The Effect of Leverage, Profitability, Liquidity Ratio, and Inflation towards Financial Distress

Study from the Manufacturing Industry in Indonesia

Everaldi Oktavian
Department of Professional Accountant Education, Universitas Tarumanagara, Jakarta, Indonesia

Sarwo Edy Handoyo
Department of Professional Accountant Education, Universitas Tarumanagara, Jakarta, Indonesia

Abstract: Research on financial distress is an important component in the assessment of internal and external parties of the company to see whether the company's financial condition is in a good position or is in a bad position. This is important for internal parties in the process of reviewing the company's financial condition to carry out decision-making to improve or enhance the company's financial capabilities. This is also important for external parties in the decision-making process in determining whether the company is worth investing in. This study aims to analyze the effect of financial ratios in the form of leverage, profitability, and liquidity ratios along with inflation on financial distress in manufacturing companies listed on the Indonesia Stock Exchange. This study used panel data regression with a purposive sampling method with a total of 103 samples. Data processing in this study uses Eviews 9. The results of this study indicate that there is a positive influence between profitability and liquidity on financial distress indicator. As for other variables, leverage has a negative effect on financial distress indicator and inflation has no effect on financial distress indicator. This research can contribute to investors and company management in carrying out the decision making process by paying attention to the company's financial ratios and inflation in Indonesia and also contribute to developing knowledge in the field of finance study as it enhance the causality of financial distress. Suggestions that can be given for further research are to use other independent variables in the form of corporate governance and corporate social responsibility disclosure which may show results that better reflect the company's qualitative capabilities.

Keywords: profitability, leverage, liquidity, inflation, financial distress

Correspondents Author:
Everaldi Oktavian, Department of Professional Accountant Education, Universitas Tarumanagara, Jakarta, Indonesia
Email : everaldiokta@gmail.com

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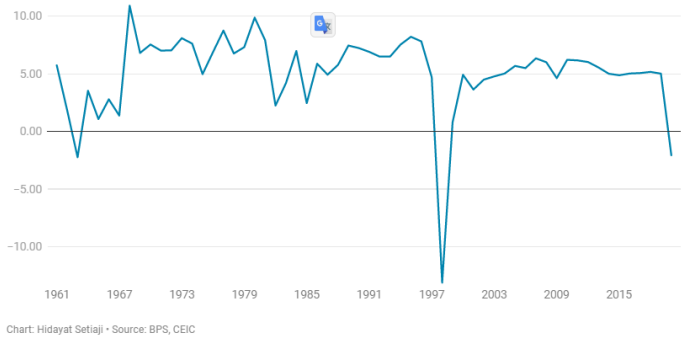
Introduction

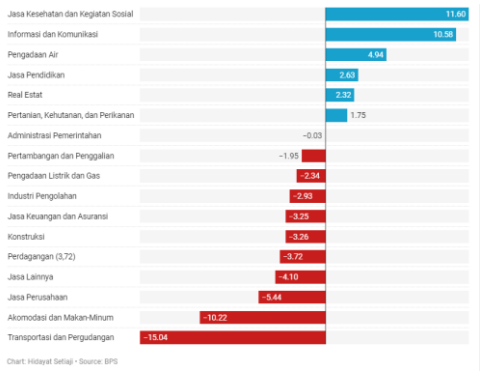
In the new-normal era which was still affected by the presence of Covid-19 which caused economic performance not only in Indonesia but globally to decline drastically compared to previous years. Based on the Central Bureau of Statistics, the Indonesian economy has experienced a decline during 2020. This is evidenced by the decline in Indonesia's Gross Domestic Product of 2.07%, which is the highest decline since the 1998 monetary crisis. This can be seen in Figure 1.



Source: Indonesia Central Bureau of Statistics, 2021

Figure 1 Gross Domestic Product Movement Indonesia

For the processing or manufacturing industry in particular, it has experienced a greater decline than the average for all industries. The decline in Gross Domestic Product sat at 2.93% from the previous year. This can be seen in Figure 2.



