Research article

The effect of leverage, activity, profitability, growth, and firm size on financial distress

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ABSTRACT

Purpose: This study was to determine the effect of leverage, activity, profitability, growth, and firm size on financial distress in industrial sector companies in Indonesia in 2018–2021. Financial distress is a stage of decline in the financial condition of a company that is experiencing financial difficulty problems.

Methods: Financial distress is the dependent variable, while leverage, activity, profitability, growth, and firm size are independent variables. The population of this study are industrial sector companies listed on the Indonesia Stock Exchange (IDX) in 2018–2021. The sample was determined using nonprobability and purposive sampling methods. The number of samples used was 47 companies, and the total observation data during the 2018-2021 period was 148 observation data.

Findings: The results showed that Profitability (ROA) has a significant positive effect on financial distress. Meanwhile, Leverage (DER), Activity (TATO), Growth (Sales Growth), and Firm Size have no impact on financial distress in industrial sector companies listed on the IDX for the period 2018-2021.

Practical implications: The study indicates that Return on Assets (ROA) has a significant positive effect on financial distress. In contrast, the Debt-to-Equity Ratio (DER), Total Asset Turnover (TATO), Sales Growth, and Company Size do not have any effect. Therefore, companies should prioritize increasing profitability through effective cost management and operational efficiency while being cautious about their debt structures. Management should also regularly monitor financial indicators and invest in financial management training to mitigate the risk of financial distress and support sustainable growth.

Keywords: Leverage, activity, profitability, growth, company size, financial distress, logistic regression.

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Abstrak

Tujuan: Penelitian ini adalah untuk mengetahui pengaruh *leverage*, aktivitas, profitabilitas, *growth*, dan *firm size* terhadap *financial distress* pada perusahaan sektor *industrials* yang di Indonesia tahun 2018-2021. *Financial distress* merupakan tahap penurunan kondisi keuangan perusahaan yang sedang mengalami permasalahan kesulitan keuangan.

Metode: *Finansial distress* sebagai variabel dependen, sedangkan *leverage*, aktivitas, profitabilitas*, growth*, dan *firm size* sebagai variabel independen. Populasi dari penelitian ini adalah perusahaan sektor *industrials* yang terdaftar di Bursa Efek Indonesia (BEI) tahun 2018-2021. Sampel ditentukan menggunakan metode *nonprobability sampling* dengan teknik *purposive sampling*. Jumlah sampel yang digunakan sebanyak 37 perusahaan serta keseluruhan data pengamatan selama periode 2018-2021 sebanyak 148 data observasi.

Temuan: Hasil penelitian menunjukkan bahwa Profitabilitas (ROA) berpengaruh positif signifikan terhadap *financial distress*. Sedangkan, *Leverage* (DER), Aktivitas (TATO), *Growth* (*Sales Growth*), dan *Firm Size* tidak berpengaruh terhadap *financial distress* pada perusahaan sektor *industrials* yang terdaftar di BEI periode 2018-2021.

Implikasi praktis: Studi ini menunjukkan bahwa ROA memiliki pengaruh positif yang signifikan terhadap kesulitan keuangan. Sebaliknya, DER, TATO, Pertumbuhan Penjualan, dan Ukuran Perusahaan tidak memiliki pengaruh. Oleh karena itu, perusahaan harus memprioritaskan peningkatan profitabilitas melalui manajemen biaya yang efektif dan efisiensi operasional, sambil tetap berhati-hati terhadap struktur utangnya. Manajemen juga harus secara rutin memantau indikator keuangan dan berinvestasi dalam pelatihan manajemen keuangan untuk mengurangi risiko kesulitan keuangan serta mendukung pertumbuhan yang berkelanjutan.

Kata kunci: Leverage, aktivitas, profitabilitas, growth, firm size, financial distress, regresi logistik.

1. Introduction

Starting from the COVID-19 pandemic, which significantly impacted several sectors, there was a disruption in global economic stability. The COVID-19 pandemic has caused a significant decline in economic growth in various countries. According to the International Monetary Fund (IMF), in 2020, the global economy experienced a 3% decline. The impact of the Covid-19 pandemic was also felt in Indonesia, with economic growth in 2020 experiencing a decline. Based on data from the Central Statistics Agency (BPS) in 2020, it was recorded that Indonesia's economic growth reached -2.07% (kemenkeu.go.id, 2022).

