

## Analysis of Factors that Influence Financial Distress Conditions using the Debt Service Coverage Ratio Approach (Case Study of the Food and Beverage Industry Listed on the Indonesian Stock Exchange Before and During Covid-19)

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### Abstract

*Covid-19 condition is known to have had a major impact on the financial performance of issuers. The food and beverage industry is one of the mainstay manufacturing sectors in making a major contribution to national economic growth. The data used in this study was pre-covid data, year 2018 until 2021 during covid. The method used in this study is the Debt Service Coverage Ratio Pranowo et al. (2010). The analysis used in this research is descriptive analysis and panel data regression. The results of this research were that 26 company experienced a decrease in distress, 26 company experienced an increase in Profitability, 26 company experienced an increase in Liquidity, 26 company experienced an increase in Efficiency, 26 company experienced a decrease in Leverage, 26 company experienced a decrease in Solvency. Factors that show a significant influence on financial distress in the period before Covid-19 are Efficiency, Liquidity. The factor of increasing efficiency also influences the reduction in the occurrence of financial distress. The factor of increasing liabilities also influences the increase in the occurrence of financial distress. Factors that show a significant influence on financial distress during Covid-19 are Solvability and Efficiency. This shows that during Covid-19, the increase in the value of debt will influence the tendency to increase the occurrence of financial distress. The decline in the value of income during Covid-19 also influenced the increase in financial distress. Advice to investors to be more selective in choosing food and beverage issuers as a place to invest during Covid-19. One important consideration is that investors focus more on factors that have a significant influence on Liquidity, Efficiency, Solvency.*

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## 1. INTRODUCTION

*Financial Distress* is defined as the condition of the issuer being unhealthy or experiencing financial problems [1]. [2] financial distress is a situation where the issuer's operating cash flow is inadequate to pay off current obligations (such as trade payables or interest expenses) and the issuer is forced to take corrective action. Financial distress can be a signal of worsening financial performance [3]. [4] explains financial distress as a stage of decline in financial conditions that occurs before bankruptcy or liquidation. [5] explains that financial distress occurs when there is a sharp decline in the issuer's performance and value. [6] defines Bankruptcy as a situation where the issuer fails or is no longer able to fulfill all obligations of the lender (debtor) because the issuer lacks funds to run and continue its business so that the achievement of economic goals is not met. [7] said an issuer is considered to be experiencing financial distress when one of these conditions is

met, namely: an issuer that experiences losses for three consecutive years or more, an issuer that has negative cash flow for three years or more.

There are many methods for measuring issuers experiencing financial distress, including Altman, Springate, Zmijewski, Olhson, and Grover. [8] explains that the Altman Z-Score proxy can be used to determine the financial condition of issuers in the UK, but it still has to be adjusted to the country and type of issuer. Aziz's statement was reinforced by [9] which states that the Altman proxy can still be used but needs refinement in order to get better results, however in Indonesia there is an approach that is considered comprehensive, namely corporate financial distress using the debt service coverage ratio proxy [10].

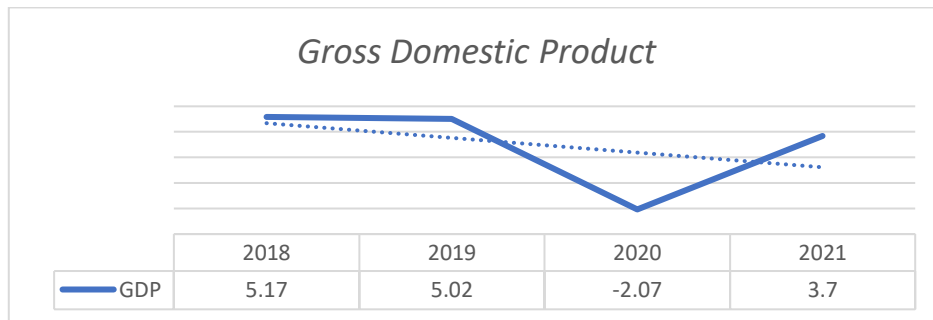
This is because it contains several financial ratios, namely 1) profitability, 2) liquidity, 3) efficiency, 4) solvability, and 5) leverage. [11] emphasized that profitability, liquidity, efficiency, solvency, and leverage have a significant influence on financial distress. [12] conducting research on Condition Analysis *Financial Distress* in the Indonesian Agricultural Sector listed on the BEI in the 2006-2010 period using the panel data regression method by looking at the value *Debt Service Coverage Ratio* (DSCR) which is calculated using six financial ratios as internal factors and the subprime mortgage crisis as an influencing external factor. [13] using the DSCR model as a determinant of company financial distress in Ethiopia. Research in Indonesia itself has proven a lot about the use of the DSCR model as a determinant of financial distress, as done by [14].

The recent phenomenon of financial distress (Financial Distress) in listed issuers or companies listed on the Indonesia Stock Exchange occurred when an increase in cases of the Covid-19 pandemic began to occur in the city of Wuhan, China, which surprised business people in early 2020, which created stability. the finances of food and beverage issuers are disrupted. This made China implement a lockdown policy to prevent the spread of the Covid-19 virus. COVID-19 is an infectious disease caused by a type of corona virus. The initial outbreak occurred in Wuhan City, China in December 2019. COVID-19 is an abbreviation for Corona Virus Disease-2019 [15]. The International Monetary Fund (IMF) stated that the COVID-19 outbreak created a severe economic crisis because it affected several economic sectors and The COVID-19 outbreak has affected several economic sectors related to needs and survival, such as the food and agricultural sectors [16].

An extension of this research relating to predicting an issuer's financial distress has been carried out by including other variables such as the issuer's sensitivity to macroeconomic factors which are expected to play a major role in differentiating between issuers experiencing financial difficulties and issuers not experiencing financial difficulties before and during Covid-19. Issuer external factors are factors outside the issuer's control that can influence the possibility of the issuer experiencing financial difficulties before and during Covid-19, for example Indonesia's Gross Domestic Product and Indonesia's Prompt Manufacturing Index.