Source: Indonesia Central Bureau of Statistics, 2021

Figure 2 Gross Domestic Product Movement per Sector

This economic downturn is also in line with the many manufacturing companies that are delisting from the stock exchange, and at worst going out of business in 2020-2021 due to limited operations and cash flow caused by the Covid-19 pandemic. This is of course interesting to study because of the importance of knowing whether a company is in a position of financial distress. This is important for internal parties to know so they can carry out a

decision-making process to deal with this or improve the company's financial position. This is important for external parties to know in order to be able to carry out the decision-making process in terms of whether the company is worth investing in or not.

This study refers to research previously conducted by Susanti, et al. (2020) regarding the effect of profitability, leverage, and liquidity on financial distress in retail companies listed on the Indonesia Stock Exchange. This study shows that profitability have a positive effect on financial distress which is in line with Christine et al. (2019). This study shows that leverage have a positive effect on financial distress which is not in line with Dirman (2020) which resulted in no effect. Meanwhile, liquidity has a negative effect on financial distress which contradicts with other research which has a positive effect from Inggamal (2022). This research also refers to research conducted by Irmayanti and Armuni (2020) which discusses the effect of inflation on financial distress. This study shows that inflation has no effect on financial distress which is not line with Pertiwi (2018) research which shows negative effect on financial distress.

From the illustration above, due to difference in result in separate research, this study aims to address whether and how the financial ratios in the form of profitability, leverage, and liquidity ratios and inflation affect the financial distress conditions of a company. The object of the study is the manufacturing companies listed on the Indonesia Stock Exchange. This research is important to do to help related parties in the process of determining whether a company is facing financial distress so that related parties can make the right decisions to deal with it. With this research, it is hoped that it will add technical understanding and insight for internal and external parties of the company as well as for future researchers.

In accordance with what has been explained above, the following are some of the problem formulations that will be discussed in this study:

1. Does the profitability ratio affect financial distress?
2. Does the leverage ratio affect financial distress?
3. Does the liquidity ratio affect financial distress?
4. Does inflation affect financial distress?

Literature Review

The theory of liquidity and profitability states that when a company's indicators in the form of liquidity and profitability are in good condition, it reflects a healthy company condition, and if the indicator condition is in a bad condition, it means that it reflects an unhealthy company condition. This theory also indicates that companies can also fail even though the company's

profitability is good, this is because the increase in profitability is smaller than the company's growth which reflects the increase in debt that needs to be paid (Hashi, 1997).

Agency theory is a theory which states that there is a separation between the owner (principal) and manager (agent) of a company which can lead to agency conflicts. This can be caused by the existence of asymmetrical information that comes from the lack of information owned by the principal when compared to the agent (Jensen and Meckling, 1976).

Financial distress occurs when the company fails or is unable to meet the debtor's obligations due to lack and insufficient funds to run or continue its business (Kalbuana et al., 2022). Financial distress can also be defined as a condition in which a company fails to fulfill its obligations to pay or redeem debts to creditors (Isayas, 2021). Financial distress that occurs in a company will affect investors or creditors who want to invest in the company (Elviana and Ali, 2022) . From the three definitions above, financial distress can be defined as a condition that describes the challenges and difficulties faced by companies in generating sufficient cash inflows to meet obligations to repay debts owned by the company that may affect company's stakeholders.

Profitability can be defined as the profit generated by the company on the results of the company's business activities (Ariyani et al., 2018). Profitability ratio can also be defined as a ratio that measures a company's ability to earn profits in the short and long term in terms of income and investments made (Kariyawasam, 2019). From the two definitions above, the profitability ratio can be defined as a ratio that reflects a company's ability to generate profits in the short and long term resulting from the company's business activities.