This decline in Indonesia's economic growth was influenced by several factors, including the decrease in Gross Domestic Product (GDP) growth in most industrial sectors. Based on BPS data in 2020, the industrial sector experienced a reduction in GDP growth of -2.93%. This decline occurred because companies reduced their production capacity by reducing employee working hours, the number of machines, and the number of employees. These steps were taken to ensure the continuity of company operations by regulations imposed by the government to overcome the spread of COVID-19. As a result of this decline, the company's revenue also decreased due to a decrease in production output.

The decrease in revenue indicates that the company has not been able to maintain, organize, and manage finances properly, which can result in the company experiencing losses (Wulandari & Jaeni, 2021). The decrease in revenue and losses experienced by the company can cause the company to experience financial difficulties or financial distress.

Financial distress is one of the biggest challenges a company can face and can happen at any time. If the company is unable to make improvements in financial management, then within a few years, it is at risk of bankruptcy. However, in the COVID-19 pandemic situation, companies experiencing financial distress can face the risk of bankruptcy directly (Prabowo & Iswanaji, 2022).

Therefore, it is important to detect symptoms of financial distress early so that companies can take preventive measures. Thus, efforts to overcome financial distress can be made early so companies can avoid bankruptcy risk. One way to detect financial distress is to carry out an analysis procedure with the company's financial statements (Asfali, 2019 in Prabowo & Iswanaji, 2022). This analysis involves assessing information related to factors that can affect the emergence of financial distress. By assessing this information, it is hoped that companies can more quickly detect symptoms of financial distress to take the necessary steps to prevent bankruptcy and liquidation.

Based on this, research is needed to determine what factors affect financial distress in industrial sector companies during the COVID-19 pandemic. Several factors that affect the existence of financial distress include profitability, liquidity, leverage, operating capacity, cash flow operating, and sales growth (Wulandari & Jaeni, 2021).

The COVID-19 pandemic has significantly impacted the production of industrial sector companies, manifested in a reduction in working hours, the number of machines, and labor. Companies take these measures to comply with government regulations and continue operating. These reductions then decrease the company's revenue, which can lead to financial distress. To face these challenges, preventive measures are needed to analyze the factors that cause financial distress (Prabowo & Iswanaji, 2022).

Financial ratio calculations can be used to predict a company's financial distress. Based on financial literature, various types of performance or financial ratios are used to predict a company's financial distress. However, in using these financial ratios, there are still limitations in predicting the financial distress condition of a company, namely of the many financial ratios, it is not sure which financial ratios are dominant in influencing financial distress. In addition, there are also differences in research results from one researcher to another. Therefore, it is interesting to be re-examined in predicting or identifying the financial distress conditions of companies in Indonesia in the future. Based on the description above, the authors want to examine the effect of leverage, activity, profitability, growth, and firm size on financial distress prediction (empirical study of industrial sector companies listed on the Indonesia Stock Exchange for the period (2018-2021).

2. Theoretical background and hypothesis

Financial Distress

Financial distress refers to the stage of worsening financial conditions before bankruptcy. The company has experienced negative net income for several years (Nurdiwaty & Zaman, 2021). Financial distress can be measured using Interest Coverage Ratio (ICR). ICR is used to evaluate the company's ability to pay current debt interest with the company's income. ICR is used as an

analytical tool to determine whether the company has sufficient financial conditions to pay the interest that must be paid. If the company's ICR is known to be negative, it means that the company is experiencing losses because its income is smaller than the costs it has to pay. Therefore, it can be concluded that this condition indicates that the company is experiencing financial distress (Putri & Erinos, 2020). In this study, a company is declared to be experiencing financial distress if the ICR result is below 1. This ratio is calculated by:

$$ICR = \frac{EBIT}{Interest\ Expense}$$

Description:
- ICR < 1 means the company is experiencing financial distress, symbolized by dummy 1.
- ICR> 1 means the company is not experiencing financial distress or includes healthy firms, symbolized by dummy 0.

