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# Comparison of financial distress between manufacturing companies in the ceramic, porcelain, and glass sector with agriculture sector

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## ABSTRACT

Rapid technological development, high economic growth rates and the development of complex demands have resulted in the emergence of various industries that only answer the needs of society. The purpose of the study is to determine the influence of independent variables, namely Liquidity, Activity and Leverage, on Dependent variables, namely Financial Distress of Agricultural Sector Companies and Ceramics, Glass and Porcelain Subsector Companies in 2017-2020 and compare the level of Financial Distress between Agricultural Sector Companies and Ceramics, Glass and Porcelain Subsector Companies using the Altman Z-Score method. The population to be studied in this study is all Agricultural Sector Companies and Ceramics, Glass and Porcelain Subsector Companies listed on the Indonesia Stock Exchange in 2017-2020. The sampling technique was selected using the purposive sampling method, obtaining observation data of 100 data. The analysis technique used in this study is multiple linear regression. Coefiseien determination, F test and t-test as measuring instruments were used. The study results showed that Liquidity does not affect Financial Distress, Activity, and Leverage affect Financial Distress, and the level of Financial Distress of Ceramics, Glass and Porcelain Subsector Companies is better than Agricultural Sector Companies. Profitability is important to measure a company's ability to generate profits. In this study, the level of profitability of each company during 2017-2020 varies; some companies experienced an increase in profit and a decrease in profit, this will certainly affect the results of research on the independent variable profitability.



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## Introduction

Rapid technological developments, high economic growth rates and complex demand developments have resulted in the emergence of various industries that only answer the needs of society. This makes trade competition even more intense, especially between similar companies. Companies that can compete will be able to maintain their business continuity (going concerned) ((Halim, 2021); (Akbar & Ridwan, 2019)). However, the company that loses the competition will go bankrupt. Several studies have identified several companies that will experience bankruptcy, such as (N. Putri & Merkusiwati, 2014), (Kariani & Budiasih, 2017) and (Susilowati & Fadhillah, 2019). They analyzed the signs of companies experiencing financial

distress through the company's financial condition. The company's bankruptcy risk can be seen and measured through the financial statements by analyzing the ratios in the financial statements issued by the company concerned. Research on bankruptcy is important, even for large companies. The bankruptcy prediction model is very useful in most companies as an early warning system that will affect decision-making for interested parties to a company so that the potential losses investors face can minimize (Gamayuni, 2011).

Based on data from the Ministry of Finance as of December 31, 2018, several SOEs in various industries and agriculture recorded low values. This index is a measurable control tool over the financial status of a company experiencing financial difficulties. The numbers that indicate a company is in the red zone or financial distress are below 1.23 for manufacturing companies and 1.1 for non-manufacturing corporations. Finance Minister Sri Mulyani Indrawati said that SOEs in the industrial and agricultural sectors are companies that are vulnerable to bankruptcy due to poor scores on this index (Rika, 2019). Based on previous studies, there are differences in research results on the prediction of financial ratios such as liquidity, activity, and leverage ratios to the possibility of experiencing financial distress. (Susilowati & Fadhillah, 2019) shows that liquidity ratios affect financial distress. Meanwhile, the investigation of (Kariani & Budiasih, 2017) obtained different research results, namely, liquidity does not involve financial distress. (Susilowati & Fadhillah, 2019) states that the leverage ratio affects financial distress. Ratio leverage does not affect financial distress (N. Putri & Merkusiwati, 2014). (Susilowati & Fadhillah, 2019) proved that the percentage of activities influences financial distress. However, (Kariani & Budiasih, 2017) obtained different research results, namely, the ratio of activities does not affect financial distress.

There needs to be more research on financial distress. Previous research that examined financial distress was more widely analyzed in certain industry sectors. Rarely do studies identify whether the approach used to measure financial distress differs from industry to industry. For this reason, this study tries to fill the gap by analyzing financial distress in different industries, namely ceramic, porcelain and glass sub-sector companies and agricultural sector companies. Therefore, the purpose of this study is to determine the effect of independent variables, namely Liquidity, Activity and Leverage on the dependent variable, namely Financial Distress of Agriculture Sector Companies and Ceramic, Glass and Porcelain Subsector Companies in 2017-2020 and compare the level of Financial Distress.

### Theoretical Review

The signal theory explains that companies provide information about financial statements to external parties because there is information asymmetry between the company and external parties, which can be overcome by reducing the asymmetry of the information, namely by providing signals to external parties in the form of information about the company's activities (Purwaningsih & Aziza, 2019). This information provides signs or signals to stakeholders about the company's concern for the surrounding environment. It provides information because it is based on regulatory provisions and provides more information for stakeholders. These signs or signals are expected to be received positively by the market so that they can affect the company's market performance which is reflected in its stock market price ((Purwaningsih & Aziza, 2019); (Muliahati, 2022)).

