

The Effect of Debt to Equity Ratio and Price to Book Value on Financial Distress: Evidence from Transportation Companies Listed on the Indonesia Stock Exchange

Ita Darsita

Faculty of Economics and Business, Pamulang University, South Tangerang, Banten, Indonesia

Ratna Dumilah

Faculty of Economics and Business, Pamulang University, South Tangerang, Banten, Indonesia

Siti Nurcahayati

Faculty of Economics and Business, Pamulang University, South Tangerang, Banten, Indonesia

Abstract: This study aims to determine the impact of the Debt-to-Equity Ratio (DER) and Price-to-Book Value (PBV) on financial distress among transportation sub-sector companies listed on the Indonesia Stock Exchange during the 2019–2024 period. This research employs a quantitative approach with an associative method. Secondary data were obtained from the annual financial reports of transportation sub-sector companies listed on the exchange for the 2019–2024 period. The study population consisted of 12 companies; a purposive sampling technique was used, resulting in a sample of five companies. Data analysis involved descriptive statistics and panel data regression, utilizing EViews 12 and Microsoft Excel software. Estimation and model selection procedures identified the Common Effect Model as the appropriate panel data regression model, yielding the equation: $Z\text{-score} = 1.280760 - 0.286199(\text{DER}) - 0.272671(\text{PBV})$. Hypothesis testing results indicate that the Debt-to-Equity Ratio and Price-to-Book Value simultaneously influence financial distress, with an Adjusted R-squared value of 30.38%. The research addresses gaps related to financial performance instability, high Debt-to-Equity Ratios, low Price-to-Book Values, and the risk of financial distress facing companies in Indonesia's transportation sub-sector, particularly during the 2019–2024 period. Examining these issues is crucial for providing empirical insights into the factors influencing financial distress and offering recommendations to corporate management, investors, and regulators regarding risk management and opportunities within the transportation sub-sector.

Keywords: Debt to Equity Ratio, Price to Book Value, Financial Distress.

Correspondents Author:

Ita Darsita, Faculty of Economics and Business, Pamulang University, South Tangerang, Banten, Indonesia
Email : dythashy78@gmail.com

Received June 26, 2026; Revised September 4, 2026; Accepted September 4, 2026; Published September 7, 2026.

Introduction

The transportation subsector is a primary driver of global economic activity, playing a strategic role in facilitating the flow of goods, services, and people across regions and nations. According to a 2023 World Bank report, the transportation sector accounts for approximately 5–10% of the Gross Domestic Product (GDP) in most countries, underscoring its importance in maintaining economic stability and international trade. This sector also plays a vital role in supporting regional connectivity and social development, particularly in developing nations like Indonesia that are striving to address infrastructure gaps and regional distribution disparities. Beyond facilitating economic mobility, transportation is instrumental in crisis management, humanitarian aid, and the development of industrial ecosystems underpinned by global supply chains. With technological advancements, transportation now relies not only on physical infrastructure but also on digitalization and automation to enhance the efficiency and reliability of international logistics systems. Consequently, the transformation of the transportation subsector serves as a key indicator of technological progress and cross-border economic integration. Although Indonesia's transportation sub-sector has shown growth, not all companies have managed to maintain stable financial performance. The stock market for this sub-sector is also highly vulnerable to external pressures, such as energy price fluctuations, regulatory changes, and global crises—including the impact of the COVID-19 pandemic. Since 2020, the COVID-19 pandemic has dealt a severe blow to the transportation sector, particularly air travel and public transport. Mobility restrictions, regional lockdowns, and reduced economic activity caused many transportation companies to suffer drastic revenue declines. Some airlines and transportation service providers were even forced to furlough employees or temporarily suspend operations (Dube et al., 2021). According to a report by (UNCTAD., 2021), global trade volume plummeted in 2020, directly impacting the maritime and air transportation sub-sectors. This situation placed significant financial strain on many global transportation companies, affecting everything from operations and revenue to their long-term viability. High financial ratios, such as the Debt-to-Equity Ratio (DER), reflect a company's reliance on external funding, thereby increasing the risk of default and bankruptcy—while a low Price-to-Book Value (PBV) indicates limited market confidence in the company's prospects (Kasmir., 2018 ; Santoso, 2016). Previous studies have demonstrated that DER and PBV significantly influence financial distress; however, a research gap remains regarding Indonesia's transportation sub-sector, which possesses unique characteristics as a geographic connector between regions and is highly vulnerable to both economic crises and technological shifts (Liandra & Nuryaman, 2022; Ramadhan & Lukviarman., 2019; Sukesa & Papyrakis, 2021). Consequently, this study addresses the phenomena of financial performance instability, high Debt-to-Equity Ratios, low Price-to-Book Values, and the risk of financial