Leverage

The leverage ratio measures how much a company uses debt to finance its operations. This ratio compares all debt, including current debt, with all equity. This ratio is calculated by:

$$DER = \frac{Total\ Liabilities}{Total\ Equity}$$

Source: Kasmir (2019)

Research conducted by Agustini & Wirawati (2019), Amanda & Tasman (2019), and Purwanti (2022) states that the leverage ratio affects the prediction of financial distress. In contrast, research conducted by Dirman (2020), Oktaviani & Lisiantara (2022), and Sutra & Mais (2019) states that leverage does not affect predicting financial distress.

Activity

The activity ratio is an activity performance that illustrates the extent to which the company's resources have been optimally utilized. By comparing activity performance with industry standards, we can assess the company's efficiency level in the industry. Activity level is the level of asset utilization that measures asset turnover. Activity performance reflects the efficiency and intensity of the company in utilizing assets to generate sales (Sartono, 2018). This ratio is calculated by:

$$Total\ Assets\ Turnover = \frac{Sales}{Total\ Assets}$$

Source: Kasmir (2016)

Research conducted by Agustini & Wirawati (2019), Prabowo & Iswanaji (2022), and Sutra & Mais (2019) states that the activity ratio has an effect on predicting financial distress. In contrast to research conducted by Limajatini et al. (2022), Oktaviani & Lisiantara (2022), and Wulandari & Jaeni (2021) state that activity has no effect on predicting financial distress.

Profitability

The Profitability ratio measures the company's ability to generate profits from its normal business activities (Hery, 2014). This ratio is calculated by:

$$ROA = \frac{Net\ Profit}{Total\ Assets}$$

Source: Sujarweni (2017)

Research conducted by Dirman (2020), Mahaningrum & Merkusiwati (2020), and Prabowo & Iswanaji (2022) states that the profitability ratio affects the prediction of financial distress. In contrast to research conducted by Limajatini et al. (2022), Purwanti (2022), and Wulandari & Jaeni (2021) state that the profitability ratio has no effect on predicting financial distress.

Sales Growth

Growth in this study uses sales growth. Sales growth is an increase in sales from year to year or from period to period (Dewi & Sujana, 2019). Sales growth can be determined by looking at changes in sales between the previous year and the following year. This ratio is calculated by:

$$Sales\ Growth_t = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}} \times 100\%$$

Source: Kasmir (2016)

Research conducted by Amanda & Tasman (2022) and Purwanti (2022) states that the growth ratio affects the prediction of financial distress. In contrast, research conducted by Mahaningrum & Merkusiwati (2020), Oktaviani & Lisiantara (2022), and Rahma & Dillak (2021) states that growth has no effect on predicting financial distress.

Firm Size

The size of the company can be measured through company size. Company size can affect the company's ability to obtain additional capital, which will be used to finance the company's operational activities. High profits will affect the company's size, but the number of assets is assumed to be significant. Thus, the company's size will make it easier for companies to obtain funds from the capital market and have wider access to external funding sources, making it easier to get loans (Hery, 2016). This ratio is calculated by:

$$Firm\ Size = Log\ (Total\ Assets)$$

Source: Kasmir (2016)

Research conducted by Dirman (2020) states that the firm size ratio affects the prediction of financial distress. In contrast, research conducted by Amanda & Tasman (2022) and Rahma & Dillak (2021) states that firm size has no effect on predicting financial distress. The model can be seen in Figure 1
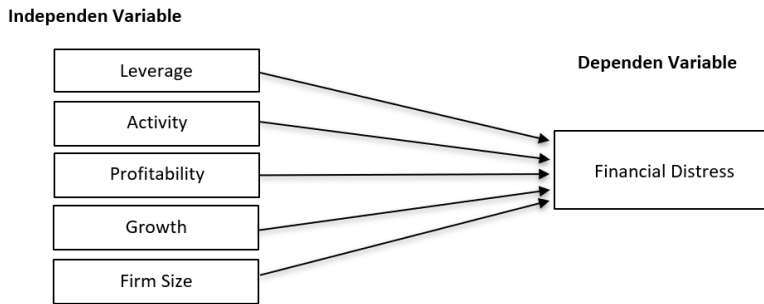
Source: Data processed, (2024)

Figure 1. Research Conceptual Framework

3. Methods

This study uses an associative research design, which is research conducted to determine the relationship between two or more variables (Siregar, 2013). It aims to determine how much influence the independent variables, namely leverage, activity, profitability, growth, and firm size, have on the financial distress prediction of industrial sector companies listed on the Indonesia Stock Exchange in 2018-2021.