The impact of the Covid-19 virus has resulted in a decline in Indonesia's Gross Domestic Product and Prompt Manufacturing Index due to large-scale social restrictions (PSBB) nationally and in a number of countries implementing activity restrictions. This activity restriction policy was a massive blow to cash flow and business operations as the outbreak spread rapidly, causing some employees to work from home, while others became victims of layoffs (COVID-19 2020). [17] stated that the effect of these restrictions had an impact on reducing economic growth. The conditions that occurred were also made worse by supply chain disruptions, which increased the prices of food and beverage industry products by five to seven percent [18] so that the food and beverage industry has become one of the mainstay manufacturing sectors in making a major contribution to national economic growth [19] and Indonesia's economy is largely driven by increased household

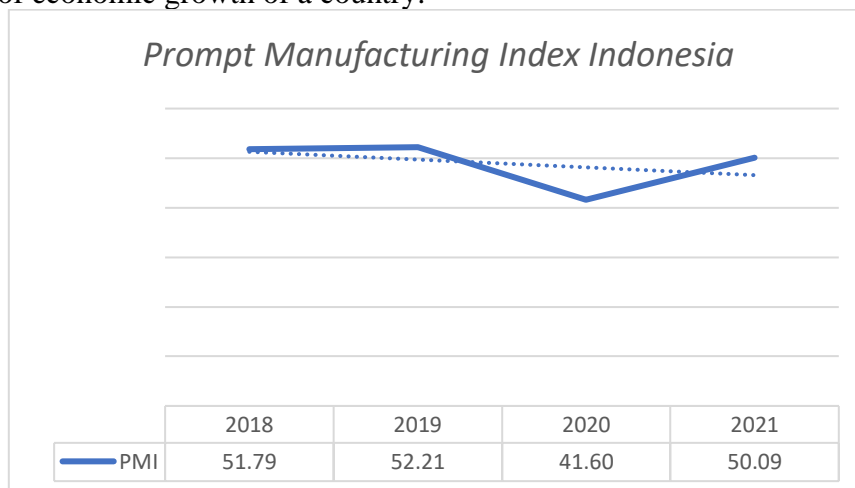
consumption and one of the industries that is growing rapidly is the food and beverage industry [20].



Source: Central Statistics Agency 2021

Figure 1. Growth of Gross Domestic Product (in percent)

Figure 1. provides information that the growth of Gross Domestic Product in Indonesia decreased in 2018 by 5.17% and in 2019 by 5.02% due to the global economic slowdown, while Gross Domestic Product in Indonesia experienced an economic recession in 2020. Minus economic growth during the pandemic was -2.07%, then in 2021 it was 3.7% due to a slowing surge in Covid-19 cases and reducing the death rate which will have an impact on easing large-scale social restrictions nationally, then the food and beverage industry provides contribution of 37.77 percent to national Gross Domestic Product in the first quarter of 2022 (Ministry of Industry 2022). [21] explains that economic growth, which is described as Gross Domestic Product, has a big role in business growth in a country in one period.[22] explained that Gross Domestic Product plays a major role in the rate of economic growth of a country.



Source: Bank Indonesia 2021

Figure 2. Prompt Manufacturing Index Indonesia

Figure 2. The Indonesian Prompt Manufacturing Index provides an overview of the Indonesian Prompt Manufacturing Index in 2018 of 51.79, indicating that the Indonesian economy is in a healthy and developing condition or the Indonesian economy is in a state of expansion, after 2019 it was 52.21, indicating that the Indonesian economy is in a healthy and developing condition or the Indonesian economy is in a state of expansion, but in 2020 it indicates that the Indonesian economy is in a weak state or the Indonesian economy is in a state of contraction, while in 2021 it is 50.09 experiencing a healthy and developing state or the Indonesian economy is in a state of expansion. Joseph et al. (2011)

explained that the Indonesian Manufacturing Prompt Index can be used as a measurement related to the optimistic attitude of business people regarding the prospects for the national economy in the next period. The measurement of the Indonesian Manufacturing Prompt Index is obtained from several pieces of information: a) number of new orders, b) production output, c) number of workers, d) product delivery time, e) availability of supporting goods, and f) improvement [1].

If Covid-19 is not handled properly, it will affect the performance of the manufacturing sector, where a decrease in demand causes production to adjust to market demand, moreover the implementation of Large-Scale Social Restrictions can hamper sales and net profits obtained by the manufacturing sector. Due to shrinking demand, production will decrease. The same condition is also experienced by the food and beverage industry (kontan 2020). As a result of the Covid-19 virus, several issuers experienced a decrease in their net profit in 2020.

From 2018 to 2021, several issuers in the food and beverage sub-sector industry experienced a decline in net profit every year. In 2020, the largest decrease occurred in JAWA issuers with a decrease of 307,643 billion rupiah compared to 2019 so that net profit in 2019 was recorded at 282,699 billion rupiah. Apart from that, it was noted that MAIN, SGRO and ALTO issuers recorded a decrease in net profit in 2020. A decrease in net profit and a net loss condition is one of the early symptoms of issuers experiencing financial difficulties. Short-term difficulties that are temporary and not so serious, if not handled as quickly as possible, will become more severe and cause the issuer to be liquidated [4]. Based on this background, researchers are interested in conducting research with the title: Analysis of factors influencing Financial Distress conditions using the Debt Service Coverage Ratio approach (Case Study of the Food and Beverage Industry listed on the Indonesia Stock Exchange before and during Covid-19).

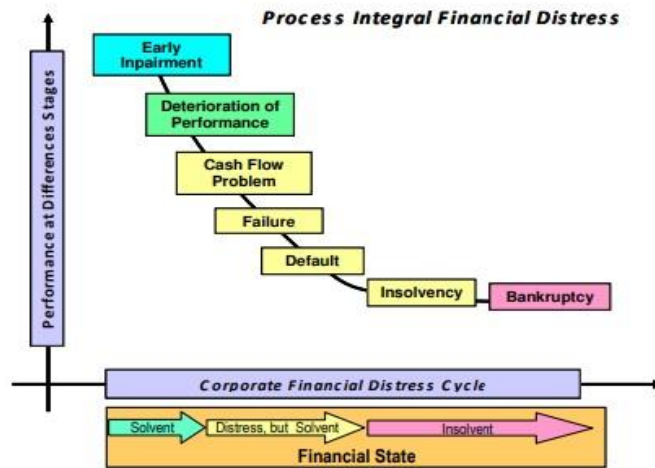
## 2. LITERATURE REVIEW

### a. Financial Reports

Harahap (2013) financial reports describe the financial condition and business results of an issuer at a certain time or certain period of time. The types of financial reports that are commonly known are balance sheets, profit and loss reports or business results, cash flow reports, reports of changes in financial position. financial report of the Indonesian Institute of Accountants (2015) in Financial Accounting Standards (SAK) no. 1 stated that financial reports are part of the financial reporting process and financial reports are a structured presentation of the financial position and financial performance of an entity. A complete financial report usually includes a balance sheet, profit and loss statement, statement of changes in financial position (which can be presented in various ways for example, as a cash flow statement, or funds flow statement), notes and other reports and explanatory material that are an integral part of the financial report .

