Survival Analysis: Evaluating the Influence of Financial Ratios on Financial Distress in Transportation Companies on the Indonesia Stock Exchange

Dradjad H Wibowo[1], Nurhaliza Muntaz Begum[2], Muhammad Iqbal[3]

[1,2,3] Perbanas Institute

ARTICLE INFO	ABSTRACT
Published Online: 29 February 2024 **Corresponding Author:** Dradjad H Wibowo	Financial distress is a condition where a company experiences a decline in financial condition before bankruptcy occurs. This research aims to find out whether financial ratios have an influence on financial distress in transportation companies listed on the Indonesia Stock Exchange (BEI) for the 2019 - 2022 period. The population in this study is 10 companies that are still listed on the Indonesia Stock Exchange for the 2019 - 2022 period. The testing hypothesis is carried out using Panel Data Regression analysis. The results show that profitability, liquidity, and cash flow have a positive influence on financial distress, firm size has a negative influence on financial distress, and leverage has no influence on financial distress in transportation companies listed on the Indonesia Stock Exchange (BEI) for the 2019 - 2022 period.
KEYWORDS: Financial Distress, Profitability, Leverage, Liquidity	

INTRODUCTION

The crisis that occurred in the global economic sector after the COVID-19 pandemic had a significant impact on many companies. Some experts worry that economic growth will slow down because the impact of Covid-19 could be greater in the economic sector compared to the health sector. At least 2.1% of developing countries in the East Asia and Pacific region experienced delays in economic growth in 2020 according to World Bank projections based on data from (The World Bank, 2020)

Unpreparedness to anticipate this problem caused many companies to experience a financial crisis in a short time because they had to face various government policies that were considered very detrimental to business people, namely the implementation of the Lockdown system. It is at this time that companies are vulnerable to experiencing unhealthy financial conditions which tend to lead to bankruptcy.

Companies continue to experience a decline in business income, one of which is transportation companies. Airline companies are one of the transportation companies that continue to experience a decline in revenue. Airline transportation companies felt a big impact because transportation activities had to be tightened, especially by airlines. Several flight routes had to be closed to protect the situation which was heating up due to the increasing number of people infected with the Covid-19 virus due to the spread of the virus through foreign tourists coming to Indonesia. This policy requires airline companies to close and open

replacement routes to anticipate the financial crisis that occurred due to COVID-19. The losses experienced by the Indonesian National Aviation Companies Association (INACA) due to the COVID-19 pandemic reached US$ 1.5 billion or the equivalent of Rp. 23.4 trillion (exchange rate Rp. 15,000/US$) according to (CNBC Indonesia, 2020).

(CNBC Indonesia, 2020) stated that the airline's total losses in USD were around $812 million in 3 months for the domestic market and international market. Airlines also lost US$748 million in revenue. The decline in income was experienced before the COVID-19 pandemic and experienced a further crisis after the pandemic occurred. In April 2020, most airlines' cargo and repatriation activities decreased by around 25%. This shows that airlines experienced many financial conditions that declined drastically before the pandemic and were made worse by Covid-19.

The inability of a company to make payments on its obligations including liquidity, short-term and long-term obligations is identified as a company experiencing financial distress. According to Maulidia & Asyik (2020), financial distress is a condition of a company where the company is declared to be experiencing financial difficulties before bankruptcy occurs and is experiencing an inability to run the business. According to Kristianti (2019), financial distress usually involves two (2) parties, namely debtors and creditors. According to Rahmat (2020), financial difficulties can be described between two extreme points, namely short-term liquidity difficulties starting from the mildest to

insolvency or the most severe. Short-term financial difficulties are temporary but can worsen the company's financial condition. In his research, Dirman (2020) used the Z-score model to analyze financial distress conditions. In their research, Maulidia & Asyik (2020) used the Z-score model to determine whether financial distress conditions occurred or not in Food and Beverage companies on the Indonesia Stock Exchange (BEI).

According to Arifin et al. (2021), a source of information that can be used to view a company's financial condition, performance, and changes in a company's financial position which is useful to support making the right decisions is the Financial Report. Whether a financial condition is healthy or not can be determined using ratio analysis through profitability, leverage, liquidity, firm size, and cash flow approaches.

According to Kasmir (2016), Profitability is a ratio to assess a company's ability to make a profit. The effectiveness of using company assets reduces costs incurred by the company, savings and sufficient funds will be obtained to run a business. The indicator that can be used to measure company profitability is ROA (Return on Assets), which is the return on assets that will later be used to generate the company's net income according to (Hendrayanti et al., 2022). According to research by Muntahanah et al. (2021); Arifin et al. (2021); Maulidia & Asyik (2020); Setiyawan & Musdholifah (2020); Oktasari et al. (2022) profitability using the ROA formula has a significant effect on financial distress.