3.1. Sample and procedures

Sugiyono (2014) says that population is a generalization area consisting of objects /subjects with certain qualities and characteristics set by researchers to study and then draw conclusions. This study's population is all industrial sector companies listed on the IDX, namely 63 companies. The data to be processed is data from 2018-2021, in 2018-2021 it is also a determinant of whether the company is experiencing financial distress or not. The period in this study was carried out only until 2021 because the researcher adjusted the data fit with the data processing model.

In this research, the sample is determined as part of the number and characteristics of the population based on the purposive sampling method, which is a determination technique that considers specific criteria. Researchers chose samples based on predetermined considerations and criteria, where the companies used as samples must fulfill two conditions: first, the company must operate in the industrial sector, and second, the company must be listed on the Indonesian Stock Exchange (IDX) during the 2018 period. Until 2021 and continuously publishes its financial reports.

Based on these criteria, it is found that from the population of companies in the industrials sector listed on the IDX, 63 companies, a sample of 37 companies was obtained using the purposive sampling method. This sample will later be used for this study and then processed to obtain results by researchers..

3.2. Measurement

The variables in this study are grouped into the independent variable (free) and the dependent variable (bound). This study has five independent variables: leverage, total assets turnover, return on assets, sales growth, and firm size on the dependent variable, namely financial distress. The operationalization of variables in this study is shown in the following table:

Table 1. Variable Operationalization

Variable	Indicator	Scale
Financial Distress	$ICR = \dfrac{EBIT}{Interest\ Expense}$	Rasio
Leverage	$DER = \dfrac{Total\ Liabilities}{Total\ Equity}$	Rasio
Activity	$Total\ Assets\ Turnover = \dfrac{Sales}{Total\ Assets}$	Rasio
Profitability	$ROA = \dfrac{Earning\ After\ Tax}{Total\ Assets}$	Rasio
Growth	$Sales\ Growth_t = \dfrac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$	Rasio
Firm Size	$Firm\ Size = Log\ (Total\ Assets)$	Rasio

Source: Kasmir (2016), Dirman (2020), Wulandari & Jaeni (2021), Mahfudoh (2018)

3.3. Data Analysis Technique

Researchers in this study processed data using a computer with the Microsoft Excel program and the Economics Views (Eviews) version 12 program to obtain accurate and more efficient calculation results. However, in processing the data, researchers faced obstacles related to the limited number of observations due to the small number of companies in Indonesia that had gone public. This obstacle is further exacerbated by the use of annual data, which is generally obtained from financial reports that each company has audited. Due to the limited number of companies, the potential for companies that can be used as samples is decreasing due to predetermined sample selection criteria.

To overcome these obstacles, this study proposes a pooled cross-sections over time approach, which provides several benefits, including a larger sample size and the ability to consider temporal effects on the dependent variable by adding year dummy variables to the regression equation. In addition, if necessary, the year dummy variable can also interact with the independent variable to account for the effect of time on the slope of the coefficient of the relevant independent variable. According to Wooldridge (2002) and Suriawinata (2002), the interaction between the year dummy and independent variables benefits policy analysis.

In connection with the pooled cross-sections over time approach utilized by this study, following Wooldrige's (2002) explanation in Suriawinata (2002), it is assumed that each year a random sample is taken from the relevant population, thus obtaining what is called independent, nonindependent distributed (i.n.i.d) observations. In simpler language, it is assumed that the sample of company X that appears every year from 2018 to 2022 is viewed as 3 different and independent companies. Thus, if company X appears more than once, it is viewed as a mere coincidence and hence ignored.

Given that the basic idea of the pooled cross-sections over time approach is to sample every year from 2018 to 2021 randomly, all observations are pooled and structured based on these years. Data structuring based on this pooling approach is different from the panel data approach, although sometimes, some researchers' use of pooling and panel is not distinguished.