### b. Financial Distress

Research by Pranowo et al. (2010) used the financial distress cycle concept modified from Outecheva (2007) as an instrument to identify issuers in order to know the signals of financial distress (Figure 2.1). This signal is obtained by using four stages as signs of whether the issuer is still able to run or is getting worse. The four stages included in the financial distress cycle are good campaign, early impairment, deterioration of performance, and cash flow problems.



**Figure 1. Financial distress cycle**

Source: Pranowo et al. (2010) modified from Outecheva (2007)

Damodaran (2001) states that the causes of issuer bankruptcy can come from internal or external sources of the issuer. The issuer's management must be able to identify more quickly the anticipated occurrence of financial distress which could lead to bankruptcy in the future in order to maintain the issuer. Ruster (1996) explains that an issuer is said to be good if the DSCR value is  $\geq 1.20$ . If the DSCR condition is in the range of 1.90-1.75, then the excess amount of cash flow should be collected to meet debt needs for some time to come. If the DSCR value ranges between 1.74-1.35, 50% of the excess cash flow should be allocated to the debt budget in the future. If the DSCR figure is in the range of 1.34-1.20, then 100% of the excess cash flow should be allocated to finance liabilities. Therefore, if an issuer's DSCR value is below 1.20 for more than two consecutive quarters, then the issuer is classified as a default payment or a signal of financial distress. Rodoni and Ali (2014) causes of financial distress in companies include:

- 1) Lack of capital, the flow of funds received from sales or collection of receivables compared to the expenditure of funds to finance the issuer's operations is not balanced or the expenditure is greater. So, what happens is that the issuer lacks funds to finance these operations and in the end the issuer is in an illiquid condition.
- 2) The large interest burden and debt, where the issuer managed to attract cash from outside, such as getting credit from the bank to cover the cash shortage. While the issuer's liquidity problem can be resolved, a new problem arises, namely, the obligation to pay the loan principal and loan interest. However, this is not too dangerous if the issuer can carry out risk management on the loans received and if the credit interest rate is lower than the issuer's ratio on assets.
- 3) Suffering losses, the income created by the company must be able to cover all costs incurred so that the issuer can create a net profit. Net profit is very meaningful for the issuer because it is capital for the issuer to be able to invest in the next period, so that it can increase the issuer's net worth and increase ROE (return on equity) to guarantee the interests of shareholders. The issuer's failure to balance income with the costs incurred will bring the issuer closer to a condition called financial distress.

c. Financial Ratios

Financial ratios explain the activity of comparing numbers in financial reports. This comparison is made between one component and another component in a financial report or between components in financial reports (Kasmir 2015). Financial ratios are

calculation results obtained from a comparison of one financial report item with other items that have a relevant and significant relationship (Harahap 2015). Munawir (2010) emphasizes financial ratios as an analytical tool to explain the relationship between one element and another in a financial report (Financial Statement). The financial ratios used in this research refer to research by Pranowo et al. (2010), Azizah (2019), namely:

1) Liquidity Ratio

Hery (2015) stated that liquidity value is related to the issuer's ability to settle its short-term obligations. Setianto and Pratiwi (2017) liquidity is related to the ability to cover short-term debt, and taking into account working capital so that the issuer can still operate. Ijaz et al. (2013) liquidity value can play a significant role in the health of an issuer's financial statements, namely the ability to pay the issuer's current assets with current liabilities. Fahmi and Irham (2015) define liquidity as the ability of an issuer to fulfill its short-term obligations in a timely manner.

2) Solvency Ratio

The solvency ratio is the issuer's ability to pay off short-term and long-term obligations with collateral for assets or wealth owned by the issuer if the issuer is liquidated or delisted (Kasmir 2012). Simanjuntak and Hutabarat (2014) A good issuer must have the ability to fulfill its short-term and long-term obligations. Restianti and Agustina (2018) explained that the debt value plays a major role in the issuer's financial performance, but if it exceeds the limit, it will increase the risk of default which will result in the issuer being liquidated or delisted. Rida and Khafid (2014) explain that the risk of default on obligations can increase when the issuer continues to increase the amount of obligations in each period.

3) Profitability Ratio

Hery (2015) profitability value also aims to measure the level of management effectiveness in carrying out the issuer's business operations. Yadiati (2017) Profitability can determine the condition of the issuer's performance and the health of the financial statements for the next period. The profitability of an issuer has an important role in increasing the financial health of the issuer, the higher the net profit, the better able it is to fulfill its obligations (Desiyanti et al. 2019). Positive and continuously growing profitability has a significant influence on the condition of the issuer's financial statements (Maturunggan et al. 2017). Moch et al. (2019) profitability value has a role in generating net profit in fulfilling obligations to avoid financial distress. Harahap and Sofyan (2011) profitability is the issuer's ability to earn profits through all its capabilities and existing sources such as sales, cash, capital, number of employees and number of branches.

4) Leverage Ratio

Kasmir (2017) leverage is the ability to measure the extent to which an issuer's assets are financed with debt. Kasmir (2014) Leverage is a value that describes the company's debt to assets. Praditasari and Setiawan (2017) Leverage is a comparison between the amount of debt used for operational financing by the issuer in carrying out its business activities.

5) Efficiency Ratio

Halim and Iqbal (2019) stated that efficiency is a value that compares the input used to the output produced. Halim (2007) explains that an important measure of success is comparing costs with the net profit obtained. Ardiyanto and Prasetyo (2011) stated that efficiency plays a role in the health of an issuer's financial statements. Tesfamariam (2014) explains that if an issuer has optimal efficiency it will produce high profits so that it will avoid financial distress.

d. Covid-19

COVID-19 is an infectious disease caused by a type of coronavirus. The initial outbreak occurred in Wuhan City, China in December 2019. COVID-19 is the abbreviation for Corona Virus Disease-2019 (SATGAS 2022). The International Monetary Fund (IMF) stated that the COVID-19 outbreak created a severe economic crisis because it affected several economic sectors (Nugroho 2021). The World Health Organization (WHO) on March 9 2020, officially declared the corona virus or COVID-19 a pandemic, which means the corona virus has spread widely in the world. The first case of COVID-19 in Indonesia was reported on March 2 2020 and was subsequently declared a national disaster on March 14 2020 (KEMENKES 2022). Adapted from the worldometers website, on December 30 2021 there were more than 4.2 million confirmed cases of patients infected with the corona virus in Indonesia (Layuk 2022).

### 3. RESEARCH METHODS

The types and sources of secondary data used in this research come from annual reports from companies, journals, books, and various other sources that are credible and can be accounted for in research, for example websites of listed companies, the Financial Services Authority, and the Indonesian Stock Exchange.