The financial difficulties of an enterprise can be seen and measured through its financial statements. Financial statements published by the company are one of the sources of information about the company's financial position, performance and changes in the company's financial position, which are very useful in supporting the right decision-making. In this case, financial ratios are used to predict the occurrence of financial distress. (Kariani & Budiasih, 2017) stated that the monetary balance shows the company's financial performance. Financial performance indicators as predictions in predicting future economic conditions are used as indicators in research on bankruptcy, failure, and financial difficulties ((Ginting, 2017); (Sopian & Rahayu, 2017)).

According to ((Setyowati & Sari, 2019); (Widhiari & Merkusiwati, 2015)) Financial distress is a deterioration in financial condition that occurs before bankruptcy or liquidation. (G. W. Putri & Aminah, 2019), financial distress starts from the inability to fulfill its obligations, especially short-term obligations, including liquidity obligations, and also includes duties in the solvency category. Companies experiencing financial distress can be seen from the events in the company, namely dividend reductions, closed factories, losses, layoffs, the retreat of the company's CEO and the stock price that has dropped sharply (G. W. Putri & Aminah, 2019).

The company's bankruptcy will result in various losses for shareholders, employees and the national economy. Bankruptcy is the worst financial distress. Financial distress is a company's financial condition decline before it reaches bankruptcy (N. Putri & Merkusiwati, 2014). Financial distress is measured using Earning Per Share (EPS) because EPS can describe how much a company can generate a profit per share that will be distributed to shareholders (N. Putri & Merkusiwati, 2014).

### **Relationship of Liquidity to financial distress**

Liquidity is a ratio that measures a company's ability to meet its short-term obligations ((Nuriasari, 2018); (Purba & Marlina, 2019); (Prabowo & Sutanto, 2019)). The more liquid a company is, the better the company's financial condition. Prediction of financial distress itself can be done using financial ratios. The liquidity ratio is one of the financial ratios. Companies with a high level of liquidity can avoid financial distress. Therefore, the company gives a signal to investors to invest in the company. Thus, companies that have a high level of liquidity will be able to avoid financial distress. (Susilowati & Fadhillah, 2019) shows that obtaining liquidity results affects financial distress. (G. W. Putri & Aminah, 2019) supported the study that obtained liquidity results concerning financial distress. From this description and the consequences of previous research, a hypothesis can be concluded as follows:

H1: Liquidity involves financial distress.

### **The relationship of activity to financial distress**

Activity is a ratio that measures how far assets have been used in the company's activities and shows the effectiveness of the turnover of all company assets. If the company cannot maximize the turnover of assets owned, the possibility of sales will decrease. If this decline occurs continuously, it can result in financial distress. If the activity is not in good condition, the company should postpone submitting financial statements to the public not to attract investors to invest in the company. Thus, companies that have a poor level of activity will have an impact on financial distress risk. Based on (Susilowati & Fadhillah, 2019), the results of activities affecting financial distress were obtained. (G. W. Putri & Aminah, 2019) supported the study and received the results of activities involving financial distress. From this description and the effects of previous research, a hypothesis can be concluded as follows:

H2: Activity involves financial distress.

### **The relationship of leverage to financial distress**

Companies running their business only use their capital, but some use debt. Leverage arises from using company funds derived from third parties in the form of debt. The company's high debt level will make the leverage ratio high as well, and it will have an impact on the risk of financial distress which will be higher. Therefore, third-party funds must be able to provide optimal results to give investors a positive picture. Thus, companies with a high leverage ratio will impact financial distress risk. (Susilowati & Fadhillah, 2019) shows that getting leverage results affects financial distress. The study is supported by research by obtaining leverage results concerning financial distress. From this description and the effects of the previous study, a hypothesis can be concluded as follows (Purwaningsih & Aziza, 2019):

H3: Leverage affects financial distress.

### **Comparison of financial distress of manufacturing companies in the ceramic, porcelain and glass sub-sectors is better than the agricultural sector**

One of the companies in Indonesia that continues to strive to increase production is a Manufacturing Company (Perindustrian, 2018). One of the manufacturing company sectors listed on the Indonesia Stock Exchange is the basic and chemical industry sector of the cement, porcelain ceramics and glass sub-sectors. Increased production will generate income for an enterprise so that the company can get the expected profit level. Thus the company will be relieved of financial distress. The global financial crisis harmed the agribusiness sector in Indonesia. This is due to global demand, and commodity prices tend to weaken. Weakening economic conditions and the global crisis can affect agribusiness companies' performance ((Setiawan et al., 2015); (Nurfajrina, 2016)). When the company experiences many obstacles, the company will gradually be in a state of financial distress. From this description, a hypothesis can be drawn as follows:

H4: financial distress manufacturing companies sub-sector ceramics, porcelain and glass are better than the agricultural sector.