H1: Profitability has a significant effect on Financial Distress

Leverage is a ratio measuring the size of a company's assets to cover the company's debts (Maulidia & Asyik, 2020). According to Muntahanah et al. (2021) a company where the level of leverage tends to be higher means that when funding its operational activities the company relies more on borrowed sources of funds, with a large level of borrowing so that the risk of experiencing financial distress is increasingly open. According to research conducted by Wangsih et al. (2021); Muntahanah et al. (2021); Hidayat et al. (2020) leverage has a significant effect on financial distress.

H2: Leverage has a significant effect on Financial Distress

Liquidity Ratio, according to Fahmi (2013) in Masdupi et al. (2018) liquidity basically measures a company's ability to meet its short-term obligations and the company's ability to meet its operational funds. If liquidity is greater, the company is less likely to experience financial distress. According to previous research by Maulidia & Asyik (2020), measuring a company's financial distress condition can use the current ratio as a measuring tool for the liquidity ratio. According to research by Utaminingsih & Nursiam (2023); Muntahanah et al. (2021); Hidayat et al. (2020); and Masdupi et al. (2018) liquidity has a significant effect on financial distress.

H3: Liquidity has a significant effect on Financial Distress

Firm Size is an important component for examining the financial condition of a company (Muzharoatiningsih & Hartono, 2022). Firm size is used to explain the size of the company through the assets owned. According to Dirman (2020), a company with large total assets indicates that the company is able to pay off its obligations in the future so that the company can avoid financial distress. Research conducted by Dirman (2020); Arifin et al. (2021); Wangsih et al. (2021) stated that firm size has a significant effect on financial distress.

H4: Firm Size has a significant effect on Financial Distress

Another indicator that can explain the financial condition of a company is cash flow. According to Dirman (2020), cash flow is one of the important things for creditors to know about the company's financial conditions. A company is said to be able to avoid financial difficulties if it has good cash flow so that creditors will give their trust in the company that the company is able to carry out its obligations. According to Oktasari et al. (2022) and Dirman (2020) in their research stated that cash flow has a significant effect on financial distress.

H5: Cash Flow has a significant effect on Financial Distress

Based on previous research, it is known that several factors influence financial distress, namely profitability, leverage, liquidity, firm size, and cash flow. In the framework of this research the following conclusions can be drawn:

RESEARCH METHODS

This type of research is quantitative research with an associative approach. The aim of researchers using quantitative methods with an associative approach is to determine the relationship between variables by collecting data, analyzing data, and testing predetermined hypotheses. The dependent variable in this research is financial distress, while the independent variables in this research are profitability, leverage, liquidity, firm size, and cash flow.

Financial Distress

According to Platt & Platt (2006), financial distress is a condition of financial pressure that deviates from the normal condition of a company before bankruptcy occurs. Companies that experience difficulty paying their obligations are declared to be experiencing financial difficulties (Muzharoatiningsih & Hartono, 2022). According to Aviannie et al. (2020), predicting non-manufacturing financial difficulties can use the revised Altman Z-score model, namely, if z < 1.10 then the company is declared to be experiencing financial distress, if the z value is between 1.10 - 2.6 then the company is in the gray area However, there is a chance of experiencing financial distress if the z value is > 2.6, the company is declared to be in good and healthy financial condition. The following is the Altman Z-score formula for non-manufacturing companies:

$$Z = 6.56X_1 + 3{,}26X_2 + 6{,}72X_3 + 1{,}05X_4$$

where:
X_1 = Working Capital/Total Asset
X_2 = Retained Earnings/Total Asset
X_3 = Earning Before Interest and Taxes/Total Asset
X_4 = Book Value of Equity/Total Debt