distress facing companies in Indonesia's transportation sub-sector, particularly during the 2019–2024 period. Examining these phenomena is crucial for providing empirical insights into the factors influencing financial distress and for offering recommendations to corporate management, investors, and regulators regarding the management of risks and opportunities within the transportation sub-sector. Financial distress is defined as a stage of declining financial health within a company, occurring just prior to bankruptcy. It is characterized by an inability to meet financial obligations, which can lead to bankruptcy if specific remedial measures are not taken (Hutauruk et al., 2021). Financial distress is assessed using the Altman Z-Score method to evaluate a company's financial health; a low Z-Score indicates that the company is experiencing financial difficulties (Kusuma., 2024). The Modified Altman Model is the most widely accepted and tested proxy for financial distress demonstrating a high level of accuracy within the empirical literature concerning the non-manufacturing sector on the Indonesia Stock Exchange (IDX). This ensures the consistency and comparability of the present study with previous research. According to (Kasmir., 2018:157), the Debt-to-Equity Ratio is used to assess the relationship between debt and equity. This ratio is calculated by comparing total debt including current liabilities against total equity. It helps determine the proportion of funds provided by creditors versus those provided by company owners. In other words, the ratio indicates the amount of equity capital serving as security for debt. According to (Kasmir., 2019:347), the Price-to-Book Value (PBV) ratio assesses a company's stock market price relative to its book value of equity. This ratio indicates whether the stock is overvalued or undervalued by the market and reflects investor perception regarding the company's success in managing resources and generating profit. The primary distinction between this research and previous empirical studies lies in the integration of Debt-to-Equity Ratio (DER) and Price-to-Book Value (PBV) as new independent variables, as well as the use of the most recent data covering the period from 2019 to 2024 to capture the latest phenomena. Given the diverse findings of previous studies and the phenomenon of financial distress, the author decided to conduct a new study focusing on a different set of subjects. This study differs significantly from prior research by concentrating on transportation sub-sector companies listed on the Indonesia Stock Exchange and utilizing a more recent timeframe specifically, the period from 2019 to 2024. Drawing on the theoretical background and the varied results of earlier studies, the author was motivated to investigate the impact of the Debt-to-Equity Ratio and Price to Book Value on financial distress.

Literature Review

Financial Distress

According to (Hutabarat., 2021), financial distress can be viewed as a stage of financial decline occurring prior to bankruptcy or liquidation; specifically, financial difficulty often manifests

as a liquidity crisis that can serve as a precursor to bankruptcy. If a company encounters problems meeting its obligations, it may enter a period of financial distress; if this financial difficulty is not promptly addressed, it can lead to the company's bankruptcy. (Hernadianto, Yusmaniarti, and Fraternali, 2020) state that financial distress begins with a company's inability to meet its obligations—particularly short-term ones—encompassing both liquidity and solvency requirements. Financial distress is defined as an entity's failure—a situation in which the company is unable to fulfill all its obligations, arising from a lack of sufficient funds to conduct business operations, thereby preventing the achievement of desired economic objectives. The Debt-to-Equity Ratio (DER) indicates the extent to which a company utilizes debt to finance its operations. A high DER signifies substantial obligations that must be met, thereby increasing the risk of financial distress if not balanced by the ability to generate profit. Meanwhile, the Price to Book Value (PBV) reflects the level of investor confidence in the company's prospects. A low PBV indicates market skepticism regarding the company's ability to generate future profits, making the company more vulnerable to financial distress. Prior research supports these relationships. (Ramadhan and Lukviarman, 2019) demonstrated that capital structure (as indicated by leverage), alongside market indicators such as PBV, significantly impacts the likelihood of financial distress. Furthermore, (Liandra and Nuryaman, 2022) found that companies with high leverage and low firm value face a greater risk of financial distress compared to those with healthy capital structures and strong market confidence. Companies characterized by a combination of high leverage (substantial debt) and low firm value (poor market perception) are in a vulnerable position, as they are trapped by default risk and high agency costs of debt.

Debt To Equity Ratio

Debt policy refers to a company's strategy regarding the extent to which it utilizes debt financing. This ratio provides insight into the company's capital structure, thereby revealing its capacity to meet its obligations (Mardiyati et al., 2012). Companies with higher debt ratios face a greater risk of loss during adverse economic conditions (recessions) but achieve higher returns under normal economic conditions. Conversely, companies with low debt ratios do not face significant risk of loss during recessions, yet their potential to increase return on equity under normal economic conditions is also limited (Weston and Brigham, 2001). The leverage ratio measures the extent to which a company is financed by debt (Fahmi, 2013, cited in Gustina, 2018). The specific leverage ratio employed in this study is the Debt-to-Equity Ratio (DER). High Debt to Equity Ratio (DER) can increase financial risk, particularly if a company struggles to meet its debt repayment obligations. However, optimal debt usage can help enhance firm value by leveraging tax benefits and earnings from business expansion. Research findings support this relationship. (Saraswati, Sukadana, and Widnyana, 2020) found that

leverage has a significant impact on financial distress. Conversely, (Wijaya and Suhendah., 2023) found that leverage measured by the DER has a significant negative effect on financial distress.

Price To Book Value

The Price-to-Book Value (PBV) ratio compares a stock's market price per share to its book value per share. This ratio is used to assess whether a stock is overvalued or undervalued. A lower PBV ratio categorizes a stock as undervalued, making it attractive for long-term investment; however, a low PBV can also signal declining quality and fundamental performance of the issuing company. Therefore, a stock's PBV should be compared against the PBV ratios of other companies within the same industry; significant discrepancies warrant further analysis (Houston., 2018). PBV is a market ratio used to measure stock market price performance relative to book value—a concept supported by (Maryam., 2018), who defines PBV as the relationship between a stock's market price and its book value per share. According to (Harahap., 2018), a higher PBV ratio indicates a higher market price for the stock. Higher market prices generally correspond to higher required stock returns. Companies performing well typically exhibit a PBV ratio greater than one, indicating that the stock's market value exceeds its book value. PBV reflects effective management—specifically, the ability to create and capitalize on business prospects to generate profit and fulfill obligations to stakeholders, including owners, employees, the community, and the government (Gultom et al., 2019).