Previous research that examines financial distress is mostly analyzed in certain industry sectors. Rarely has any research identified whether the approach used to measure financial distress differs from one industry to another. With this, there needs to be more research on financial distress. Thus, this study tries to fill the gap by analyzing financial difficulties in various industries, namely ceramic, porcelain and glass subsector companies and agricultural sector companies. Therefore, the purpose of this study is to determine the effect of independent variables, namely Liquidity, Activity and Leverage on the dependent variable, namely Financial Distress of Agricultural Sector Companies and Ceramic, Glass and Porcelain Subsector Companies in 2017-2020 and compare the level of Financial Distress.

## Method

The research method used is quantitative research method, which according to (Sugiyono, 2019), research with quantitative methods is a research method based on the philosophy of positivism, quantitative methods are used in research with a determined population or sample, data is collected using research instruments, quantitative or statistical data analysis is carried out, aimed at testing predetermined conjectures. The population in this study specializes in manufacturing companies of the ceramic, porcelain and glass sub-sectors and the agricultural sector. The samples in this study were selected using the purposive sampling method with the following criteria: first, Listed on the Indonesia Stock Exchange in 2017-2020. Second, have annual financial statements in Rupiah currency units. Third, have a complete annual financial report according to the needs of the variables in this study.

The dependent variable in this study is Financial Distress. According to ((Antikasari& Djuminah, 2017); (Fitriyah & Haryati, 2013)), Financial Distress is defined as a method for calculating the percentage of a company's bankruptcy rate using an indicator. Financial Distress in this study used the Altman Z-Score method using the following components of the ratio formula:

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$$

Information:

Z: Overall Index (Overall index)

X1: Working Capital to Total Asset (Modal Kerja / Total Aset)

X2: Retained Earning to Total Assets (Laba Ditahan / Total Aset)

X3: Earnings Before Interest and Taxes to Total Assets (EBIT / Total Assets)

X4: Market Value of Equity to Book Value of Total Liabilities (Nilai Pasar Modal Sendiri / Nilai Buku Total Kewajiban)

X5: Sales to Total Assets (Penjualan / Total Aset)

The resulting prediction of the Z-Score (Overall Index) value is as follows Table 1.

**Table 1.** Z-score Cut-off Points

Value Cut-off	Information
$Z < 1,18$	shows indications the company is dealing with a serious threat of bankruptcy; this needs to be followed up by company management so that bankruptcy does not occur
$1,18 < Z < 2,99$	Shows that the company is in a vulnerable condition. In this condition management must be careful in managing the company's assets so that bankruptcy does not occur ( <i>Grey Area</i> )
$Z > 2,99$	Shows the company is in a healthy financial condition and has no problems with finances ( <i>non-bankrupt company</i> )

The first Independent Variable used in this study, Liquidity (CR), is a ratio that can measure the company's current assets' ability to repay its short-term debt. Indicators in the measurement of liquidity are as follows:

$$CR = (\text{Current asset}) / (\text{current liabilities})$$

The second independent variable is the Activity ratio, which measures the effectiveness and efficiency of a company managing the company's assets. The indicators in measuring activity are as follows:

$$TATO = \text{Sales} / (\text{Total Sales})$$

The third independent variable is Leverage arising from the use of company funds derived from third parties in the form of debt. The indicators in leverage measurement are as follows:

$$LEV = (\text{Total liabilities}) / (\text{Total Assets})$$

According to Altman's Z-Score method, a company with a healthy financial condition and no financial problems (financial distress) when the Z-Score obtained are more than 2.99 or  $Z > 2.99$ . If a company has a Z-Score of more than 1.81 to less than 2.99 ( $1.81 < Z < 2.99$ ) indicates that the company is in a state of bankruptcy proneness. Companies with a Z-Score of less than 1.81 ( $Z < 1.81$ ) show that the company is facing a serious threat of bankruptcy. Multiple linear regression tests were used to analyze the study. The following equation can determine the multiple linear regression model:

$$Y = \alpha + \beta_1 CR + \beta_2 TATO + \beta_3 LEV + e$$

Information:

Y= Bound variable (Financial distress  $\alpha$  = constant

CR= liquidity

TATO= activity

LEV= leverage

$\beta_{1,2,3}$ = Regression coefficient

e= error term

## Results and Discussions

This study uses secondary data types in the form of financial statements, manufacturing companies in the ceramic, porcelain and glass sub-sectors with the agricultural sector listed on the Indonesia Stock Exchange in 2017-2020. The financial statements used are financial statements from 2017 to 2020. Based on the selection of samples using purposive sampling obtained by 25 selected companies.