Profitability
Profitability is a ratio used to measure a company's sales level and certain capital in generating the company's net profit (Muzharoatiningsih & Hartono, 2022). ROA is a measuring tool to determine a company's financial condition. The formula that can be used to measure return on assets (ROA) is as follows:

$$Return\ on\ Asset\ (ROA) = \frac{Net\ Profit}{Total\ Asset} \times 100\%$$

Leverage
The leverage ratio is a ratio used to measure how much a company uses its assets to cover its debts (Maulidia & Asyik, 2020). According to Muzharoatiningsih & Hartono (2022), the debt ratio determines the amount of a company's debt, both long-term and short-term, with the total assets owned as the debt to asset ratio (DAR). DAR can be calculated with the following formula:

$$Debt\ to\ Asset\ Ratio\ (DAR) = \frac{Total\ Debt}{Total\ Asset}$$

Liquidity
Liquidity is an analytical tool to determine a company's ability to fulfill its obligations (Aviannie et al., 2020). In this study, researchers used the current ratio (CR) as a measuring tool, with the following formula:

$$Current\ Ratio\ (CR) = \frac{Current\ Asset}{Current\ Liabilities}$$

Firm Size
According to Setyowati (2019) in Muzharoatiningsih & Hartono (2022), company size is part of the things considered in making funding decisions to cover the size of the company's assets. The size of the company in this study can be calculated using the following formula:

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

Cash flow
According to Dirman (2020) operating cash flow is information and also an indicator for creditors to know the company's financial condition. The use of free cash flow is used for directors' purposes such as acquisitions and growth. The greater the available cash flow, the healthier the company. in this research it can be calculated using the following formula:

$$Operating\ Cash\ Flow = \frac{Cash\ from\ Operation}{Current\ Liabilities}$$

The population used in this research is all transportation companies that are still listed on the Indonesia Stock Exchange in 2019 - 2022 totaling 10 companies. The sample used by researchers in this study was a purposive sampling technique, namely with certain considerations and also predetermined criteria in order to obtain an appropriate sample. The criteria set in this research are as follows:
1. Transportation company shares include a number of companies that provide goods and passenger transportation services, including land, sea, and air transportation.
2. Transportation companies that are still listed on the Indonesia Stock Exchange (BEI) in 2019 - 2022.

Table 1. Sample Transportation Companies

No.	Company name	Kode
1.	Garuda Indonesia (Persero) Tbk.	GIAA
2.	Air Asia Tbk.	CMPP
3.	Blue Bird Tbk.	BIRD
4.	Adi Sarana Armada Tbk.	ASSA
5.	Transkon Jaya Tbk.	TRJA
6.	Batavia Prosperindo Trans Tbk.	BPTR
7.	Weha Transportasi Indonesia Tbk.	WEHA
8.	Express Transindo Utama Tbk	TAXI
9.	Jaya Trishindo Tbk.	HELI
10.	Eka Sari Lorena Transport Tbk.	LRNA

This quantitative research uses secondary data sources where the annual financial statements of transportation companies listed on the Indonesia Stock Exchange (BEI) in the 2019-2022 period are published and obtained from the official website of the Indonesia Stock Exchange (BEI), namely www.idx.co.id. Data is processed using the panel data regression method. In this research, data analysis methods include descriptive statistics, classical assumption tests (including normality and multicollinearity tests), t-hypothesis testing, and analysis of the coefficient of determination (R^2).
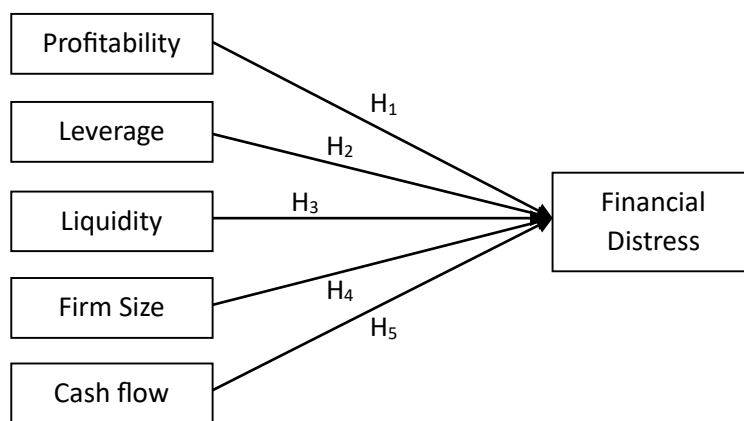
Figure 1. Graph of Net Income for Transportation Companies listed on the IDX

RESULTS AND DISCUSSION

Financial Distress conditions in the last four years transportation companies have fluctuated quite a lot. The Covid-19 pandemic has not changed much the financial health conditions of transportation companies. Financial distress as indicated by the Altman Z-score value in each company is relatively stable. Based on Table 2, it is recorded that only two companies experienced financial distress during the COVID-19 pandemic, the rest had relatively the same financial distress conditions during and before the pandemic.

If we look at the average Z-Score (Table 3), the majority of companies are experiencing financial distress (mean 2.945). Only two transportation companies are consistently free from financial distress. Fluctuations in financial distress values between transportation companies are relatively high, this indicates that financial distress that occurs in transportation companies is more caused by the company's internal conditions than the influence of the company's external conditions such as macroeconomic conditions.