The scope of the research object determined by the author in accordance with the problems to be studied is the financial performance of issuers and the factors that influence issuers' financial difficulties using panel data regression. The classification of issuers as being in financial distress or not experiencing financial distress is based on the DSCR value with the following conditions and calculations [20]:

- a. If the DSCR value is  $< 1.2$ , it is in the financial distress category
- b. If the DSCR value is  $\geq 1.2$ , the category is not experiencing financial distress.

The panel data regression method in this research refers to annual financial report data from 2018-2021. Meanwhile, panel data regression analysis is used to identify factors that influence financial distress conditions with the Debt Service Coverage Ratio.

The data analysis method uses the Ordinary Least Square model, Fixed Effect Model, Random Effect Model, Chow Test, Hausman Test, and Breusch-Pagan LM Test.

Panel Data Regression Method This research refers to annual financial report data from 2018-2021. The panel data regression analysis is used to identify factors that influence financial distress conditions with the Debt Service Coverage Ratio. The panel regression model used is:

$$Y_{1it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \text{COVID}_t + \varepsilon$$

Information :

$Y_1$  = Financial Distress

$\alpha$  = Intercept coefficient

$X_1$  = Profitability

$X_2$  = Liquidity

$X_3$  = Efficiency

$X_4$  = Leverage

$X_5$  = Solvency

COVID = Covid-19 pandemic dummy

$i = 1, 2, 3, \dots$  (as many issuers as the number observed)

$t = 1, 2, 3, \dots$  (As many periods as the observed number)

$\varepsilon$  = Error component

- a. Profitability compares net profit after tax to shareholder equity
- b. Liquidity compares current assets to current liabilities
- c. Efficient compares operational costs to operational income

- d. Leverage compares total debt to total equity
- e. Solvency compares total debt to total assets

#### 4. RESEARCH RESULTS AND DISCUSSION

The results of the research are discussing the results of the research that has been carried out. This chapter discusses the financial performance of issuers in the food and beverage industry in the 2018-2021 period, factors that influence financial distress conditions, regression model analysis, and managerial implications.

##### *Financial Distress*

[8] provides a minimum value limit for issuers facing financial distress if it is below 1.2 and above 1.2 in the category of not experiencing financial distress. Looking at Appendix 2 provides information that during the research period, 26 issuers experienced a reduction in distress. Covid-19, which has been going on for two years, has forced many issuers to carry out business transformations. This must be done to survive under the pressure of the health crisis which has an impact on the economy. In survival mode, a number of issuers are starting to develop businesses outside their main business segmentation. There are also those who change direction and leave their main business, such as the PALM issuer changing its business unit from a palm oil issuer to an investment issuer which will have an impact on the income received.

##### *Profitability*

[8] Profitability is the issuer's ability to earn profits through all its capabilities and existing sources such as sales, cash, capital, number of employees, number of branches. Profitability during the research period showed that 26 issuers experienced an increase in profitability. PALM's profit condition from 2020 to 2021 was due to a significant increase in net profit but there was no significant increase in sales income, there was other income obtained by PALM from investment activities.

##### *Liquidity*

[5] the definition of liquidity is the ability of an issuer to fulfill its short-term obligations in a timely manner. [17] liquidity value can play a significant role in the health of the issuer's financial statements, namely the ability to pay the issuer's current debt with assets or current assets. Liquidity during the research period showed that 26 issuers experienced an increase in liquidity. The condition of PALM's current assets during 2020-2021 experienced a significant increase due to a significant increase in income received by PALM. A high Liquidity value can be said to be good if it is the highest or above 1.0, indicating that the issuer has more than enough to cover short-term liabilities, but if it is too low or below 1.0 then it is necessary to sell or cash in some long-term assets. In this research, the highest Liquidity value is above 1.00, meaning the issuer is able to pay all current liabilities with the issuer's current assets.

##### *Efficiency*

[5] Efficiency is comparing the input used to the output produced issuer. Efficiency during the research period showed that 26 issuers experienced an increase in efficiency. The issuer with the highest efficiency score shows how well the issuer manages operations to achieve maximum income during one period for the industrial sector. The DLTA issuer succeeded in reducing operational costs in 2020 to 2021 significantly, thereby increasing the income received by the company.

##### *Leverage*

[19] *leverage* which is used to measure the extent to which the issuer's assets are financed with debt. Brigham and Houston (2010) state that the limit for Leverage is said to be unfavorable if the value is above 1.0 or above 100 percent. Leverage during the research



period showed that 26 issuers experienced a decrease in leverage. The impact is that higher debt indicates that the issuer's interest burden will be greater and can reduce equity (every one rupiah of the issuer's equity will guarantee one rupiah of debt). DLTA issuers have smaller debts in 2020 than equity so the risk of debt default is very small.

*Solvency*

[18] explains that the debt value plays a major role in the issuer's financial performance, but if it exceeds the limit, it will increase the risk of default which will result in the issuer being liquidated or delisted. Solvency during the research period showed that 26 issuers experienced a decrease in solvency. The solvency value is measured in the form of a number or percentage, and the higher the number, the greater the proportion of assets funded with debt. LSIP issuers show that issuers have more debt to finance their assets so that the financial risk is higher.

*Analysis of the Covid Impact Difference Test*

The first stage for the difference test is to test the distribution of data from all the variables to be tested. The results of the normality test will determine further testing. Further tests are different tests used, namely parametric tests and non-parametric tests. If the results of the normality test show that the data is distributed normally then the parametric test is used and vice versa. The following is the hypothesis for testing data normality.

H0: data spreads normally

H1: data is not distributed normally

**Table 1. Normality Test**

		FD	Profitability	Liquidity	efficiency	Leverage	Solvency
N		104	104	104	104	104	104
Normal Parameters, b	Mean	2.3529	.1606	2.1190	.3332	12.4712	.3603
	Std. Deviation	5.63827	1.05076	1.73679	.23958	14.15996	.16080
Most Extreme Differences	Absolute	,328	,398	,170	.118	,191	.132
	Positive	,328	,398	,170	.118	,186	.132
	Negative	-.319	-.286	-.139	-.086	-.191	-.113
Statistical Tests		,328	,398	,170	.118	,191	.132
Asymp. Sig. (2-tailed)		,000c	,000c	,000c	.001c	,000c	,000c
Conclusion		No Normal	No normal	No normal	No normal	No normal	No normal

Source: SPSS 2023 processing

The normality test results show that the FD variable has a prob value (0.000) smaller than alpha 5%, meaning the data is not distributed normally. The same thing also happens to the Profitability, Liquidity, Efficiency, Leverage and Solvability variables which have a probability value greater than alpha 5%, meaning that all variables are proven not to be distributed normally. Based on these results, the difference test used was the Man Whitney non-parametric difference test.