Manufacturing companies of the ceramics, porcelain and glass sub-sector with the agricultural sector listed on the Indonesia Stock Exchange in 2017 – 2020 totaled 25 companies with details of 17 agricultural sector companies and eight ceramic, porcelain and glass sub-sector companies. The companies that did not publish the annual financial statements and reports consecutively during 2017-2020 totaled seven companies. The number of companies that obtained the research criteria and were sampled. On this basis, 100 observational data were obtained. Data was collected with all research variables, including liquidity (CR), activity (TATO), leverage (LEV) and financial distress.

Based on the results of descriptive statistics, the liquidity variable shows an average value (mean) of 2.189829, with the smallest (minimum) value of 0.0337; the largest value (maximum) is 40.0520, with a standard deviation value of 4.7714918. The Activity Variable shows a mean value of 0.694576, with the smallest (minimum) value of 0.0084; the largest (maximum) is 3.8782, and the standard deviation value of 0.6957704. Variable Leverage shows a mean value of 0.514256, with the smallest (minimum) value of 0.0476; the largest value (maximum) is 1.9253, standard deviation value of 0.2945141. The financial distress variable shows an average value (mean) of -0.16069, with the smallest (minimum) value of -4.5487; the largest value (maximum) is 5.5310, standard deviation value of 1.6847689.

**Table 1.** Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Liquidity (CR)</b>	100	.0337	40.0520	2.189829	4.7714918
<b>Activities (TATOs)</b>	100	.0084	3.8782	.694576	.6957704
<b>Leverage (LEV)</b>	100	.0476	1.9253	.514256	.2945141
<b>Financial Distres (Z)</b>	100	-4.5487	5.5310	1.816756	1.6847689

**Table 2.** Multiple Linear Regression Tests

Type	B	Std. Error	T	Sig.
(Constant)	3.364	.151	22.338	.000
Liquidity (CR)	-.001	.013	-.080	.936
Activities (TATOs)	1.081	.084	12.875	.000
Leverage (LEV)	-4.463	.208	-21.485	.000

**Table 3.** Altman Z-Score Test

Variable	Coefficient	Agriculture Sector	Ceramics, Glass and Porcelain Subsector
X1	1,2	0,4434	0,5756
X2	1,4	0,0665	0,0491
X3	3,3	(0,0001)	0,0429
X4	0,6	0,3786	1,3288
X5	0,999	0,5712	0,9567
Z-Score		1,4227	2,6541

Based on table 2 above, it can be seen that partial testing of liquidity does not significantly affect financial distress; this is evidenced by a significant value of  $0.936 > 0.05$ , so it can be concluded that liquidity does not affect financial distress. Thus, H1 was rejected. To test the second hypothesis that partial testing Activity has an effect and is significant to financial distress, this is evidenced by a significant value of  $0.000 < 0.05$ , and it can be concluded that activity has an effect and is significant on financial distress. Thus, H2 is accepted. While the results of testing the third hypothesis that leverage has an effect and is significant on financial distress are evidenced by a significant value of  $0.000 < 0.05$ , it can be concluded that leverage has an effect and is significant on financial distress. Thus, H3 is accepted.

Based on table 3 above, it can be seen that the financial distress of manufacturing companies in the ceramic, porcelain and glass sub-sector is better than the financial distress of agricultural sector companies; the Z-Score of the Ceramics evidence this. Glass and Porcelain Subsector Company of 2.6541 (vulnerable conditions / a gray area) and the Z-Score of Agricultural Sector Companies of 1.4227 (bankruptcy conditions) then it can be concluded that the financial distress of manufacturing companies in the ceramic sub-sector, porcelain and glass are better than the financial distress of agricultural sector companies. Thus, H4 is accepted.