Table 1. Altman Z-score Values for Ten Transportation Companies

Year	GIAA	CMPP	BIRD	ASSA	TRJA	BPTR	WEHA	TAXI	HELI	LRNA
2019	-2.79	-10.46	4.32	-0.19	-1.02	-0.94	2.82	-1.03	0.21	7.13
2020	-3.42	-13.56	4.07	-0.56	0.46	-0.73	1.20	5.21	3.58	4.58
2021	-6.87	-17.76	5.60	0.68	1.78	-0.30	-0.51	66.84	1.12	6.48
2022	4.59	-18.48	5.69	0.45	1.35	-0.48	2.88	64.30	-4.34	5.91

Source: Data processed (2023)

The condition of financial ratios of transportation companies have quite varied values. The ratio between the standard deviation of each variable and the average is relatively large (Table 3). This shows that the financial performance of transportation companies has also varied for at least the last four years. The value of financial distress (Alman Z-Score) as previously stated has very varied values, the same thing also happens to profitability (ROA), liquidity (CR), and operating

cash flow (OCF). Meanwhile, the other two variables, debt to asset ratio (DAR) and company size (SIZE), have value ratios that tend to be the same among transportation companies. These results indicate that the distribution of sample data obtained does not tend to be homogeneous and not too heterogeneous, it is still within moderate limits, thus the data processing results that will be produced are quite representative of the population of transportation companies.

Table 3. Descriptive Statistic

	Z	ROA	DAR	CR	SIZE	OCF
Mean	2.944732	-0.012933	0.775952	1.092168	24.92019	0.168971
Median	0.568959	0.007769	0.599482	0.520958	26.36113	0.153283
Maximum	66.83956	1.978840	3.138601	7.684298	29.61456	1.762281
Minimum	-18.47737	-0.630156	0.137005	0.025076	15.70230	-1.788486
Std. Dev.	15.71280	0.387630	0.660371	1.624844	4.298099	0.630560

Source: Data processed (2023)

The results of data analysis using panel data regression begin with model selection. Model selection is aimed at finding a match between the data obtained and the existing model. The panel data regression models chosen in this research include the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). Selection of panel data regression model with two tests, Chow test and Hausman test. Based on the Chow test results of Table 4, the probability value in the cross-section F of 0.0000 is smaller than alpha (5%). This can be interpreted that the fixed effect model (FEM) is more appropriate to use in this research than the common effect model (CEM). Meanwhile, the results of the Hausman test have the same probability value, namely less than alpha (5%), which shows that the fixed effect model (FEM) is more suitable to explain the existing data compared to the random effect model (REM). These results were obtained that recommend the use of the Fixed Effect Model which will be analyzed further in this research.

Table 4. Chow & Hausman Test Results

Test Title	Effect Test	t-Statistic	p-value	Keputusan
Chow Test	Cross-section F	17.754550	0.0033	Select Fixed effects Model
Hausman Test	Cross-section random Chi-Square	17.754550	0.0033	Select Fixed effects Model

Source: Data processed (2023)

The selected fixed effect model uses the Generalized Least Squared (GLS) approach which is different from the Ordinary Least Squared (OLS) approach so that it does not need to meet the requirements of classical assumption tests such as autocorrelation and heteroscedasticity, it is enough to test normality and multicollinearity only (Ekananda, 2018). In the normality test in Table 5, the results obtained show that the probability value is 0.175444. Thus it can be said that the data is normal. Because of the Jarque-Bera probability (0.175444) > 0.05. The results of the multicollinearity test in Table 6 state that each variable has a correlation value below 0.80. So there is no multicollinearity problem in the data.

Table 5. Normalitas Test Results

Statistical Parameters	Value
Jarque-Bera	3.480865
Probability	0.175444

Source: Data processed (2023)

Table 2. Multikolinearitas Test Results

	ROA	DAR	CR	SIZE	AK
ROA	1.000000				
DAR	-0. 400716	1.000000			
CR	0.543012	-0.408710	1.000000		
SIZE	-0.204586	0.091458	-0.470087	1.000000	
AK	0.083343	0.118966	-0.321146	-0.084906	1.000000

Source: Data processed (2023)

The results of the fixed effect model (FEM) from panel data regression are in Table 7, showing the results of the F test with an f-statistic value of 76.93941 and a probability (p-value) of 0.000000 < 0.05 which means that the model can explain that variable independent profitability, leverage, liquidity, firm size, and cash flow influence the dependent variable, namely financial distress. Based on the results of the p-value of the t-test which is above 0.05 only DAR, it can be concluded that profitability has a significant positive effect on financial distress, liquidity has a significantly positive effect on financial distress, firm size has a significant negative effect on financial distress, cash flow has a positive effect on financial distress.