Leverage ratio can be defined the amount of debt a company has that is useful in making decisions about funding its assets which with the greater the debt owned, the greater the interest expense that must be paid by the company (Widyastuti et al., 2021). The leverage ratio is a measure of how much the company is financed with debt (Sari et al., 2022). From the two definitions above, the leverage ratio can be defined as a ratio that describes how much the company is funded by debt or commitments that still need to be paid by the company.

Liquidity ratio can be defined as a company's ability to generate cash in a short period of time to fulfill obligations (Kisman and Dian, 2019). Liquidity ratio is an indicator of a company's ability to meet its short-term obligations without external assistance, such as loans from banks (Sihombing et al., 2022). The liquidity ratio plays an important role in maintaining the financial stability of a company (Wisnu and Astuti, 2023). From the three definitions above, the liquidity ratio can be defined as a ratio that describes a company's ability to generate cash in the short term to fulfill or pay the company's short-term obligations which plays a huge role in maintaining financial stability.

Inflation can be defined as an economic phenomenon that indicates an increase in the general price level that is sustainable (Irmayanti and Al Murni, 2020). Inflation can also be defined as an important variable in the potential for economic conditions which can become the main goal of all countries in achieving sustainable growth (Musarat et al., 2021). From the two definitions above, inflation can be defined as an economic phenomenon that reflects an increase in the general price level, which is the main focus of all countries in achieving sustainable growth.

The Relationship Between Profitability Ratio And Financial Distress

The lower the profits a company gets, the higher the probability of a company going bankrupt (Christine et al., 2019). This is also supported by another which states that the higher the level of profitability a company gets, the more likely the company is to avoid financial difficulties (Inggamal, 2022). From the several studies above, the authors make the following hypothesis:

H1: Profitability ratio has a positive influence on financial distress indicators.

The Relationship Between Leverage And Financial Distress

The higher the level of corporate debt, the lower the possibility of creditors to re-fund so that it can cause a lack of money and lead the company to financial difficulties (Finishtya, 2019). This is also supported by another which states that the higher the debt raises the obligation to pay interest and principal which if the company's operations cannot be paid it will cause financial losses or difficulties (Desiyanti et al., 2019). There is also a possibility that even though the company's liabilities are large, the company's assets are also large so that it does not affect financial distress (Dirman, 2020). From the several studies above, the authors make the following hypothesis:

H2: Leverage ratio has a negative effect on financial distress indicators.

The Relationship Between Liquidity And Financial Distress

A high liquidity ratio can mean that the company's assets are not optimally used, which causes a lack of the company's ability to generate profits, which will lead to an increase in the likelihood that the company will experience financial difficulties (Kisman et al., 2019). This is in contrast to another which states that the higher a company's ability to pay debts, the healthier the company will be financially (Inggamal, 2022).

From the several studies above, the authors make the following hypothesis:

H3: Liquidity ratio has a positive influence on financial distress indicators.

The Relationship Between Inflation And Financial Distress

Inflation has no effect on financial distress because the inflation rate in the study period tends to be stable (Irmayanti and Armuni, 2020). Another research states that an increase in the inflation rate causes prices to rise so that companies can use the increase to gain profits which causes a decrease in the possibility of companies experiencing financial difficulties (Pertiwi, 2018).

From the several studies above, the authors make the following hypothesis:

H4: Inflation has a positive effect on financial distress indicators.

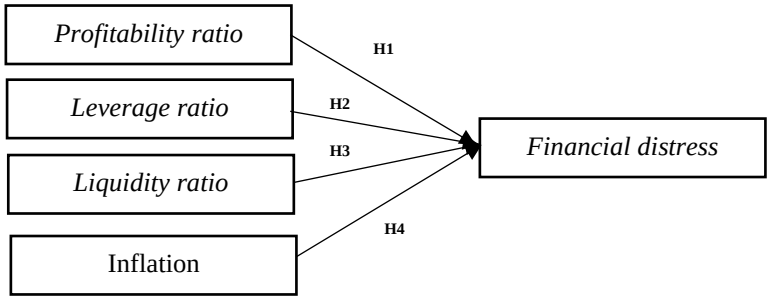


Figure 3 Conceptual Framework

Research Method

The population used in this study are companies that are operating in the manufacturing industry which are listed on the Indonesia Stock Exchange. The reason for choosing the manufacturing industry is the large number of companies in the industry so that there is a large number of samples that can be used and there is a possibility that it includes companies that are experiencing financial distress which could be caused by the Covid-19 outbreak. The research period used is 2019-2021.