A high PBV indicates investor confidence in a company's growth prospects, whereas a low PBV suggests a negative market perception. Signaling theory posits that the more positive the signal perceived by investors, the lower the likelihood of the company experiencing financial distress, as investors tend to view the company as having good performance. Empirical research supports this. (Siregar., 2020) demonstrated that PBV influences financial distress. Furthermore, (Safaruddin et al., 2023) found that PBV has a significant negative partial effect on financial distress.

Research Method

A conceptual framework is developed to clarify the meanings of terms found in the theoretical review that might otherwise be open to varying interpretations. Therefore, the conceptual framework in a study must be clearly defined; a lack of clarity regarding the concepts involved can lead to perceptions that differ from the researcher's intended meaning. The conceptual framework in this study illustrates the relationship between the dependent and independent variables. The dependent variable is financial distress, while the independent variables are the Debt-to-Equity Ratio and Price to Book Value. Based on the foregoing explanation, the conceptual framework is formulated as follows:

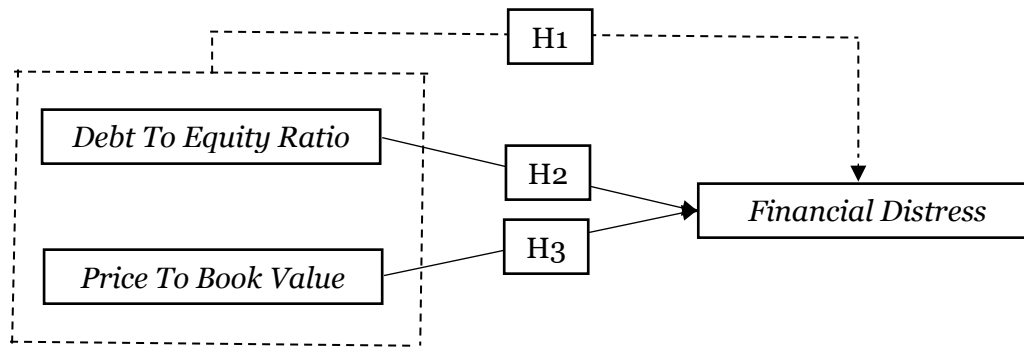


Figure 1 Conceptual Framework

Based on the figure above, the relevance to the research objectives lies in examining the simultaneous effect of the Debt-to-Equity Ratio and Price to Book Value on financial distress, as well as the partial effects of the Debt-to-Equity Ratio and Price to Book Value on financial distress. This study is a quantitative research project that yields findings derived through statistical procedures or other methods of quantification. Based on its level of explanation, it is classified as associative research. Citing (Sugiyono., 2019:16), the quantitative research method is defined as an approach grounded in positivist philosophy; it involves studying specific populations or samples, collecting data via research instruments, and conducting quantitative or statistical analysis to test established hypotheses. Meanwhile, according to (Sugiyono., 2019:21), associative research aims to determine the relationship between two or more variables. The data analysis technique employed in this study is panel data regression. Panel data—also known as pooled data—combines cross-sectional and time-series data; it involves observing a set of variables across various categories over a specific period. Time-series data consists of information regarding a single object observed over multiple time periods, whereas cross-sectional data comprises information obtained from one or more research objects during a single, specific period. This empirical study focuses on transportation companies listed on the Indonesia Stock Exchange (IDX). It utilizes secondary data—specifically annual reports audited by independent professional bodies—sourced from the official IDX website (www.idx.co.id), thereby ensuring the data's authenticity and validity. The IDX serves as Indonesia's capital market and plays a vital role in the national economy through its economic and financial functions. According to (Sugiyono.,2019: 193), secondary data refers to information not obtained directly by the data collector but rather acquired through intermediaries or records maintained by other parties.

Table 1 Sampling Criteria

No	Criteria Description	Does not meet the criteria	Does meet the criteria
1	Companies in the transportation sub-sector listed on the Indonesia Stock Exchange for the 2024 period.	(0)	12

2	Transportation sub-sector companies listed on the Indonesia Stock Exchange with a listing date (IPO) no later than 2018.	(1)	11
3	Transportation sub-sector companies listed on the Indonesia Stock Exchange that use the rupiah in their annual financial statements.	(1)	10
4	Transportation sub-sector companies listed on the Indonesia Stock Exchange that possess complete financial statements for the 2019–2024 period and the account data required for the research at the time of data collection.	(5)	5

Source: Processed data, 2026

Based on the criteria in the table above, out of a total population of 12 companies in the transportation sub-sector, one company listed on the Indonesia Stock Exchange had an IPO date no later than 2018; consequently, only 11 companies met the second criterion. Among these 11 companies with an IPO date of 2018 or earlier, one company used the rupiah in its annual financial statements, leaving 10 companies that met the third criterion. After excluding companies that lacked complete financial statements for the 2019–2024 period or the specific account data required for the study at the time of data collection, the final sample suitable for this research consists of 5 companies. To obtain accurate data aligned with the research objectives, the process of selecting research subjects was carried out using purposive sampling based on specific criteria. The detailed sample selection stages ranging from the initial population size to the determination of the final sample size suitable for analysis are presented in Table 2 below.