#### **The effect of liquidity on financial distress**

The results of this study show that liquidity testing has a negative and insignificant effect on financial distress. This means that there is no effect of liquidity up or down on the company on financial distress. Liquidity is a ratio that measures a company's ability to meet its short-term obligations. The more liquid a company is, the better the company's financial condition. The results showed that liquidity does not affect financial distress because even though a company has a large amount of liquidity, there is no guarantee that the company is safe from the threat of experiencing company financial difficulties. Possessing unneeded current assets usually causes companies to have a high current ratio, so they do not provide income. Also, a very large amount of funds is immersed in the form of uncollectible receivables. Receivables, which later, if they are to be used to pay the company's lender obligations, require much time and vary between each company to convert receivables into a form of cash that will be used to finance the company's obligations. So any amount of liquidity of the company will not affect the possibility of the company experiencing financial distress (Kariani & Budiasih, 2017). The results of this study a direction was contrary to the theory proposed by (Rabuisa et al., 2018), where it is said that if a company continues to be in a condition of low current ratio (liquidity), the company is likely to experience financial distress. However, this study proves the theory from (Rabuisa et al., 2018) that the current ratio (liquidity) has a positive but insignificant effect on financial distress even though the research results have a different direction. The results of this study are under the research of (Kariani & Budiasih, 2017). Obtaining liquidity results does not affect financial distress. Previous research also obtained liquidity results that did not affect financial distress (N. Putri & Merkusiwati, 2014).

#### **Effect of activity on financial distress**

The results of this study show that partial testing activity has a positive and significant effect on financial distress. This means that the higher the activity, the higher the financial distress. The activity ratio will be better if there is a decent balance between sales and various elements of assets, such as inventories and other company assets because this will influence the company's financial distress. In contrast, if the activity ratio is not balanced, the possibility of experiencing financial distress will be higher. If inventory grows faster than sales, profits will fall; in other words, when company sales slow down while inventory continues to grow, prices will usually decrease. This price drop will eventually lead to lower sales revenue and profits. Companies with low profits cannot attract investors to buy shares of the company, and this can be detrimental to the company because it is more difficult to obtain funds from outside parties; these circumstances may indicate the possibility of experiencing the company's financial distress will be higher, in other words, the higher the activity, the chances of financial distress will also increase (Susilowati & Fadhillah, 2019). This study's results follow (Susilowati & Fadhillah, 2019) to obtain the results of activities affecting financial distress. The research was supported by (G. W. Putri & Aminah, 2019), who obtained the results of activities affecting financial distress.

#### **The effect of leverage on financial distress**

The results of this study show that partial testing of leverage has a negative and significant effect on financial distress. This means that the higher the leverage, the lower the financial distress. The use of high debt is indeed quite risky for the company because the company will be charged the interest expense that must be paid. Still, if the funds derived from the debt can be used properly and effectively, such as business expansion or increasing product promotion, it will be able to improve the company's performance which will have an impact on the less likely the company is to experience financial distress (Susilowati & Fadhillah, 2019). The results of this study are by (Susilowati & Fadhillah, 2019) to obtain the results of leverage affecting financial distress. (G. W. Putri & Aminah, 2019) supported the research and obtained leverage results affecting financial

distress. The results of this study show that the financial distress of manufacturing companies in the ceramic, porcelain and glass sub-sectors is better than the financial distress of agricultural sector companies. One of the companies in Indonesia that continues to strive to increase production is a Manufacturing Company (Perindustrian, 2018). One of the manufacturing company sectors listed on the Indonesia Stock Exchange is the basic and chemical industry sector of the cement, porcelain ceramics and glass sub-sectors. Increased production will generate income for an enterprise so that the company can get the expected profit level. Thus, the company will be relieved of financial distress. The global financial crisis harmed the agribusiness sector in Indonesia. This is due to global demand, and commodity prices tend to weaken. Weakening economic conditions and the global crisis can affect agribusiness companies' performance ((Setiawan et al., 2015); (Aljufri, 2022)). When the company experiences many obstacles, the company will gradually be in a state of financial distress. Based on the results of the study, the suggestions in the upcoming research agenda are as follows: first, adding control variables such as profitability can make a broader picture of financial distress in a company. Second, make a comparative analysis between other sector companies outside the agricultural sector and the ceramics, glass and porcelain subsectors according to the problems and phenomena of each sector. The third, compares a company's financial distress level using methods other than the Altman Z-Score, such as the Springate or the Grover method.

## Conclusions

Based on the results of research that has been carried out by hypothesis testing, get the following results. First, Liquidity does not affect financial distress, and the first hypothesis is rejected. Secondly, Activity has an effect and is significant on financial distress; the second hypothesis is accepted. Third, Leverage has a significant effect on financial distress; the third hypothesis is accepted. Fourth, the financial distress of manufacturing companies in the ceramic, porcelain and glass sub-sector is better than that of agricultural sector companies. In this study, there are limitations on independent variables of profitability. Profitability is important to measure the ability of a company to make a profit. In this study, each company's profitability level during 2017-2020 was different; several companies experienced an increase in profits and a decrease in profits, which would affect the results of research on independent profitability variables.

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