debt-to-Equity Ratio is 2.155329376. The Total Assets Turnover variable indicates that the average Total Assets Turnover is 4.4367523226. The highest TATO value was recorded at 4.444623707 by PT Presisi (PPRE) in 2023, and the lowest value was 0.0073334020 by PT Meta Epsi Tbk (MTPS) in 2022. The standard deviation of Total Assets Turnover is 4.4367523226.

Multicollinearity Test

The multicollinearity test aims to assess whether there is a strong correlation among the independent variables in the model. If two independent variables show a very high level of correlation, then they are considered to contain similar information, so that the regression equation can actually be represented by only one of those variables (Santoso, 2018). The results of the multicollinearity test show that the TOL values for the variables (>0.10) are 0.990 for DER and 0.990 for TATO. The VIF values are below 1.0 for the DER variable (1.010) and the TATO variable (1.010). This indicates that there is no evidence of multicollinearity among the independent variables.

Overall Model Fit Test

The overall model fit test is used to assess the overall suitability of the logistic regression model. This test is conducted by comparing a model without independent variables (Block Number = 0) with a model that includes all independent variables, namely the Debt-to-Equity Ratio (DER), Total Assets Turnover (TATO), and cash flow (Block Number = 1). The model's suitability is assessed by examining the decrease in the -2 Log Likelihood (-2LL) value, which represents how well the model explains the observed data (Sujarweni & Utami, 2025). The results of the Overall Model Fit test showed a decrease in the -2 Log Likelihood value from 156.843 at (Step 0) to 124.769 at (Step 1), indicating that including independent variables in the model yields a more accurate result compared to using only the constant term

Hosmer and Lemeshow Goodness of Fit Test

The Hosmer and Lemeshow test is used to test the null hypothesis that the empirical data fit the model; if there is no difference between the model and the data, the model can be considered valid. If the value of the Hosmer and Lemeshow test statistic is equal to or less than 0.05, then the null hypothesis is rejected, meaning there is a significant difference between the model and the observed values; thus, the Hosmer and Lemeshow test indicates the model is not suitable because it cannot predict the observed values. If the Hosmer and Lemeshow test statistic is >0.05 , this indicates that the logistic regression model is suitable for further analysis because there is no significant difference between the predicted classifications and the observed classifications (Ghozali & Ratmono, 2017). Based on the results of the model suitability test using the Hosmer and Lemeshow test, a chi-square value of 9.967 was obtained with a significance level of 0.267 (>0.05), so the model was proven to be acceptable because it was consistent with the observed values.

Classification Table

The classification table is used to measure the accuracy of the logistic regression model in classifying and predicting the dependent variable's condition based on the agreement between the model's predictions and the observed data (Ghozali & Ratmono,

2017). Based on the classification table test, the logistic regression model demonstrated excellent performance in classifying companies not experiencing financial distress. Of the 168 observations classified as not experiencing financial distress, 166 were correctly predicted as not experiencing financial distress, while 2 were incorrectly predicted as experiencing financial distress, resulting in a prediction accuracy of 98.8%. However, the model's ability to classify companies experiencing financial distress is relatively lower. Of the 27 observations classified as experiencing financial distress, 10 were correctly predicted as such, while 17 were incorrectly predicted as not experiencing financial distress, resulting in an accuracy rate of 37%. This indicates that the model tends to favor the "not experiencing financial distress" category, thereby making its ability to identify actual financial distress relatively low. Overall, the model has an accuracy rate of 90.3%.

Logistic Regression Analysis

Table 1. Results of the Logistic Regression Test

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	DER	.537	.115	21.886	1	.000	1.710	1.366	2.142
	TATO	-.833	.942	.782	1	.376	.435	.069	2.754
	Constant	-2.758	.525	27.643	1	.000	.063		

Source: SPSS 25 Output (2026)

Based on Table 1 the following equation is obtained:

$$\text{Logit } \frac{FD}{1-FD} = -2,758 + 0,537\text{DER} - 0,833\text{TATO} \quad (4)$$

1. A constant value of -2.394 indicates that when all independent variables, namely DER and TATO, are assumed to be zero, the log odds of financial distress occurring are negative

2. DER has a coefficient of 0,593, indicating that an increase in DER will increase the likelihood of financial distress.
3. TATO has a coefficient of 0–1,833, indicating that an increase in TATO increases the likelihood of financial distress.

Wald Test

Based on the results of the Wald test in Table 2 the following interpretation applies:

1. The Wald value for the DER is 20,414 with a significance level of 0.000 (<0.05). This indicates that, in part, the DER variable has a significant influence on financial distress, thus the hypothesis (H_1) is accepted.
2. The Wald value for TATO is 1,152 with a significance level of 0,376 (>0.05). This indicates that the TATO variable does not have a significant partial effect on financial distress, so hypothesis (H_2) is rejected.

Coefficient of Determination

The coefficient of determination in logistic regression is used to assess the extent to which independent variables explain the dependent variable by examining the Nagelkerke R-squared value (Ghozali & Ratmono, 2017). The Nagelkerke R-Square value is 0.274, which means that 27% of the variation in financial distress can be explained by DER and TATO, while the remaining 73% is explained by other variables outside the scope of this study.