Table 2 Results of Sample Criteria Selection

No	Code	Company	Criteria				Amount
			1	2	3	4	
1	ASSA	PT Adi Sarana Armada Tbk	√	√	√	√	√
2	BIRD	PT Blue Bird Tbk	√	√	√	X	X
3	BPTR	PT Batavia Prosperindo Trans Tbk	√	√	√	√	√
4	CMPP	PT AirAsia Indonesia Tbk	√	√	√	X	X
5	GIAA	PT Garuda Indonesia (Persero) Tbk	√	√	X	√	X
6	HELI	PT Jaya Trishindo Tbk	√	√	√	√	√

7	IMJS	PT Indomobil Multi Jasa Tbk	✓	✓	✓	✓	✓
8	LRNA	PT Eka Sari Lorena Transport Tbk	✓	✓	✓	✓	✓
9	SAFE	PT Steady Safe Tbk	✓	✓	✓	X	X
10	TAXI	PT Express Transindo Utama Tbk	✓	✓	✓	X	X
11	TRJA	PT Transkon Jaya Tbk	✓	X	✓	✓	X
12	WEHA	PT WEHA Transportasi Indonesia Tbk	✓	✓	✓	X	X
Amount Criteria			12	11	10	5	5

Source: Processed data, 2026

The limited sample size (5 companies, 30 observations) resulted from the application of strict purposive sampling criteria intended to maintain data homogeneity. Many transportation companies listed on the Indonesia Stock Exchange (IDX) lacked complete financial statement data for the observation period, had conducted their initial public offerings (IPOs) midway through the period, or had negative equity (which would distort DER and PBV ratios). Consequently, these five companies represent the most suitable sample meeting the established criteria. To process the secondary data obtained, the researcher used statistical software applications, including MS Excel, to create tables and graphs for descriptive analysis. Data processing activities using EVIEWS version 12 were used to assist in analyzing the data used to test the significance of panel data regression analysis. The analytical method is a method where researchers process or analyze data that meets the criteria to ensure the results obtained support the proposed hypothesis. The analytical method used by the researchers was quantitative analysis. This method was used to test whether the data used met the requirements as a good measuring instrument.

Result and Discussion

Research Result

This section presents the results of data analysis and hypothesis testing regarding the impact of the debt-to-equity ratio and price to book value on financial distress. The objective of this section is to address the previously established research questions. To achieve this, the presentation is structured as follows: it begins with descriptive statistical analysis, panel data

regression selection, classical assumption testing, panel data regression analysis, and hypothesis testing, concluding with an in-depth discussion comparing the research findings with prior studies.

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to provide an overview of the research sample data. This analysis presents key values such as sample size, minimum and maximum values, the mean, and the standard deviation. A summary of the data, including measures of central tendency and score dispersion for each variable, is presented in detail in Table 3 below.

Table 3 Results of Descriptive Statistical Analysis

Variabel	DER	PBV	FD
Mean	2.392	1.458	0.199
Median	1.997	0.935	0.110
Maximum	6.403	6.740	3.320
Minimum	0.154	0.180	-3.370
Std. Dev.	1.840	1.676	1.204
Skewness	0.659	1.961	-0.539
Kurtosis	2.241	6.028	5.391
Jarque-Bera	2.589	30.693	8.597
Probability	0.274	0.000***	0.014
Sum	71.755	43.740	5.960
Sum Sq. Dev.	98.196	81.417	42.063
Observations	30	30	30

Source: Eviews 12 Output (Data processed, 2026)

Based on the results of the Eviews 12 descriptive statistics calculations shown in Table 3, the level of Financial Distress and Leverage can be determined. The following is an explanation of the descriptive statistics for each research variable: The Z-Scores for the five companies over a six-year period yielded a mean value of 0.198667. The maximum Z-Score of 3.320 was recorded by PT Jaya Trishindo Tbk (HELI) in 2019, while the minimum Z-Score of -3.370 was observed for the same company in 2022. A Z-Score standard deviation of 1.204 indicates significant data dispersion relative to the mean. Since the standard deviation exceeds the mean, this suggests high variability in the Z-Score data, with values widely distributed around the mean. The Debt-to-Equity Ratio (DER) for the five companies over a six-year period shows a mean value of 2.392. The maximum DER value of 6.403 was recorded by PT Indomobil Multi Jasa Tbk (IMJS) in 2019, while the minimum value of 0.154 was recorded by PT Eka Sari Lorena Transport Tbk (LRNA) in 2024. The DER standard deviation of 1.840 indicates that the mean value exceeds the standard deviation, demonstrating that the data is homogeneous.

The PBV values for the five companies over a six-year period yielded a mean of 1.458. The maximum PBV value of 6.740 was recorded by PT Adi Sarana Armada Tbk (ASSA) in 2019, while the minimum value of 0.180 was observed for PT Eka Sari Lorena Transport Tbk (LRNA) in the same year. The PBV standard deviation of 1.676 indicates significant data dispersion relative to the mean. Since the standard deviation exceeds the mean, the PBV data exhibits high variability, with a distribution that is widely dispersed rather than homogeneous. In other words, PBV values vary considerably across companies and time periods and are not concentrated around the mean.

Determination of Panel Data Regression Model

The Chow test was conducted to compare the Common Effect Model (CEM) and Fixed Effect Model (FEM) approaches and determine which one to use. The Chow test results showed a Cross-section Chi Square value of 0.0672, which is greater than 0.05; therefore, the CEM was selected. The Hausman test was performed to compare the FEM and REM approaches for the panel data regression analysis. The Hausman test results indicated a Cross-Section Random value of 0.1459, which is greater than 0.05; thus, the Random Effect Model (REM) was selected. The Lagrange Multiplier (LM) test was used to determine the best model between CEM and REM for the panel data regression. The LM test results showed a Cross Section Breusch Pagan value of 0.7365, which is greater than 0.05; consequently, the CEM was selected.