The sampling technique used in this research is purposive sampling, which is a technique based on certain intentions, utilization of this technique is used because of limited time, effort, and cost, as a result it cannot obtain complex samples (Abdullah, 2015).

The criteria used in determining the sample are as follows:

- Entities listed on the Indonesia Stock Exchange that operate in the manufacturing industry during the study period;
- Listed on the Indonesia Stock Exchange during the study period;
- Issuing financial reports during the study period;
- Get profits during the study period;
- Using Rupiah currency.

The number of samples found using this technique is 103 companies.

Variable operationalization

Financial distress (FD) variable is the dependent variable in this study which is measured using the Z-Altman score. The higher the Z-altman score indicates that the company is further away from financial distress or bankruptcy. The following is the formula used to determine a company's Z-altman score:

Z-altman score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E

Where:
A = Working capital/Total assets ratio
B = Retained earnings/Total assets ratio
C = Earnings before interest and Tax/Total assets ratio
D = Market value of equity/Total liabilities ratio
E = Total sales/Total assets ratio

Profitability ratio (ROA) is one of the independent variables in this study which is measured using Return on Assets /ROA. The higher the ROA value will mean that with the condition of the assets owned by the company, the company can generate higher profits and vice versa. The following is the formula used to determine a company's ROA:

ROA = Net income/Total assets

Leverage ratio (DAR) is one of the independent variables in this study which is measured using the Debt to assets ratio/DAR. The higher the DAR value will mean that the amount of debt owned by the company is higher than the assets owned by the company and vice versa. The following is the formula used to determine a company's DAR:

DAR = Total debt/Total assets

Liquidity ratio (CR) is one of the independent variables in this study which is measured using the Current ratio/CR. The higher the CR value will mean that the company's ability to pay short-term debt is higher which is represented by the existence of liquid assets and vice versa. The following is the formula used to determine a company's CR:

CR = Total current assets/Total current liabilities

Inflation is one of the independent variables in this study, the information obtained is based on the International Monetary Fund (IMF) regarding information on inflation rate, average consumer prices (annual price) change) historical data for 2019-2021.

Data analysis method

The method used is Panel Data Regression which is a combination of data from cross sections and time series using the Eviews 9 tool. By using Eviews 9, there are some several analysis to be done:

1. Data panel regression model testing: To determine which model between common, fixed, or random to be used

2. Classical assumption testing: Need to test heteroscedasticity and multicollinearity if the model obtained is fixed.

3. Hypothesis test: Perform F-testing and t-testing to determine the effect of each independent variable to the dependent variable

Some of the advantages gained from using panel data are the emergence of a very large amount of data to be used in the research regression process. The following is a panel data regression model:

$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + e$

Description:
Y = dependent variable (financial distress)
α = constant
β = coefficient of each independent variable
X1 = Profitability ratio
X2 = Leverage ratio
X3 = Liquidity ratio
X4 = Inflation
e = error rate

Result and Discussion

Result

Below is the Descriptitive Statistics Analysis for the variables used.

Table 1 Descriptive Statistics Analysis

Detail	FD	ROA	DAR	CR	Inflation
Mean	4.718608	0.063282	0.235175	2.357104	0.021333
Median	3.110000	0.048000	0.235000	1.745000	0.020000
Maximum	30.86000	0.358000	1.139000	13.30900	0.028000
Minimum	-1.690000	0.000001	0.000000	0.310000	0.016000
Std. Dev.	4.587901	0.055543	0.179559	1.951658	0.004997

Data panel regression model testing

The Chow test is used to determine which model is better between Common Effect or Fixed Effect to be used as a model in estimating panel data.