Since the number N is 37 companies, while the number T for each cross-sectional unit (company) is a maximum of 5 years, the data structure can be said to be "cross-sectional

dominant." Thus, hypothesis testing through the Logit method will be carried out on a pooled cross-sectional over-time basis with year dummies covering the period 2018-2021, where 2018 is used as the base year so that the empirical model will have dummy variables for the years 2019 to 2021. The reason for pooling with year dummies is to get a larger sample size.

3.4. Hypothesis Testing

In this study, hypothesis testing aims to determine the effect of the independent variables included in the model on the dependent variable. The analytical method used in this study to test the hypothesis is logistic regression, where the independent variable is a combination of matrix and non-matrix (standard). Logistic regression is a regression that tests whether the independent variable can be used to predict the profitability of the dependent variable that occurs. Using logistic regression does not require the independent variables to be normally distributed. In addition, this analytical technique does not require the normality test of the independent variables, the heteroscedasticity test, and the classical hypothesis test.

The dependent variable in this study uses a dummy/binary variable, namely whether the company is experiencing financial distress or not. The dependent variable in this study uses a proxy, namely the interest coverage ratio below one (ICR < 1). The independent variables used in the model are leverage, activity, profitability, growth, and firm size.

4. Results and discussion

4.1. Results

Statistical Analysis of Data

Table 2, shows the number of observations or observations made in industrial sector companies listed on the IDX in 2018-2021. In this study, there were 148 observations, each of which describes the variables used in this study.

Table 2. Statistical Analysis of Data

	FD	DER	TATO	ROA	GROWTH	SIZE
Mean	0.7905	1.1926	0.8170	-0.0063	0.0563	27.8683
Median	1.0000	0.7285	0.6745	0.0250	0.0275	27.9065
Maximum	1.0000	22.0250	3.3810	0.3160	6.4960	33.4950
Minimum	0.0000	-17.6230	0.0000	-1.2160	-0.8410	22.3690
Std. Dev.	0.4083	3.3041	0.6173	0.1865	0.6229	2.1270
Skewness	-1.4279	1.3597	1.4266	-3.7865	7.6193	-0.0962
Kurtosis	3.0391	21.6370	5.5405	21.3455	79.0113	4.6236
Jarque-Bera	50.3085	2187.534	90.0090	2429.105	37061.27	16.4851
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
Sum	117.0000	176.5190	120.9270	-0.9330	8.3440	4124.513
Sum Sq. Dev.	24.5067	1604.881	56.0179	5.1154	57.0482	665.0294
Observations	148	148	148	148	148	148

Source: Secondary data www.idx.co.id processed, 2024

The minimum value is the smallest value of a series of observations, the maximum value is the largest value of a series of observations, and the mean (laverage) value is the result of the sum of the values of all observations divided by the number of observations, while the standard deviation is the root of the sum of the squares of the difference between the observation value and the average divided by the number of observations. Based on the results of data processing using E-VIEWS 12, the results of the number of samples for 2018-2021 are as follows:

Hypothesis Testing

The test analysis using logistic regression takes into account the following points.

Table 3, shows that the probability of the Hosmer Lemeshow Static Goodness of Fit Model value is 0.1125> 0.05 so that the null hypothesis (H_0) cannot be rejected or in other words accepted and it can be said that the model fits the data which means that the model is able to predict its observation value. The probability value of the Hosmer Lemeshow Static cannot be rejected or in other words accepted so that this regression model remains suitable for further analysis.