Table 4 Common Effect Model (CEM) Panel Data Regression Model

No	Method	Testing	Results
1	Chow Test	Common Effect Model vs Fixed Effect Model	CEM
2	Hausman Test	Fixed Effect Model vs Random Effect Model	REM
3	Lagrange Multiplier Test	Common Effect Model vs Random Effect Model	CEM

Source: Processed data, 2026

Based on the results of the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test, the CEM was selected as the most appropriate model for hypothesis testing. The CEM assumes that the intercept and slope of the relationship between variables are constant (identical) across all firms (cross-section) and over time (time-series). Panel data regression analysis is employed in this study to determine the influence of the independent variables on the dependent variable. This method was selected because it can simultaneously analyze time-series and cross-sectional data, resulting in more efficient and reliable estimates. Based on the

Chow, Hausman, and Lagrange Multiplier tests, the selected model was subsequently estimated. The results of the panel data regression model selection are presented in Table 5.

Table 5 Panel Data Regression Results Using CEM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	1.281	0.339	3.775	0.001***
DER	-0.286	0.102	-2.819	0.009***
PBV	-0.273	0.112	-2.445	0.021**

Source: Eviews 12 Output (Data processed, 2026)

The obtained constant value (α) is 1.281, meaning that if the Debt-to-Equity Ratio and Price-to-Book Value variables are assumed to be zero, the magnitude of financial distress is 1.281. The coefficient for the Debt-to-Equity Ratio variable is -0.286 (negative); this indicates that a decrease in the Debt-to-Equity Ratio leads to a reduction in the level of financial distress assuming other independent variables remain constant resulting in a decrease of 0.286 in the company's financial distress. The coefficient for the Price to Book Value variable is -0.273 (negative); this indicates that a decrease in the Price to Book Value leads to a reduction in the level of financial distress, assuming other independent variables remain constant resulting in a decrease of 0.273 in the company's financial distress.

Classical Assumption Test

Normality Test

Before proceeding with further regression analysis, a mandatory initial step is the testing of classical assumptions, one of which is the normality test. The primary objective of this test is to determine whether the residual values in the regression model are normally distributed. This is crucial because a valid regression model requires normally distributed residuals. The Jarque-Bera test is used to assess normality and ensure that the model residuals are normally distributed. If this assumption is not met, the statistical test results and predictions derived from the model may be biased or inaccurate. The results of the normality test for this study are presented in Figure 2 below.

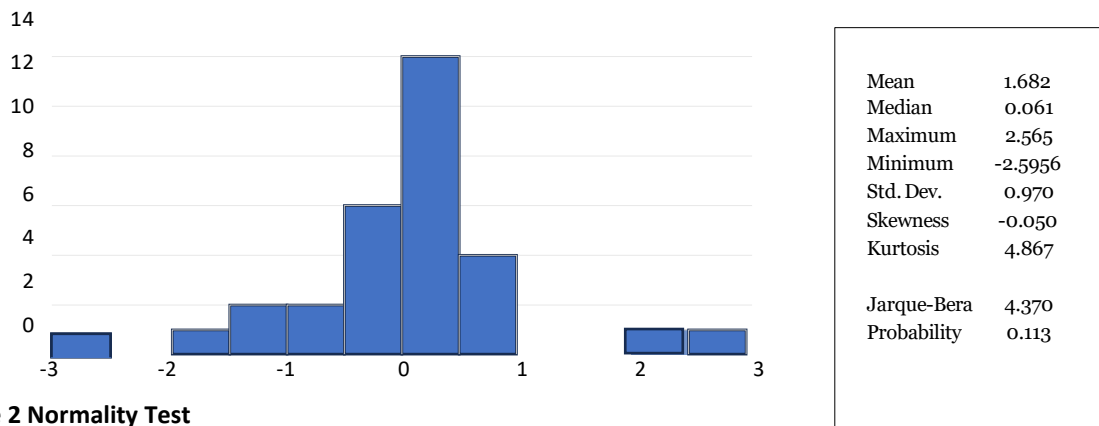


Figure 2 Normality Test

Figure 2 illustrates the normality test and the research data is normally distributed, as evidenced by the Jarque-Bera value of 4.369517 and a probability of 0.112505 > 0.05, so the data in this study is normally distributed.

Multicollinearity Test

A multicollinearity test was conducted to ensure the absence of correlation among the independent variables within the model. Given that the independent variables are DER and PBV, we evaluated the Variance Inflation Factor (VIF) values to ensure the absence of high linear correlation among the independent variables (VIF value < 10). Verifying this independence is crucial for satisfying the fundamental assumptions of regression, thereby ensuring the resulting model is accurate and unbiased, and that the estimated coefficients are reliable. The results of the test to detect signs of multicollinearity are presented in Table 6 below:

Table 6 Multicollinearity Tes

Variabel	DER	PBV
DER	1.000	0.050
PBV	0.050	1.000

Source: Eviews 12 Output (Data processed, 2026)

The coefficient values between the independent variables are less than 0.90. This aligns with the criterion for the multicollinearity test, which stipulates that no correlation coefficient between independent variables exceeds 0.90. Based on Table 6, the results of the multicollinearity test can be seen that each independent variable X1 (DER) and X2 (PBV) shows a correlation coefficient value of 0.050430 < 0.90. Therefore, it can be concluded that there is no multicollinearity between the independent variables.