H0 = Common Effect Model is better

H1 = Fixed Effect Model is better

Basis for decision making:

If the cross section chi-square value <0.05 then H0 is rejected

If the cross section chi-square value is > 0.05 then H0 is accepted

Table 2 Chow Test

Redundant Fixed Effects Tests			
Equation : Model			
Test cross-section fixed effects			
Effects test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	9.204063	(102,202)	0.0000
Cross-section Chi-square	534.950075	102	0.0000

From the test results above, it was found that the cross section chi-square value <0.05 so that H0 was rejected, and it means that the Fixed Effect Model is better than the Common Effect Model. Next, a Hausman test is needed to determine which model is better between the Fixed Effect Model and the Random Effect Model.

The Hausman test will be used to determine which model is better between the Fixed Effect Model and the Random Effect Model for estimating panel data.

H0 = Fixed Effect Model is better

H1 = Random Effect Model is better

Basis for decision making:

If the cross section random value is <0.05 then H0 is accepted

If the cross section random value is > 0.05 then H0 is rejected

Table 3 Hausman Test

Correlation Random Effects - Hausman Tests			
Equation : Model			
Test cross-section random effects			
Test summary	**Chi-Sq. Statistic**	**Chi-sq. d.f.**	**Prob.**
Cross-section random	13.951605	4	0.0075

From the test results above, it was found that the value of the random cross section <0.05 so that H0 was accepted, and meant that the Fixed Effect Model was better than the Random

Effect Model. Therefore, the model to be used in this study is the Fixed Effect Model. Hence we will need the heteroscedasticity test and multicollinearity test.

Classical assumption test

The heteroscedasticity test aims to test whether there is an inequality of variance from the residuals of one observation to another. If the variance found from the residuals of each observation is different then it is called heteroscedasticity. The following are the results of testing the test:

H0 = There is Heteroscedasticity
H1 = There is no Heteroscedasticity
Basis for decision making:
If the value of Prob. Independent variable < 0.05 then H0 is accepted
If the Prob. Independent variable > 0.05 then H0 is rejected

Table 4 Heteroscedasticity Test

Variable	Coefficient	Std.error	t-statistics	Prob.
ROA	-0.695998	1.519478	-0.458051	0.6474
DAR	-0.812393	0.573789	-1.415841	0.1584
CR	0.015391	0.068408	0.224985	0.8222
Inflation	7.827717	7.436141	1.052658	0.2938
C	0.710059	0.277036	2.563054	0.0111

From the test results above, it is known that there is no Prob. Independent variable < 0.05. Therefore H0 is rejected and there is no heteroscedasticity in the model.

The multicollinearity test aims to test whether there are independent variables used in the regression model that have a high correlation with each other. The following are the results of testing the test:

H0 = There is Multicollinearity
H1 = There is no Multicollinearity
Basis for decision making:
If the Correlation value between independent variables > 0.90 then H0 is accepted
If the Correlation value between independent variables is <0.90 then H0 is rejected

Table 5 Multicollinearity Test

Correlation	ROA	DAR	CR	Inflation
ROA	1.000000	-0.271186	0.127336	0.028777
DAR	-0.271186	1.000000	-0.549788	0.053366
CR	0.127336	-0.549788	1.000000	-0.011064
Inflation	0.028777	0.053366	-0.011064	1.000000

From the test results above, it is known that there is no correlation between the independent variables that exceeds 0.90, therefore Ho is rejected and there is no multicollinearity in the model.

Hypothesis test

After analysing the model, next is the Hypothesis Test, which is divided into F-Test and t-Test. In this study, model testing was carried out to see whether all independent variables simultaneously affected the dependent variable of this study. The following is for the simultaneous regression testing table (F-Test).