Table 3. Andrews and Hosmer Lemeshow Goodness of Fit Tests Results

	Quantile of Risk Low	High	Actual	Dep=0 Expect	Dep=1 Actual	Expect	Total Obs	H-L Value
1	0.0486	0.6851	9	7.7536	5	6.2463	14	0.4490
2	0.6939	0.7874	7	3.6297	8	11.3702	15	4.1282
3	0.7898	0.8077	3	2.9863	12	12.0136	15	7.7E-05
4	0.8080	0.8172	2	2.8112	13	12.1888	15	0.2880
5	0.8178	0.8262	4	2.6802	11	12.3198	15	0.7912
6	0.8262	0.8315	1	2.3924	13	11.6076	14	0.9774
7	0.8330	0.8405	2	2.4426	13	12.5574	15	0.0958
8	0.8407	0.8490	0	2.3375	15	12.6625	15	2.7690
9	0.8500	0.8601	0	2.1785	15	12.8215	15	2.5486
10	0.8605	0.9209	3	1.7876	12	13.2124	15	0.9334
	Total		31	31.0000	117	117.000	148	12.9811
H-L Statistic		12.9811			Prob. Chi-Sq(8)		0.1125	
Andrews Statistic		44.0576			Prob. Chi-Sq(10)		0.0000	

Source: Secondary data www.idx.co.id processed, 2024

Expectation Prediction

Table 4, above shows the results that testing using Expectation-Prediction Evaluation shows a % correct value of 79.73%, which means that the correct prediction is 79.73%.

Tabel 4. Expectation Prediction Evaluation

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total

P(Dep=1)<=C	4	3	7	0	0	0
P(Dep=1)>C	27	114	141	31	117	148
Total	31	117	148	31	117	148
Correct	4	114	118	0	117	117
% Correct	12.90	97.44	79.73	0.00	100.00	79.05
% Incorrect	87.10	2.56	20.27	100.00	0.00	20.95
Total Gain*	12.90	-2.56	0.68			
Percent Gain**	12.90	NA	3.23			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	9.00	22.00	31.00	6.49	24.51	31.00
E(# of Dep=1)	22.00	95.00	117.00	24.51	92.49	117.00
Total	31.00	117.00	148.00	31.00	117.00	148.00
Correct	9.00	95.00	104.01	6.49	92.49	98.99
% Correct	29.04	81.20	70.28	20.95	79.05	66.88
% Incorrect	70.96	18.80	29.72	79.05	20.95	33.12
Total Gain*	8.10	2.15	3.39			
Percent Gain**	10.24	10.24	10.24			

Source: Secondary data www.idx.co.id processed, 2024

McFadden R-squared Test

Table 5, the McFadden R-Squared (R2) value is 0.084261. That means that the variation of the independent variables (leverage, activity, profitability, growth, and firm size) can explain the variation of the dependent variable (financial distress) by 8.43%. In contrast, variations influence the rest of the variables not included in the regression equation model.

Tabel 5. McFadden R-Squared and Individual/Parsial Results

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.2254	3.1600	0.3878	0.6982
DER	0.0498	0.0648	0.7689	0.4419
TATO	0.0755	0.3690	2.2047	0.8377
ROA	3.5235	1.3980	2.5203	0.0117
GROWTH	-0.1877	0.2807	-0.6688	0.5036
SIZE	0.0029	0.1089	0.0273	0.9782

McFadden R-squared	0.0842	Mean dependent var	0.7905
S.D. dependent var	0.4083	S.E. of regression	0.3942
Akaike info criterion	1.0210	Sum squared resid	22.0659
Schwarz criterion	1.1425	Log likelihood	-69.5590
Hannan-Quinn criter.	1.0704	Deviance	139.1181
Restr. deviance	151.9189	Restr. log likelihood	-75.9594
LR statistic	12.8008	Avg. log likelihood	-0.4699
Prob(LR statistic)	0.0253		

Obs with Dep=0	31	Total obs	148
Obs with Dep=1	117		

Source: Secondary data www.idx.co.id processed, 2024

The R2 value is also used to assess the goodness of fit of the logistic model, where the higher R2 indicates a better model so that the model fits or fits the data.

Regression Coefficient

This t-statistical test aims to determine the effect of each variable or individual of the independent variables, namely leverage, activity, profitability, growth, and firm size, on the dependent variable, namely financial distress. To determine whether the hypothesis is accepted or rejected by comparing the t-count with the t-table and the significance value with the significance level in this study, namely a = 5% = 0.05, then the independent variable being tested does not affect the dependent variable and vice versa if the p-value <0.05, it means that the independent variable being tested affects the dependent variable.