Different tests were carried out to prove the effect of Covid on all variables. The following is a different test hypothesis.

H0:  $\mu_{\text{before covid}} = \mu_{\text{covid}}$

H1:  $\mu_{\text{before covid}} \neq \mu_{\text{covid}}$

**Table 2. Difference Test Results**

<i>Test Statistics</i>							
		FD	Profitability	Liquidity	efficiency	Leverage	Solvency
Mann-Whitney U		12	1102	12	12	11	128
		47,500	,500	52,000	66,500	38,500	9,000
Wilcoxon W		26	2480	26	26	25	266
		25,500	,500	30,000	44,500	16,500	7,000

Z												
		.680		1,624		.650		.556		1,388	.410	
Asymp. Sig. (2-tailed)		.7	.49	.104		.6	.51	.8	.57	.5	.16	.68
a. Grouping Variable: Covid												

Source: SPSS 2023 processing

The results of the different test on the FD variable show a prob value (0.497) > alpha 5%, so accept H0, meaning there is no difference in the mean value before Covid and during Covid on the financial distress variable. On variables *Profitability* shows the value of prob(0.104) > alpha 5% then accept H0 meaning there is no difference in the mean value before Covid and during Covid on the variable *Profitability*. On variables *Liquidity* shows the prob value (0.516) > alpha 5% then accept H0 meaning there is no difference in the mean value before Covid and during Covid on the variable *Liquidity*. On variables *efficiency* shows the prob value (0.578) > alpha 5% then accept H0 meaning there is no difference in the mean value before Covid and during Covid on the variable *efficiency*. On variables *Leverages* shows the prob value (0.165) > alpha 5% then accept H0 meaning there is no difference in the mean value before Covid and during Covid on the variable *Leverage*. On variables *Solvency* shows the prob value (0.682) > alpha 5% then accept H0 meaning there is no difference in the mean value before Covid and during Covid on the variable *Solvency*.

### Regression Model Analysis

To find out the factors that influenced financial distress conditions before and during Covid-19 in the food and beverage industry, panel data testing was carried out because of the large number of sample data (cross sections) over a period of several years (time series). Therefore, the first step is testing to ensure whether the selected regression model is appropriate. In addition, the appropriate regression model is used to determine the appropriate classical assumption test to use in the research. There are three types of regression models that can be used, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) using several tests, including: Chow test, Hausman test, and Breusch-Pagan test.

### Correlation Test Results

Correlation to test the linear relationship between the independent variable and the dependent variable, namely FD (Financial Distress). Meanwhile, correlation between variables can test the effects of multicollinearity. The following is a correlation table between variables.

Probability	FD	PROFITABILIT Y	LIQUIDITY	EFFICIENCY	LEVERAGE
PROFITABILITY	0.826481** 0.0000	1,000000 ----			
LIQUIDITY	0.304626** 0.0017	0.378625** 0.0001	1,000000 ----		
EFFICIENCY	0.092693 0.3493	0.188863 0.0548	-0.079353 0.4233	1,000000 ----	
LEVERAGE	-0.088230 0.3731	-0.175012 0.0756	-0.433263** 0.0000	-0.110028 0.2662	1,000000 ----
SOLVABILITY	0.111865	0.188842	0.584197**	-0.008593	-0.524430**

0.2582                      0.0549                      0.0000                      0.9310                      0.0000

Source: by EVIEWS 2023

The correlation results between independent variables show that the greatest variable correlation is between solvency and liquidity of 0.584197, however the correlation value is still below 0.8, meaning that the correlation results between independent variables show no indication of multicollinearity. The profitability variable is the variable with the strongest and most significant correlation of 0.826 with FD, and the liquidity variable has the second strongest correlation of 0.304 with FD. The correlation results show that the variables Efficiency, Leverage and Solvency are not significant to FD.

**Regression Model Analysis *financial distress***

In panel data testing to determine the influence of factors *financial distress* before the COVID-19 pandemic. It was determined by the data panel in the EVIEWS 2023 application that the sample data was 52 (cross section) in the period January 2018 to December 2019 (time series). Next, testing was carried out to determine the regression model, first with the Chow test. This test is carried out to find out whether the CEM or FEM method is most suitable to use. This can be seen from the comparison of probability values (Prob > F). The hypothesis in the Chow test, namely:

H0 : Selected CEM

H1 : Selected FEM

Based on the results of panel data regression testing for the influence of factors *financial distress* before Covid-19 obtained Prob > F = 0.0000. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is FEM.

**Table 3. Test Result Chow test on regression *financial distress* before Covid-19**

Effects Test	Statistics	df	Prob.
Cross-section F	21.495251	(25.46)	0.0000

The next step is to carry out the Hausman test. This test is needed to determine whether the REM or FEM method is most suitable to use. This can be seen from the comparison of probability values with Chi square (Prob > chi2). The hypothesis in the Hausman test is:

H0 : BRAKE selected

H1 : Selected FEM

**Table 4. Test Result test Hausman on Regression *Financial Distress* Before Covid-19**

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	15.651721	6	0.0158

Based on the test results, it was obtained that Prob > chi2 = 0.0016. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is the Fixed Effect Model. From the results of the Chow test, the Hausman test, the Fixed Effect Model that is most suitable for this research is the Fixed Effect Model regression model as follows:

**Table 5. Panel Data Regression Test Results for the Fixed Effect Model**

Variables	Coefficient	Std. Error	t-Statistics	Prob.
PROFITABILIT				0,0
Y	3,340	0.707	4,723	00
LIQUIDITY	0.223	0.024	9,112	00

LAVERAGE	0.002	0.008	0.283	78	0.7
EFFICIENCY	1,288	0.305	4,228	00	0,0
SOLVABILITY	-3,052	0.876	-3,483	01	0.0
COVID	-0.071	0.009	-8,003	00	0,0
C	2,082	0.374	5,565	00	0,0
<hr/>					
R-squared	0.963				
Adjusted R-squared	0.938				
SE of regression	1,949				
F-statistic	38,313				
Prob(F-statistic)	0,000				
Durbin-Watson stat	2,380				

Source: by EVIEWS 2023

### Regression Equations

The F-test results show the calculated F value is 38,313 with a probability value of (0.000). Because the value of prob(0.000) is smaller than alpha 5%, it means the model is Fit. The coefficient of determination is 96.63%, meaning that the diversity that can be explained by the factors in the model regarding FD is 96.63%, while the remaining 3.37% is explained by other factors outside the model.