Heteroskedasticity Test

The heteroscedasticity test aims to determine whether the variance of the residuals differs across observations within the regression model. The Glejser test (or White test) is conducted to test for heteroskedasticity and ensure that the residual variance is homoskedastic. A valid and ideal regression model requires equal or constant variance (homoscedasticity). If the residual variance is not constant (i.e., heteroscedasticity is present), the resulting parameter estimates become inefficient, and statistical tests (such as the t-test or F-test) become invalid for interpreting the relationships between variables. Therefore, this test is crucial for assessing the suitability and validity of the regression model employed in the study. The results of the heteroscedasticity test are presented in detail in Table 7 below.

Table 7 Heteroskedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	0.527	0.145	3.623	0.001***
DER	-0.068	0.044	-1.555	0.132
PBV	0.063	0.048	-1.318	0.199
Root MSE	0.408	R-squared		0.128
Mean dependent var	0.457	Adjusted R-squared		0.063
S.D. dependent var	0.445	S.E. of regression		10.431
Akaike info criterion	1.247	Sum squared resid		5.005
Schwarz criterion	1.387	Log likelihood		-15.707
Hannan-Quinn criter.	1.292	F-statistic		1.980
Durbin-Watson stat	1.919	Prob(F-statistic)		0.158

Source: EvIEWS 12 Output (Data processed, 2026)

Based on the test results in Table 7 above, the significance probability values for each independent variable relative to the absolute residual values are 0.131 for the Debt-to-Equity Ratio and 0.199 for the Price to Book Value. If the significance probability value exceeds 0.05, there is no heteroskedasticity issue; conversely, if the value is less than 0.05, a heteroskedasticity issue exists. These results indicate that the regression model in this study is free from heteroskedasticity issues, as the probability values for all independent variables exceed the 0.05 significance level.

Hypothesis Testing

To address the research questions and test the hypotheses in this study, hypothesis testing was conducted using panel data regression analysis. The objective of this testing was to determine the significance of the influence or differences between the dependent and independent variables under study. The complete analysis results are presented in Table 8 below

Table 8 Hypothesis Testing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	1.281	0.339	3.775	0.001
DER	-0.286	0.102	-2.819	0.009
PBV	-0.273	0.112	-2.445	0.021
Root MSE	0.953	R-squared		0.352
Mean dependent var	0.199	Adjusted R-squared		0.304
S.D. dependent var	1.204	S.E. of regression		1.005
Akaike info criterion	2.942	Sum squared resid		27.263
Schwarz criterion	3.082	Log likelihood		-41.133
Hannan-Quinn criter.	2.987	F-statistic		7.329
Durbin-Watson stat	1.442	Prob(F-statistic)		0.003

Source: Eviews 12 Output (Data processed, 2026)

Based on Table 8, the F-test results show that the probability value (0.003) is lower than the significance level of 0.05, while the calculated F-value (7.329) exceeds the F-table value (3.354). With $df_1 = 2$ ($3 - 1$) and $df_2 = 27$ ($30 - 3$), the results indicate that H_{01} is rejected and H_{a1} is accepted. Therefore, leverage, measured by the Debt-to-Equity Ratio (DER), and firm value, measured by Price-to-Book Value (PBV), simultaneously have a significant effect on the Z-score (Financial Distress). From a theoretical perspective, DER and PBV are closely associated with a company's financial distress. A higher DER increases the risk of financial distress because greater reliance on debt raises financial obligations and default risk. In contrast, a higher PBV reflects stronger market valuation and investor confidence, thereby reducing the likelihood of financial distress.

Based on Table 8, the t-test results indicate that leverage, measured by the Debt-to-Equity Ratio (DER), has a significant partial effect on Financial Distress (Altman Z-Score). The probability value of DER is 0.009, which is below the 5% significance level (0.05), and the absolute calculated t-value exceeds the critical t-value ($|-2.819| > 2.052$) with $df = 27$. Accordingly, H_{02} is rejected and H_{a2} is accepted, confirming that DER has a significant partial effect on the Z-score. Theoretically, this finding suggests that higher leverage increases the probability of financial distress because companies with greater debt burdens face higher financial risks. Based on Table 8, the t-test results also indicate that firm value, measured by Price-to-Book Value (PBV), has a significant partial effect on Financial Distress (Altman Z-Score). The probability value of PBV is 0.021, which is below the 5% significance level, and the calculated t-value exceeds the critical t-value ($|-2.445| > 2.052$) with $df = 27$. Therefore, H_{03} is rejected and H_{a3} is accepted, indicating that PBV significantly affects the Z-score. From a theoretical standpoint, PBV has a significant negative relationship with

financial distress, implying that companies with higher market valuations are less likely to experience financial difficulties or bankruptcy. The coefficient of determination test shows an Adjusted R^2 value of 0.304, indicating that DER and PBV jointly explain 30.4% of the variation in Financial Distress (Z-score). The remaining 69.6% of the variation is explained by other factors not included in the research model.