Table 7. Fixed Effect Model Analysis

Variable	Coefficient	Std. Error	t-Statistic	p-value	conclusion
ROA	3.442577	1.608316	2.140485	0.0423	Ha_1 accepted
DAR	-2.928326	1.749128	-1.674163	0.1066	Ha_2 rejected
CR	6.227904	0.627613	9.923157	0.0000	Ha_3 accepted
SIZE	-3.905199	1.153325	-3.386034	0.0023	Ha_4 accepted
AK	2.304033	0.625400	3.684097	0.0011	Ha_5 accepted
C	95.38854	28.12761	3.391278	0.0023	

R-Squared = 0.977317

F-statistic (p-value) = 76.93941 (0.000000)

Source: Data processed (2023)

Analysis of the coefficient of determination (R-square) presented in Table 7 shows that the Adjusted R-square is 0.977317, it can be concluded that 97.73% of the variation in changes in financial distress in transportation companies during 2019 - 2022 can be influenced by profitability, leverage, liquidity, firm size, and cash flow. Meanwhile, another 2.27% is influenced by other variables outside the regression model.

The results of the research conclude that profitability using the return on assets formula has a positive effect on financial distress. A higher profitability ratio indicates that the company has the ability to return investment and company assets. The profits generated by the company are sufficient to fulfill the company's operational obligations and are able to return investments from investors. The more capable a company is of generating profits and gaining profits, the better the company's financial performance will be so that the company can be said to be healthy and far from financial distress. The results of this research are in line with the research of Oktasari et al. (2022) and Muntahanah et al. (2021)

The research results conclude that leverage has no effect on financial distress. Lower leverage indicates that the company uses less debt in its capital structure compared to equity. A negative value also indicates that the company is still funding its business activities with its own capital and has less debt to pay to other parties. The research results are supported by research by Sutra & Mais (2019)

The research results conclude that liquidity has a positive effect on financial distress. the ability of a company to pay off current liabilities using available current assets. If a company's current assets are greater than its current liabilities, then the company can be considered to be in a liquid condition to cover its current liabilities and could be categorized as experiencing financial distress. Liquidity does not affect financial distress because, in the sample companies, the company can fund the company's operations by meeting short-term obligations with the assets it owns well so that financial distress does not occur. The results of this research are supported by Dirman (2020) and Hidayat et al. (2020).

The research results state that firm size has a significant negative effect on financial distress. According to Salim & Dillak (2021), a large Z-score value indicates that the company is not in financial difficulties and conversely, if the Z-score value is smaller then the company is indicated to be experiencing financial difficulties. This research shows that low company size in a company can cause high financial distress. It is stated that the total assets owned by the company are not able to pay off the company's future obligations, so the company is vulnerable to financial difficulties. Research conducted by Dirman (2020) and Wangsih et al. (2021) supports this research.

The cash flow variable is stated to have a positive effect on financial distress. Cash flow. High cash flow indicates that there is an increase in cash coming from sales (Wijaya & Suhendah, 2023). The research results show that the company can pay debts without borrowing from other parties. Companies with high cash flow can be declared to be protected from financial difficulties. However, if cash flow is at a stable point but the company still has long-term loans from the investment side that cannot be covered by cash flow, this could result in the company being in a state of financial difficulty (Julius, 2017) in (Carolina et al., 2017). This research is in line with Wijaya & Suhendah (2023) and Carolina et al. (2017).

CONCLUSION

Based on the results of research that has been carried out, first, it can be interpreted that increasing company profitability indicates that the company is increasingly able to generate profits to return the company's investment and assets and improve its financial performance. The greater the profits generated by the company, the more the company will avoid financial difficulties. Second, this research states that the small amount of debt a company has does not affect the occurrence of financial distress in that company. leverage is stated to not affect financial distress conditions. Third, the liquidity ratio has a positive effect on financial distress, meaning that the company has high liquidity and can meet short-term obligations with its current assets. The higher the

level of liquidity, the lower the possibility of financial difficulties. Fourth, high company size determines that the company has large total assets to pay its obligations. In this study, company size has a negative value, so it can be concluded that the company has fewer total assets so it is unable to pay its obligations. Fifth, the company's cash flow is at a stable point so that it can avoid financial difficulties. In this research, it is stated that cash flow has a positive influence on financial distress.

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