Profitability has a significant and positive effect on FD, the prob value (0.000) <alpha 5% and the regression coefficient is 3.340, meaning that an increase in profitability of 1% will be able to increase FD by 3.34% assuming ceteris paribus. Liquidity has a significant and positive effect on FD, the prob value (0.000) <alpha 5% and the regression coefficient is 0.223, meaning that an increase in liquidity of 1% will be able to increase FD by 0.223% assuming ceteris paribus. Leverage has no effect on FD, prob value (0.778) > alpha 5%. Efficiency has a significant and positive effect on FD, the prob value (0.000) <alpha 5% and the regression coefficient is 1.288, meaning that an increase in efficiency of 1% will be able to increase FD by 1.288% assuming ceteris paribus. Solvency has a significant and negative effect on FD, the prob value (0.001) <alpha 5% and the regression coefficient -3.052 means that an increase in solvency of 1% will be able to reduce FD by 3.052% assuming ceteris paribus. Covid has a significant effect on FD, prob value (0.000) <alpha 5%. The coefficient is -0.071, meaning that the average FD before Covid was greater than during Covid and the research is supported by research by Nurfajrina (2016), Akbar (2019), Hastuti (2011), Murti et al. (2016), Baza (2011).

### Financial distress regression model analysis Before Covid

In panel data testing to determine the influence of factors *financial distress* before the COVID-19 pandemic. It was determined by the data panel in the EVIEWS 9 application that there were 52 sample data (cross sections) in the period 2018 to 2019 (time series). Next, testing was carried out to determine the regression model, first with the Chow test. This test is carried out to find out whether the CEM or FEM method is most suitable to use. This can be seen from the comparison of probability values (Prob > F). The hypothesis in the Chow test, namely:

- H0 : Selected CEM
- H1 : Selected FEM

Based on the results of panel data regression testing for the influence of factors *financial distress* before Covid-19 obtained Prob > F = 0.0000. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is FEM.

**Table 6. Test Result Chow Test on Regression *Financial Distress* Before Covid-19**

Effects Test	Statistics	df	Prob.
Cross-section F	72,677	(25,21)	0.0000

The next step is to carry out the Hausman test. This test is needed to determine whether the REM or FEM method is most suitable to use. This can be seen from the comparison of probability values with Chi square (Prob>chi2). The hypothesis in the Hausman test is:

- H0 : BRAKE selected
- H1 : Selected FEM

**Table 7. Test result test *Hausman* on regression *financial distress* before Covid-19**

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	18.5745	5	0.0023

Based on the test results, it was obtained that Prob > chi2 = 0.0023. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is the Fixed Effect Model. From the results of the Chow test, the Hausman test, the Fixed Effect Model that is most suitable for this research is the Fixed Effect Model regression model as follows:

**Table 8. Panel data regression test results for the Fixed Effect Model**

Variables	Coefficient	Std. Error	t-Statistics	Prob.	
TY	PROFITABILI	0.22	0.24	0.91	0.3684
		52	50	92	0.0000
	LIQUIDITY	0.36	0.05	6.99	**
		99	29	14	0.0903
	LEVERAGE	-	0.00	-	*
		0.0058	33	1.7758	0.0000
	EFFICIENCY	7.73	1.12	6.88	**
	SOLVABILIT	-	2.71	-	0.0085
Y		7.8925	95	2.9022	**
		1.20	0.68	1.75	0.0942
C		13	53	29	
R-squared		0.994			
Adjusted R-squared		0.986			
SE of regression		0.529			
F-statistic		117,688			
Prob(F-statistic)		0,000			
Durbin-Watson stat		2,815			

Source: by EVIEWS 2023

Description: \*\*)significant alpha 5% \*)significant alpha 10%

Cross Section Effect

The F-test results show the calculated F value of 117,688 with a probability value (0.000). Because the value of prob(0.000) is smaller than alpha 5%, it means the model is Fit. The coefficient of determination is 96.63%, meaning that the diversity that can be explained by the factors in the model regarding FD is 99.4%, while the remaining 5.4% is explained by other factors outside the model.

Profitability has no significant effect on FD, prob value (0.3684) > alpha 5%. Liquidity has a significant and positive effect on FD, the value of prob(0.000) < alpha 5% and the regression coefficient is 0.3699, meaning that an increase in liquidity of 1% will be able to increase FD by 0.3699% assuming ceteris paribus. Leverage has a significant and negative effect on FD, the prob value (0.0903) < alpha 10% and the regression coefficient -0.0058 means that an increase in leverage of 1% will be able to reduce FD by 0.0058% assuming ceteris paribus. Efficiency has a significant and positive effect on FD, the prob value (0.000) < alpha 5% and the regression coefficient is 7.7358, meaning that an increase in efficiency of 1% will be able to increase FD by 7.7358% assuming ceteris paribus. Solvency has a significant and negative effect on FD, the prob value (0.0085) < alpha 5% and the regression coefficient -7.8925 means that an increase in solvency of 1% will be able to reduce FD by 7.8925% assuming ceteris paribus and research supported by research by Nurfajrina (2016), Santosa (2019), Hastuti (2011), Murti et al. (2016), Baza (2011).

Financial distress regression model analysis During Covid

In panel data testing to determine the influence of factors *financial distress* before the COVID-19 pandemic. It was determined by the data panel in the EVIEWS 9 application that there were 52 sample data (cross sections) in the period 2020 to 2021 (time series). Next, testing was carried out to determine the regression model, first with the Chow test. This test is carried out to find out whether the CEM or FEM method is most suitable to use. This can be seen from the comparison of probability values (Prob > F). The hypothesis in the Chow test, namely:

H0 : Selected CEM

H1 : Selected FEM

Based on the results of panel data regression testing for the influence of factors *financial distress* before Covid-19 obtained Prob > F = 0.0000. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is FEM.