Table 6 F-Test

Variable	Coefficient	Std.error	t-statistics	Prob.
ROA	24.29214	3.942597	6.161456	0,0000
DAR	-6.914314	1.488813	-4.644180	0,0000
CR	0.558714	0.177498	3.147727	0,0019
Inflation	50.54381	19.29459	2.619585	0,0095
C	2.412222	0.718827	3.355775	0,0009
Effects specification				
R-Squared	0.912737	Mean Dependent Var.		4.718608
Adjusted R-Squared	0.866946	S.D. Dependent Var.		4.587901
S.E. of regression	1.673512	Akaike info criterion		4.135209
Sum squared resid	565.7298	Schwarz criterion		5.427984
Log Likelihood	-531.8898	Hannan-Quinn criter.		4.652063
F-statistic	19.93246	Durbin-Watson stat.		2.466097
Prob (F-statistic)	0.000000			

From the data processing above, it is known that the resulting Prob (F-statistic) value is <0.05. This indicates that ROA, DAR, CR, and inflation simultaneously have a significant effect on FD. It is also known that the simultaneous regression model has a determinant coefficient of 91.2737% which indicates the independent variables in this study determine 91.2737% of the value of the dependent variable, and the remaining 8.7263% is influenced by other variables outside those tested in this study. From the processing results above, the model formed is as follows:

FD = 2,41222 + 24,29214ROA – 6,914314DAR + 0,558714CR + 50,54381Inflation

Partial testing (t-Test) will be carried out for all independent variables. The following is for the results of processing the correlation data between the independent variables and the dependent variable.

Table 7 Correlation test

Independent Variable	Correlation
ROA	0.617404
DAR	-0.455221
CR	0.394211
Inflation	0.046442

From the test above, it is known that ROA has a strong positive relationship. While DAR has a weak negative relationship. The other independent variables, namely CR and inflation, have a weak positive relationship.

After conducting a correlation test to see the relationship between the independent variables and the dependent variable, the next step is to look at the effect of each independent variable on the dependent variable.

The following is a summary of the results of the t-Test for each variable in one table.

Table 8 t-Test

Variable	Coefficient	Std.error	t-statistics	Prob.
ROA	21.85008	4.230379	5.165042	0.0000
DAR	-5.784997	1.593552	-3.630254	0.0004
CR	0.759632	0.193739	3.920907	0.0001
Inflation	42.64043	22.01350	1.937013	0.0541

From the testing results above, it is known that ROA and CR have a positive influence on FD as evidenced by a Prob. value <0.05 and a positive coefficient so that H1 and H3 are accepted. Whereas DAR has a negative effect on FD as evidenced by a Prob. value <0.05 and a negative coefficient so that H2 is accepted. For inflation, it was found that it had no effect on FD as evidenced by a Prob. value > 0.05 so that H4 was rejected.

Discussion

Effect of profitability ratio on financial distress

From the results of the t-test between profitability ratio (ROA) and financial distress (FD), ROA has a Prob. Value of 0.0000 which is lower than 0.05 and also a positive correlation as shown in Table 7, hence H1 is accepted and ROA have a positive effect on FD. This indicates that the higher the ROA will have an impact on the increase in the value of FD.

This means that the higher the profitability ratio, the higher the financial distress indicator which is proxied as the Z-Altman score, which means that the higher the profitability ratio, the healthier the company. This supports the explanation by Christine et al. (2019) which states that the lower the profits a company gets, the higher the possibility for a company to go bankrupt, and Ingamal (2021) states that the higher the level of profitability a company gets, the more likely the company is to avoid financial difficulties.

From the analysis above, it can be concluded that the higher the profitability ratio of a company, the healthier the company's financial condition, which causes the company to be far from financial distress. This is because the high profits that the company achieves will normally have an impact on higher cash inflows that can be used to pay the company's debts.