Discussion

The Effect of the Debt to Equity Ratio on Financial Distress

Based on the results of the hypothesis testing, it can be concluded that the first hypothesis (H_1) that the Debt-to-Equity Ratio has a significant effect on financial distress is supported. The findings of this study indicate that the higher the proportion of debt in a company's capital structure, the greater the likelihood of the company experiencing financial distress. This condition has the potential to create significant risk, as the company may be categorized as experiencing *extreme leverage* a situation where the company is trapped in high debt burdens and faces difficulties in reducing them. Companies that rely

more heavily on debt-based financing tend to face the risk of difficulty in meeting future obligations, especially if the amount of debt exceeds the value of their assets (Purba & Muslih, 2018).

The findings of this study align with the agency theory perspective, which states that conflicts of interest between managers and shareholders can lead managers to make suboptimal capital structure decisions, such as excessive use of debt. Managers tend to focus on short-term performance improvements, for example through debt-financed expansion, without adequately considering long-term risks. A high Debt to Equity Ratio reflects a company's reliance on debt, which ultimately increases fixed costs in the form of interest and principal payments (Nurenzi & Umaimah, 2025). If managers do not manage the capital structure carefully and are not supported by their ability to generate profits from the use of such debt, the increased burden of liabilities will put pressure on the company's financial condition, causing the company to be unable to meet its financial obligations on time, which ultimately increases the likelihood of the company experiencing financial distress[9,29]

Thus, the higher the Debt to Equity Ratio, the greater the likelihood of the company experiencing financial distress. Supported by the research of Setiyoharini & Taufiqurahman (2022), Oktaviani & Zaretta (2024), Nadia et al. (2022), and Revanza & Wahyuni (2023) it is stated that the Debt to Equity Ratio influences financial distress.

The Effect of Total Assets Turnover on Financial Distress

Based on the results of the hypothesis testing, it can be concluded that the second hypothesis (H2) that Total Asset Turnover does not have a significant effect on the probability of financial distress is supported. The lack of an effect of Total Asset Turnover on financial distress in this study is attributed to the nature of the companies in the infrastructure sector, which are capital-intensive and focused on long-term projects. Companies in this sector tend to have large assets such as toll roads, airports, and ports. Consequently, the Total Asset Turnover in infrastructure sector companies will naturally always be low and stable, remaining below the average of other industries (Aisyah & Purnamawati, 2025). The low Total Asset Turnover value in infrastructure sector companies

cannot be interpreted as an indication of deteriorating financial performance that could be assessed as a probability of financial distress. Furthermore, an increase in Total Asset Turnover does not always reflect the company's financial health if such an increase is not accompanied by operational efficiency and the resulting profit margins. This is evident in PT Acset Indonusa Tbk (ACST), where the Total Asset Turnover value has increased, yet the company remains in a state of financial distress due to higher cost of revenue compared to the revenue generated.

From an agency theory perspective, Total Asset Turnover serves as a measure of managerial operational efficiency in generating revenue from assets, which ultimately impacts the company's ability to avoid financial distress or, conversely, increases the risk of financial distress if asset management is not optimized (Hidajat, 2026). However, research findings indicate that asset utilization efficiency does not fully represent the company's financial condition regarding the risk of financial distress. In an agency relationship, managers have incentives to improve performance as reflected in indicators such as sales, since these indicators are easily observable and serve as the basis for evaluating managerial performance. Consequently, an increase in Total Asset Turnover may occur without corresponding improvements in underlying financial conditions, as decisions are more oriented toward enhancing operational results rather than maintaining a balance between revenue, costs, and liabilities. This situation results in no strong, direct causal relationship between Total Asset Turnover and financial distress (Priyatnasari & Hartono, 2019).

Thus, Total Asset Turnover cannot be used as an indicator to predict *financial distress* in infrastructure sector companies; the relationship between asset utilization efficiency and financial distress is not direct in the context of this industry. The results of this study align with those of Yoyo & Priyowidodo (2024), Pawitri & Alteza (2020), Priyatnasari & Hartono (2019), and Ningsih et al. (2021), which stated that Total Assets Turnover has no effect on financial distress.

Conclusion

This study aims to examine the influence of the Debt to Equity Ratio and Total Asset Turnover on financial distress in infrastructure sector companies listed on the Indonesia Stock Exchange for the period 2020–2024. The results of the logistic regression analysis indicate that the Debt to Equity Ratio has a significant effect on financial distress, meaning that the higher a company's leverage, the greater the risk of the company experiencing financial distress. Meanwhile, Total Asset Turnover does not have a significant effect on financial distress. These findings suggest that a company's capital structure plays a more significant role in determining financial distress conditions than the efficiency of asset utilization.

This study is expected to provide information and considerations for companies, investors, and creditors in evaluating a company's financial performance and financial risk. Further research is recommended to include other variables that may influence financial distress, such as corporate governance, expand the scope of the study, and use a longer research period to obtain more comprehensive results.

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