Table 9. Test result Chow test on regression *financial distress* during Covid-19

Effects Test	Statistics	df	Prob.
	49.	(25	0
Cross-section F	87564	,21)	.0000

The next step is to carry out the Hausman test. This test is needed to determine whether the REM or FEM method is most suitable to use. This can be seen from the comparison of probability values with Chi square (Prob > chi<sup>2</sup>). The hypothesis in the Hausman test is:

H0 : BRAKE selected

H1 : Selected FEM

Table 10 . Test result test *Hausman* on regression *financial distress* during Covid-19

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	322.0222	5	0.0000

Based on the test results, it was obtained that Prob > chi2 = 0.0023. It is known that this value is below 0.05, which means H0 is rejected. Therefore, the regression model chosen is the Fixed Effect Model. From the results of the Chow test, the Hausman test, the Fixed Effect Model that is most suitable for this research is the Fixed Effect Model regression model as follows:

Table 10. Panel data regression test results for the Fixed Effect Model

Variables	Coefficient	Std. Error	t-Statistics	Prob.	
TY	PROFITABILI	-	0.9	-	0.000
		12.0179	067	13.2548	0**
		0.025	0.0	0.417	0.680
	LIQUIDITY	4	608	5	6
		-	0.0	-	0.356
	LEVERAGE	0.0139	148	0.9437	0
Y		7.548	1.1	6.759	0.000
	EFFICIENCY	0	166	5	0**
	SOLVABILIT	9.935	2.7	3.567	0.001
		4	847	8	8**
C		0.948	0.8	1.139	0.267
		6	323	8	2
R-squared		0.9930			
Adjusted R-squared		0.9829			
SE of regression		0.9531			
F-statistic		98.5917			
Prob(F-statistic)		0.0000			
Durbin-Watson stat		2,852			

Source: by EVIEWS 2023

Description: \*\*)significant alpha 5% \*)significant alpha 10%

The F-test results show the calculated F value of 98.5917 with a probability value (0.000). Because the value of prob (0.000) is smaller than alpha 5%, it means the model is Fit. The coefficient of determination is 99.30%, meaning that the diversity that can be explained by the factors in the model regarding FD is 99.30%, while the remaining 0.7% is explained by other factors outside the model.

Profitability has a significant and negative effect on FD, probability value (0,000)<alpha 5% and regression coefficient-12.0179 meaning that an increase in profitability of 1% will be able to reduce FD by 12.0179% assuming ceteris paribus. Liquidity has no significant effect on FD, prob value (0.6806)> alpha 5%. Leverage has no significant effect on FD, prob (0.3560)>alpha 5%. Efficiency has a significant and positive effect on FD, prob value (0.000) <alpha 5% and regression coefficient 7.5480 meaning that an increase in efficiency of 1% will be able to increase FD by 7.5480% assuming ceteris paribus. Solvency has a significant and positive effect on FD, prob (0.0018)<5% alpha and regression coefficient 9.9354 meaning that an increase in solvency of 1% will be able to increase FD by 9.9354% assuming ceteris paribus and the research is supported by research by Nurfajrina (2016), Santosa (2019), Hastuti (2011), Ratna & Marwati (2018), Baza (2011).

## 5. CONCLUSION

Based on the research results, the conclusion is that by analyzing the financial performance of food and beverage issuers, 26 issuers experienced a decrease in distress, 26 issuers experienced an increase in Profitability, 26 issuers experienced an increase in Liquidity, 26 issuers experienced an increase in Efficiency, 26 issuers experienced a decrease in Leverage, 26 issuers experienced a decrease in Solvency. Factors that show a significant influence on financial distress in the period before Covid-19 are Efficiency, Liquidity. The factor of increasing efficiency also influences the reduction in the occurrence of financial distress. The factor of increasing liabilities also influences the increase in the occurrence of financial distress. Factors that show a significant influence on financial distress during Covid-19 are Solvability and Efficiency. This shows that during Covid-19, the increase in the value of debt will influence the tendency to increase the occurrence of financial distress. The decline in income value during Covid-19 also influenced the increase in financial distress.

For further research, it is recommended to develop research methods on food and beverage issuers such as Zmijewski X-Score in 1984 using leverage and liquidity approach with 97% accuracy in predicting financial distress, Olhson, Grover, and Springate S-Score developed altman Z-score research in 1978 with 91% accuracy in predicting financial distress and extended the research observation period, thereby producing more diverse research phenomena. Conduct research by adding other influencing factors (examples of external factors: Currency Exchange Rates, inflation, BI Rate, IHSG, examples of internal factors: Good Corporate Governance, Company Size) so as to produce more diverse research phenomena. This research only uses a sample of food and beverage issuers listed on the Indonesia Stock Exchange using report data for the 2018-2021. For future researchers, it would be better if they expanded the research objects such as pharmaceutical issuers, basic and chemical industries, retail, mining, media, infrastructures, telecommunication, properties, transportation and logistics and extended the research observation period, thereby producing more diverse research phenomena.

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## APPENDIX

### *Financial Distress*

ISSUER	Average	Standard Deviation	Minimum	Maximum
<b>TOTAL</b>	2.35	5.64	-0.80	50.70
AALI	0.60	0.45	0.10	1.20
ADES	2.03	0.63	1.10	2.50
ALTO	1.05	0.24	0.80	1.30
BISI	0.13	0.05	0.10	0.20
BUDI	1.05	0.34	0.60	1.40
BWPT	0.85	0.26	0.50	1.10
CPIN	0.65	0.29	0.30	1.00
CPRO	1.05	0.75	0.40	2.00
DLTA	4.15	0.82	3.00	4.90
DSNG	1.15	0.47	0.80	1.80
GZCO	0.03	0.59	-0.80	0.60
ICBP	1.58	0.17	1.40	1.80
INDF	1.58	0.32	1.30	1.90
JAVA	7.80	0.81	7.10	8.90
JPFA	1.28	0.26	1.00	1.50
LSIP	2.38	1.15	1.30	3.60
PLAY	0.38	0.10	0.30	0.50
MLBI	1.85	0.45	1.30	2.40
MYOR	2.25	0.66	1.60	3.00
PALM	21.60	22.05	1.70	50.70
BREAD	2.13	0.97	0.90	3.00
SGRO	0.13	0.30	-0.20	0.50
SIMP	0.13	0.05	0.10	0.20
SMAR	0.70	0.08	0.60	0.80
STTP	2.33	0.73	1.40	3.00
ULTJ	2.38	1.06	1.10	3.30

### *Profitability*

ISSUER	Average	Standard Deviation	Minimum	Maximum
<b>TOTAL</b>	0.16	1.05	-1.52	8.35

ISSUER	Average	Standard Deviation	Minimum	Maximum
AALI	0.06	0.03	0.01	0.08
ADES	0.16	0.10	0.07	0.28
ALTO	-0.05	0.04	-0.11	-0.02
BISI	0.17	0.02	0.14	0.19
BUDI	0.02	0.01	0.02	0.03
BWPT	-0.40	0.17	-0.50	-0.15
CPIN	0.08	0.01	0.06	0.09
CPRO	0.13	0.15	-0.05	0.28
DLTA	0.32	0.08	0.23	0.38
DSNG	0.07	0.03	0.03	0.10
GZCO	-0.64	0.64	-1.52	0.02
ICBP	0.14	0.02	0.12	0.16
INDF	0.09	0.02	0.07	0.11
JAVA	-0.42	0.19	-0.67	-0.21
JPFA	0.05	0.02	0.03	0.07
LSIP	0.14	0.08	0.07	0.22
PLAY	0.02	0.02	-0.01	0.04
MLBI	0.21	0.15	0.03	0.34
MYOR	0.07	0.02	0.04	0.09
PALM	3.52	4.50	-0.37	8.35
BREAD	0.07	0.02	0.05	0.09
SGRO	0.04	0.09	-0.05	0.16
SIMP	0.01	0.05	-0.05	0.07
SMAR	0.03	0.01	0.02	0.04
STTP	0.14	0.03	0.09	0.16
ULTJ	0.17	0.03	0.13	0.19