Effect of leverage ratio on financial distress

From the results of the t-test between leverage ratio (DAR) and financial distress (FD), DAR has a Prob. Value of 0.0004 which is lower than 0.05 and also a negative correlation as shown in Table 7, hence H2 is accepted and DAR have a negative effect on FD. This indicates that the higher the DAR will have an impact on the decrease in the value of FD.

This means that the higher the leverage ratio, the lower the financial distress indicator which is proxied as the Z-Altman score, which means that the higher the leverage ratio, the less financially sound a company is, which may lead to financial distress. This is supported by Finishtya (2019) which states that the higher the level of corporate debt, the less likely creditors will be able to re-fund, which can lead to a lack of money and lead the company to financial difficulties. This is also supported by Desiyanti et al. (2019) which states that the higher the debt raises the obligation to pay interest and principal which if the company's operations cannot be paid it will cause financial losses or difficulties.

From the analysis above, it can be concluded that the higher the leverage ratio of a company, the more unhealthy the company's financial condition will be, which causes the company to approach financial distress. This is due to the high level of debt owned by the company, of course, higher cash inflows are also needed to be able to pay off the debt, therefore the company's focus will be more towards paying off obligations rather than using the money to improve operations.

Effect of liquidity ratio on financial distress

From the results of the t-test between liqudity ratio (CR) and financial distress (FD), CR has a Prob. Value of 0.0001 which is lower than 0.05 and also a positive correlation as shown in Table 7, hence H3 is accepted and CR have a positive effect on FD. This indicates that the higher the CR will have an impact on the increase in the value of FD.

This means that the higher the liquidity ratio, the lower the financial distress indicator, which is proxied as the Z-altman score, which means that the higher the company's liquidity ratio, the healthier the company's finances. This is in line with Inggamal (2022) which states that the higher a company's ability to pay debts, the healthier the company will be financially.

From the analysis above, it can be concluded that the higher the liquidity ratio of a company, the healthier the company's financial condition, which causes the company to move away from financial distress. This is because a high liquidity ratio will result in high short-term assets or resources that can be used to pay off company debts that are nearing maturity.

Effect of inflation on financial distress

From the results of the t-test between inflation (Inflation) and financial distress (FD), inflation has a Prob. Value of 0.0541 which is higher than 0.05, hence H4 is rejected and inflation does not have an effect on FD. This indicates that the higher the inflation will have an impact on the increase in the value of FD.

This means that inflation will not affect the financial health of a company so it will not cause financial distress. This is in line with the explanation of Irmayanti and Armuni (2020) which states that inflation has no effect on financial distress because the inflation rate in the study period tends to be stable.

From the analysis above, it can be concluded that inflation has no effect on increasing or decreasing the possibility of a company experiencing financial distress. This can be caused by the stable inflation rate during the study period, besides that it can also be caused by an increase in the cost of the company's products which can also be followed by an increase in selling prices so that it does not have a large impact on companies in the manufacturing sector.

Conclusions

From the results of the above study, it was found that the best panel data regression model to use is the Fixed effect model. From the model used, it can be concluded that the profitability ratio and liquidity ratio are independent variables that have a positive influence on financial distress indicators. Leverage ratio is the only independent variable that has a negative influence on financial distress indicators. While inflation is the only independent variable that has no effect on the financial distress indicator. It is also known that the profitability ratio, liquidity ratio, leverage ratio, and inflation simultaneously affect indicators of financial distress.

This study has several limitations, namely the population used is limited to one industry, namely the manufacturing industry and is only limited to Indonesia. The research data that was conducted was also limited to 2019-2021 in which the Covid-19 outbreak occurred which caused an economic downturn in Indonesia and specifically also affected the manufacturing industry. This research can contribute to investors and company management in carrying out the decision making process by paying attention to the company's financial ratios and inflation in Indonesia and also contribute to developing knowledge in the field of finance study as it enhance the causality of financial distress. For future research, it is suggested to use qualitative variables such as corporate governance and corporate social responsibility disclosures to see the impact on the company's financial condition.

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