Discussion Results

Based on the results of the research that has been conducted which explains the influence of independent variables, namely Debt to Equity Ratio and Price to Book Value on the dependent variable, namely Financial Distress (Z-Score) in Transportation Subsector Companies listed on the Indonesia Stock Exchange for the period 2019 - 2024. The results of testing the Debt to Equity Ratio and Price to Book Value variables simultaneously on Financial Distress show an effect. This result is indicated by the F-calculated value of 7.329 which is higher than the F-table value of 3.354 ($7.329 > 3.354$). This means that H_{01} is rejected and H_{a1} is accepted. With an Adjusted R-Squared value of 0.304, it shows that 30.4% of the variation in Financial Distress can be from both independent variables, while the remaining 69.6% is explained by other variables not included in this research model. The low Adjusted R^2 value represents both a limitation and a critical finding of this study. Financial distress in the transportation industry is a multidimensional phenomenon not driven solely by leverage ratios and market perceptions. The industry's characteristics being capital-intensive, incurring high fixed operating costs (such as fuel and fleet maintenance), and being sensitive to regulatory changes necessitate the inclusion of other fundamental variables that were omitted from this study. These findings can be explained by trade-off theory which posits that excessive debt usage or a high Debt to Equity Ratio (DER) increases default risk and signaling theory, which explains that a low Price to Book Value (PBV) reflects low market confidence in a company's prospects. This study aligns with research by Ramadhani and Lukviarman (2019) and Liandra and Nuryaman (2022), indicating that DER and PBV simultaneously influence financial distress; specifically, a high DER and a low PBV together increase the likelihood of financial distress occurring. In the results of the Common Effect Model (CEM) test using Eviews 12, the t-count value of Debt to Equity Ratio was obtained at -2.819 and the t-table value was 2.052 ($|-2.819| > 2.052$). The probability value was $0.009 < \text{sig alpha } 0.05$, so H_{02} was rejected and H_{a2} was accepted. The higher the DER, the greater the risk of the company experiencing financial distress. Transportation companies require substantial capital to purchase buses, ships, aircraft, or trucks (asset renewal). If this financing relies too heavily on debt (resulting in a high Debt-to-Equity Ratio), fixed financial costs will balloon. During economic downturn or periods of rising operating costs (such as fuel prices), ticket or logistics revenues decline, yet debt obligations must still be met. This strains cash flow and

accelerates the onset of financial distress. Trade-off Theory underpins the relationship between the Debt-to-Equity Ratio (DER) and financial distress. Transportation companies that employ high leverage to expand their fleets face liquidity risks if operating income is insufficient to cover fixed interest expenses. When bankruptcy costs exceed tax-shield benefits, the company enters a state of financial distress. Consequently, Trade-off Theory predicts that the DER has a positive effect on the potential for financial distress. These results are in line with research conducted by Desak Made Ayu Shania Saraswati, I Wayan Sukadana & I Wayan Widnyana (2020) entitled *The Effect of Profitability, Liquidity and Leverage on Financial Distress Conditions in Property and Real Estate Companies Listed on the Indonesia Stock Exchange*. In the Common Effect Model (CEM) test results using Eviews 12, the t-value of Price to Book Value was -2.445338 and the t-table value was 2.051831 ($|-2.445338| > 2.051831$). The probability value was $0.0213 < \text{sig alpha } 0.05$, so H_{03} was rejected and H_{a3} was accepted. The PBV ratio reflects market valuation and the level of investor confidence in the transportation company's future prospects. The market views transportation companies with high PBV ratios as having effective asset management and promising routes or services. From an economic standpoint, this high market value affords financial flexibility; should the company require emergency capital, it can more easily issue new shares (via a rights issue) or secure loans at lower interest rates, thereby mitigating the risk of bankruptcy. Signaling Theory bridges the relationship between Price to Book Value (PBV) and financial distress. Capital markets respond to a company's internal conditions through stock price valuation. A low PBV serves as a negative signal, indicating market saturation regarding the company's operational performance or the presence of asset inefficiencies. This decline in market value restricts the company's access to new external capital, thereby accelerating the onset of financial distress. Consequently, Signaling Theory predicts that PBV has a negative effect on financial distress. These results are in line with research conducted by Johannes Kristian Siregar (2020) entitled *The Effect of Price to Book Value, Net Profit Margin and Price Earnings Ratio on Financial Distress in the Financial Sector Listed on the IDX for the 2015–2019 Period*.

Conclusions

This study does not merely confirm a linear relationship between financial ratios and bankruptcy; rather, it offers a new theoretical reconstruction of how capital structure and market perceptions operate within industries sensitive to regulation and macroeconomic shifts such as the transportation sector on the Indonesia Stock Exchange (IDX). The results of this study reinforce the relevance of the Pecking Order Theory within the Indonesian transportation industry. A high Debt-to-Equity Ratio (DER) which elevates the risk of financial distress indicates that the debt tolerance threshold (the optimal point in the Trade-

Off theory) is very low in this sector. Consequently, the sector cannot treat debt as a safe tax shield due to high fixed capital costs associated with assets such as vehicles and infrastructure. Theoretically, a high Price-to-Book Value (PBV) generally serves as a positive market signal (Signaling Theory). However, this study reveals a novel finding: for transportation companies, a high market value (PBV) is often illusory indicating overvaluation if it is not underpinned by internal liquidity. Signals of market optimism fail to mitigate financial distress when operational fundamentals are fragile. The originality of this research lies in its focus on the unique characteristics of listed transportation companies in the wake of disruptions—such as digital transformation or post-pandemic recovery. Unlike previous cross-sector studies, this research demonstrates that the theoretical sensitivity of DER and PBV to financial distress is fully moderated by the transportation industry's specific nature: it is capital-intensive and characterized by rapid cash flow turnover, yet vulnerable to fuel price fluctuations and tariff policies. Overall, this study contributes to financial management literature by establishing that market-based metrics (PBV) and accounting-based metrics (DER) must be interpreted integratively rather than in isolation when predicting business vulnerability in emerging markets.