Based on the hypothesis testing results presented in Table 5, several conclusions can be drawn regarding the influence of the variables studied on corporate financial distress. First, the first hypothesis, which states that leverage affects financial distress prediction, is rejected. The study shows that the debt-to-equity ratio variable has a coefficient of 0.0498 with a probability level of 0.4419, more significant than 0.05, indicating a positive but insignificant effect on financial distress. Furthermore, the second hypothesis is also rejected, suggesting that activity does not influence the occurrence of financial distress. This is evidenced by the total asset turnover coefficient of 0.0755 with a probability of 0.8377, showing a similar result with a positive but insignificant effect. Conversely, the third hypothesis is accepted, indicating that profitability influences financial distress prediction. The recorded return on assets coefficient of 3.5235, with a probability of 0.0117, which is less than 0.05, signifies that profitability positively and significantly affects financial distress. However, the fourth hypothesis, which states that growth affects financial distress, is rejected. The sales growth coefficient of -0.1877, with a probability of 0.5036, indicates a negative but insignificant effect on the financial distress variable.

Finally, the fifth hypothesis, which states that firm size influences financial distress prediction, is also rejected. The coefficient value for firm size is 0.0029, with a probability of 0.9782, indicating a positive but insignificant effect. Thus, the results of this study underline that only profitability contributes significantly to financial distress, while the other variables do not show any significant influence.

Logistic Regression Analysis

Hypothesis testing in this study used logistic regression analysis. Logistic regression analysis is a special form where the dependent variable is categorical, the independent variable is categorical, and a combination of metric and non-metric. Logistic regression models can show how much all available independent variables influence the dependent variable.

Table 5. shows the results of data processing, which then obtained the logistic regression equation model as follows:

$$\text{Ln} \frac{P_{i(t)}}{1 - P_{i(t)}} = 1.2254 + 0.0498\text{Lev} + 0.0755\text{Akt} + 3.5235\text{Prof} - 0.1877\text{Grow} + 0.0029\text{Size} + e$$

From this regression equation, we can observe the influence of each variable on financial distress. First, the DER variable shows a coefficient value of 0.0498, which means that every one percent (1%) increase in DER, assuming other independent variables remain constant, will contribute to the rise in financial distress. Next, the TATO variable has a coefficient of 0.0755, indicating that a one percent (1%) increase in TATO will also lead to a rise in financial distress.

In contrast, the ROA variable has a more significant coefficient of 3.5235. This shows that a one percent (1%) increase in ROA will significantly impact the rise in financial distress, assuming other variables remain constant. Meanwhile, the Sales Growth variable records a negative coefficient of -0.1877, meaning that every one percent (1%) increase in sales growth will instead reduce financial distress. Lastly, the Firm Size variable is indicated to have a positive coefficient of 0.0029, suggesting that a one percent (1%) increase in firm size will increase financial distress, assuming other independent variables remain unchanged. This analysis highlights the complex dynamics between profitability, firm size, and financial performance that can affect a company's financial condition.

4.2. Discussion

The Effect of Leverage on Financial Distress

Based on the logistic regression results, it can be seen that leverage does not significantly influence predicting financial distress. The results of these tests show the significance value of the leverage variable of 0.4419> α 0.05 and a coefficient value of 0.0498. So it can be concluded that leverage does not have a significant and positive influence in predicting financial distress. Large companies finance more operational activities using capital from third parties or, in other words, in the form of debt. Large companies are more likely to rely on financing from bank loans. Therefore, it can be said that large companies tend to have a large leverage ratio level. However, even though large companies have a high leverage ratio, they can better avoid financial distress by diversifying their business. The results of this study are in accordance with previous research conducted by Sutra & Mais (2019), Oktaviani & Lisiantara (2022), Dirman (2020), and (Limajatini et al. 2022), which state that leverage does not have a significant influence in predicting the occurrence of financial distress in a company.