*Liquidity*

ISSUER	Average	Standard Deviation	Minimum	Maximum
TOTAL	2.12	1.74	0.19	8.05
AALI	2.30	0.92	1.46	3.31
ADES	2.22	0.68	1.39	2.97
ALTO	1.59	1.52	0.76	3.87
BISI	5.65	1.23	4.14	7.13
BUDI	1.08	0.09	1.00	1.17
BWPT	0.70	0.15	0.59	0.92
CPIN	2.52	0.40	2.01	2.98
CPRO	0.53	0.27	0.31	0.88
DLTA	1.24	0.40	0.95	1.81
DSNG	1.06	0.18	0.82	1.25
GZCO	0.76	0.51	0.19	1.42
ICBP	2.14	0.33	1.80	2.54
INDF	1.26	0.14	1.07	1.37
JAVA	0.50	0.27	0.32	0.90

ISSUER	Average	Standard Deviation	Minimum	Maximum
JPFA	1.97	0.28	1.73	2.36
LSIP	5.11	0.72	4.66	6.18
PLAY	1.32	0.22	1.18	1.64
MLBI	0.79	0.07	0.73	0.89
MYOR	3.03	0.64	2.33	3.69
PALM	6.97	1.48	4.81	8.05
BREAD	2.94	0.97	1.69	3.83
SGRO	0.83	0.22	0.58	1.09
SIMP	0.90	0.11	0.77	1.04
SMAR	1.33	0.19	1.08	1.49
STTP	2.82	0.98	1.85	4.16
ULTJ	3.59	1.00	2.40	4.44

### *Efficiency*

ISSUER	Average	Standard Deviation	Minimum	Maximum
TOTAL	0.33	0.24	-0.05	1.62
AALI	0.10	0.01	0.08	0.10
ADES	0.49	0.10	0.37	0.59
ALTO	0.22	0.02	0.20	0.25
BISI	0.26	0.03	0.22	0.29
BUDI	0.42	0.12	0.28	0.56
BWPT	0.22	0.04	0.18	0.27
CPIN	0.19	0.06	0.14	0.27
CPRO	0.54	0.15	0.37	0.69
DLTA	0.65	0.04	0.60	0.68
DSNG	0.21	0.04	0.18	0.27
GZCO	0.07	0.09	-0.05	0.14
ICBP	0.35	0.03	0.30	0.37
INDF	0.31	0.06	0.26	0.38
JAVA	0.10	0.06	0.02	0.16
JPFA	0.38	0.03	0.36	0.42
LSIP	0.09	0.04	0.05	0.14
PLAY	0.20	0.07	0.13	0.28
MLBI	1.08	0.50	0.66	1.62
MYOR	0.40	0.02	0.38	0.42
PALM	0.35	0.20	0.07	0.55
BREAD	0.31	0.05	0.25	0.37
SGRO	0.07	0.06	0.03	0.15
SIMP	0.47	0.08	0.39	0.56
SMAR	0.30	0.03	0.25	0.32
STTP	0.45	0.04	0.40	0.48
ULTJ	0.46	0.06	0.38	0.51

### *Leverage*

ISSUER	Average	Standard Deviation	Minimum	Maximum
TOTAL	12.47	14.16	0.10	70.80
AALI	13.78	9.88	2.40	23.10
ADES	2.03	1.33	0.90	3.90
ALTO	29.05	12.11	18.00	45.60
BISI	2.45	1.95	0.40	4.80
BUDI	40.98	21.05	25.60	70.80
BWPT	33.35	13.34	16.40	45.70
CPIN	3.93	1.33	2.90	5.70
CPRO	37.55	13.97	18.60	51.20
DLTA	0.30	0.08	0.20	0.40
DSNG	18.15	7.54	12.20	29.20
GZCO	16.58	10.72	7.60	29.90
ICBP	3.15	1.78	1.40	5.60
INDF	4.08	1.14	3.10	5.30
JAVA	34.70	13.37	22.10	52.20
JPFA	12.90	1.83	10.90	14.60
LSIP	1.63	1.09	0.80	3.20
PLAY	15.43	1.44	14.20	17.00
MLBI	7.78	8.68	2.30	20.60
MYOR	2.95	0.54	2.30	3.60
PALM	3.10	2.06	0.10	4.80
BREAD	1.25	0.42	0.80	1.80
SGRO	7.60	2.71	4.60	10.40
SIMP	7.30	2.36	4.30	10.00
SMAR	15.30	8.41	8.00	26.30
STTP	7.78	5.38	3.00	15.40
ULTJ	1.20	0.91	0.50	2.40

*Solvency*

ISSUER	Average	Standard Deviation	Minimum	Maximum
TOTAL	0.36	0.16	0.00	0.86
AALI	0.41	0.01	0.40	0.42
ADES	0.40	0.04	0.35	0.43
ALTO	0.26	0.01	0.25	0.26
BISI	0.46	0.01	0.44	0.47
BUDI	0.30	0.02	0.27	0.32
BWPT	0.21	0.05	0.15	0.26
CPIN	0.42	0.01	0.41	0.43
CPRO	0.14	0.11	0.05	0.30
DLTA	0.56	0.19	0.46	0.84
DSNG	0.28	0.05	0.24	0.34
GZCO	0.38	0.16	0.27	0.62
ICBP	0.20	0.23	0.00	0.41

INDF	0.34	0.01	0.33	0.36
JAVA	0.10	0.05	0.06	0.16
JPFA	0.31	0.00	0.31	0.31
LSIP	0.84	0.02	0.83	0.86
PLAY	0.29	0.02	0.27	0.30
MLBI	0.29	0.03	0.27	0.33
MYOR	0.54	0.04	0.49	0.57
PALM	0.48	0.02	0.45	0.50
BREAD	0.41	0.01	0.40	0.42
SGRO	0.30	0.02	0.28	0.32
SIMP	0.35	0.01	0.34	0.35
SMAR	0.27	0.01	0.26	0.29
STTP	0.43	0.03	0.38	0.46
ULTJ	0.42	0.05	0.35	0.46