References

- Bulckaert, p., buyle, s., dewulf, w., & van de voorde, e. (2026). A tailored approach to bankruptcy risk in the airline industry: a two-dimensional financial distress indicator. *Journal of the air transport research society*, 6, 100108.
- Cahyadi, h., putra, y., tan, j. D., lee, k. Y., & ardi, a. (2026). The impact of governance and financial factors on predicting financial distress: evidence from indonesian family retail firms. *Humanities and social sciences communications*.
- Colline, f. (2022). The mediating effect of debt equity ratio on the effect of current ratio, return on equity and total asset turnover on price to book value. *Jurnal keuangan dan perbankan*, 26(1), 75-90.
- Dube, k., nhamo, g., & chikodzi, d. (2021). covid-19 pandemic and prospects for recovery of the global aviation industry. *journal of air transport management*, 92, 102022.
- Fachrudin, d. H., huriyati, r., solikin, i., & rohyana, c. (2021, september). Comparative analysis debt to equity ratio and price to book value in state-owned enterprises and private companies. In *5th global conference on business, management and entrepreneurship (gcbme 2020)* (pp. 680-685). Atlantis press.
- Fatoni, b. R., soegoto, a. S., maramis, j. B., & tawas, h. N. (2026). The effect of earnings per share (eps), price-earnings ratio (per), debt-to-equity ratio (der), and price-to-book

- value (pbv) on stock returns the mediating role of stock beta in manufacturing companies listed on the indonesia stock exchange (idx) before cov. *Asian journal of management, entrepreneurship and social science*, 6(03), 979-998.
- Hutabarat, h. (2021). *Financial management: theory, concepts, and practical applications*. <https://deepublishstore.com/shop/manajemen-keuangan-hutabarat/>
- Hutauruk, m. r., mansyur, m., rinaldi, m., & situru, y. r. (2021). financial distress in companies listed on the indonesia stock exchange. *jps (jurnal perbankan syariah)*, 2(2), 237–246. <https://doi.org/10.46367/jps.v2i2.381>
- Hernadianto, h., yusmaniarti, y., & fraternesi, f. (2020). Analysis of financial distress in property and real estate sub-sector service companies listed on the indonesia stock exchange. *jurnal sains manajemen dan bisnis indonesia* vol 10 no.1
- Johannes kristian siregar, j., k. 2020. the influence of price-to-book value, net profit margin, and price-earnings ratio on financial distress in the financial sector listed on the idx (2015–2019 period). *jurnal ekonomi bisnis*, 2(19). <https://www.gramedia.com/products/analisis-laporan-keuangan-edisi-13>
- Kusuma, m. (2024). can icomprehensive income be used to impredicate financial idistress? 25(1), 47–61. <https://doi.org/https://doi.org/10.21776/tem.a.25.1.47-61>
- Liandra, a., & nuryaman. (2022). effect of leverage, profitability and firm size on financial distress. *jurnal birci*, 3 (5).
- Nurbaiti, n., & parlina, n. D. (2026). The effect of return on assets (roa), current ratio (cr), and debt to equity ratio (der) on price to book value (pb) in mining subsector companies listed on the indonesian stock exchange (idx) for the 2020-2024 period. *Journal research of social science, economics & management*, 5(10), 12180.
- Pradana, g. A., nurhazizah, s., sinurat, m., & cahyadi, w. (2026). The effect of price-earnings ratio and price-to-book ratio on stock prices in the banking sector on the indonesia stock exchange for the period 2023–2025. *Jurnal mantik*, 10(1), 177.
- Ramadhan, a. s., & lukviarman, n. (2019). a comparative analysis of bankruptcy prediction using the original, revised, and modified altman models, with company size and age as explanatory variables (a study of manufacturing companies listed on the indonesia stock exchange). *jurnal siasat bisnis*, 13(1).
- Sanjaya, r., & yorendeu, i. (2026). The impact of debt-to-equity ratio accounting profit and firm size on price book value: evidence from pt. Erajaya swasembada tbk (2014–2023). *International journal of economics and management research*, 5(1), 05-12.
- Saraswati, d., m., a., d., sukadana, i., w., & widnyana, i., w., 2020. the influence of profitability, liquidity, and leverage on financial distress conditions in property and

- real estate companies listed on the indonesia stock exchange. *Journal of values*, vol 1, no. 4.
- Sarraf, f., & khojasteh ahvazi, m. (2023). Effects of financial distress, dividend policy and debt-to-equity ratio on firm value. *Journal of accounting and management vision*, 5(74), 104-116.
- Sirait, d. M., arismutia, s. A., damayanti, s., & febriyanti, d. (2026). The influence of return on equity, debt-to-equity ratio, and price to book value on stock prices (in consumer cyclical subsector companies listed on the indonesia stock exchange for the period 2018-2025). *International journal of management and business economics*, 4(3), 675-684.
- Sugiyono. (2019). *Quantitative, qualitative, and r&d research methods*.
- Sukesa, k., & papyrakis, e. (2021). macroeconomic vulnerability and financial distress: evidence from developing economies. *emerging markets finance & trade*, 57(3), 624-638.
- Tamara, b., widyarini, r., syamsu, e. R., abdurohman, a., salam, a. F., & hakiki, a. (2026). The effect of debt-to-equity ratio and return on equity on price to book value. *Jurnal revenue: jurnal ilmiah akuntansi*, 6(2), 2596-2608.
- Unctad. (2021). *review of maritime transport 2021*. united nations. <https://unctad.org/webflyer/review-maritime-transport-2021>
- Wildatunjanah, e. S., & suparningsih, b. (2019). The effect of debt-to-equity ratio and price earning ratio on stock price with moderating as bi rate variable in retail sector companies listed in indonesia stock exchange (idx). *East african scholars journal of economics, business and management*, 2(6), 307-317.
- World bank, 2023. trade logistics improving in developing countries, but more needs to be done. *washington, dc: world bank*.