The Effect of Growth on Financial Distress

From the results of research that has been tested with logistic regression, it is known that growth as measured by sales growth does not have a significant effect in predicting financial distress. The results of these tests show that growth, as measured by sales growth, does not have a significant and negative effect in predicting financial distress, with a coefficient value of -0.1877 and a significance level of 0.5036 < α 0.05. So it can be concluded that sales growth has no significant and negative effect in predicting financial distress because the company's sales growth cannot be used as an assessment of the state of financial distress. Even though the company's sales have dropped, it does not have an impact at that time. It will also experience bankruptcy; it will only experience a decrease in the net results obtained by the company. A decrease in sales growth will have an impact on decreasing profits, but a decrease in profits in that year will not cause immediate financial distress because sales were relatively stable in the previous year.

The results of this study are in accordance with previous research conducted by Wulandari & Jaeni (2021), Agustini & Wirawati (2019), Putri & Arifin (2021), Sutra & Mais (2019), Oktaviani & Lisiantara (2022), and Mahaningrum & Merkusiwati (2020) which show that growth does not have a significant effect in predicting financial distress in a company.

The Effect of Firm Size on Financial Distress

The firm size variable measured through logistic regression has been found that firm size has no influence in predicting financial distress. The results of the test show that firm size has no significant and positive effect in predicting financial distress, with a coefficient value of 0.0029 and a significance level of 0.9782> α 0.05. So, it can be concluded that firm size does not have a significant and positive influence in predicting financial distress, so the results are not in accordance with the predetermined hypothesis. This is possible because high assets do not necessarily produce high profits, which is possible because the current assets owned by the company are unproductive and may be influenced by other factors, such as declining economic conditions, so the size of the company has no effect on financial distress.

The results of this study are in line with previous findings conducted by Amanda & Tasman (2019) and Rahma & Dillak (2021), which stated that the size of a company measured through Ln (total assets) does not have a significant influence on predicting the occurrence of financial distress. This study also shows the influence of financial ratios, which consist of leverage ratios proxied by DER, activity ratios proxied by TATO, profitability ratios proxied by ROA, growth ratios proxied through sales growth, and company size to financial distress in industrial sector companies listed on the IDX in the 2018-2021 period. In this context, financial distress is when the company experiences financial difficulties or is in a state of decline.

The analysis conducted, several interesting results were obtained; firstly, the DER showed that although it had a positive coefficient, it had no significant effect on financial distress, meaning that a one-percent (1%) increase in DER would result in increased financial distress. Similarly, TATO was also found to not affect financial distress, with a positive coefficient indicating that if TATO increases by one percent (1%), financial distress will also increase. Meanwhile, ROA did show a significant but positive effect, meaning that a one-percent (1%) increase in ROA could worsen financial conditions. On the other hand, sales growth was proven to have a negative influence, meaning that a one-percent (1%) increase in sales growth would reduce financial distress. Nevertheless, the company's size was also found to have no significant effect, even though the positive coefficient indicates that each one-percent (1%) increase in company size would exacerbate financial distress. These findings reflect the complex dynamics between various financial variables and the financial condition of companies in the Indonesian market.

5. Conclusion

Based on the discussion of the research results that have been conducted, the DER does not have a significant effect on Financial Distress in industrial sector companies listed on the IDX during the 2018-2021 period. This shows that both an increase and a decrease in the debt-to-equity ratio have no impact on the level of financial distress experienced by the company.

In addition, TATO did not significantly affect financial distress during the same period, indicating that changes in the total asset turnover ratio did not affect the financial condition. On the other hand, ROA turned out to have a positive and significant effect on financial distress, meaning that an increase in return on assets can contribute to an increased risk of poor financial conditions. Although ROA is generally viewed as an indicator of a company's operational success, this positive relationship may reflect tension or imbalance, such as excessive use of debt or poor strategic management, which increases the risk of financial distress. Furthermore, sales growth did not significantly impact financial distress, indicating that variations in sales growth did not affect the company's level of financial distress. Finally, company size also does not show a significant effect, meaning that differences in company size are not correlated with financial distress experienced. In

The study has several limitations, including the need for further research in a more recent period until 2023 and the addition of financial ratios that have not been studied, such as the liquidity ratio. Future researchers are expected to be able to add or replace other independent variables, such as debt-to-asset ratio, Receivable Ratio, and Return on Equity. Another limitation of this study is the focus on industrial sector companies listed on the IDX, so it is recommended that future research consider combining data from industrial companies in other countries.

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Declarations

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