Capital Structure Analysis of Manufacturing Firms Listed on the Indonesia Stock Exchange (Idx) in the Covid-19 Pandemic Era

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Abstract— **The manufacturing industry contributes to the Indonesian economy, especially by enhancing export and import activities. The Covid-19 pandemic has reduced the manufacturing sector activities, which has also caused the termination of employment, closure of factories, and decline of production. This condition certainly requires manufacturing business actors to regulate their capital requirements in order to continue the operations, both internal (own capital) and external (debt) funding. The amount of debt used by the firm to finance its operational activities is a financial policy related to the capital structure. The capital structure is assessed with the leverage ratio by calculating the debt ratio, the debt to equity ratio, and the long-term debt to equity ratio. This study utilizes the quantitative method by conducting a mean difference test. The samples are sourced based on manufacturing firms listed on the Indonesia Stock Exchange (IDX). The results show that there is no significant difference between the leverage ratio before the Covid-19 pandemic and during the Covid-19 pandemic.**

Keywords— *Covid-19, manufacturing firms, capital structure*

I. INTRODUCTION

The Covid-19 pandemic outbreak in Indonesia started in March 2020 and resulted in severe casualties as well as material losses that had impacted social, economic and community welfare aspects (Law No. 2 of 2020). The manufacturing industry has experienced decreased capacity (production), despite its significant role to Indonesian economy by enhancing export and import activities. This was proven by the declining of Purchasing Managers Index (PMI) of manufacturing companies from 45.3 in March 2020 to 27.5 in April 2020 (IHS Markit PMI Manufaktur Indonesia).

The decline indicates that consumer demand is weakening due to the Covid-19 pandemic. The Covid-19 pandemic has reduced the manufacturing sector activities, which has caused the termination of employment, closure of factories, and decline of production. This condition certainly requires manufacturing business actors to regulate their capital requirements in order to continue the operations. The capital requirement is funded either from internal or external funding sources.

The selection of funding sources is one of the business strategies in order to maximize stock prices and firm values, as it is important for investors to assess the balance between the risks and the return on investment. This statement is supported by research conducted by Eka Indriyani MS (2020) which states that if the company is able to manage and analyze its capital structure well, the company is able to achieve its main goal, which is to earn a profit. The profit obtained shows the performance of the company. As it is necessary to manage the capital in order to maintain the operations and to gain profit, this study will analyze the impact of the Covid-19 pandemic on the capital structure.

II. LITERATURE REVIEW

The capital is the source of funds to finance the business operation. Firms always strive to maintain the financial balance. The capital structure is a permanent expenditure that shows the balance between the total debt and the own capital. The optimal capital structure often becomes the benchmark in managing the funds from the available sources. If a firm aims to increase the required capital, it usually obtains financing from the existing capital composition and always maintains the average cost of capital. The internal capital is generated from capital stocks, retained earnings, and reserves. If the internal capital is deficit then it is necessary to consider debt financing.

This study aims to analyze differences in the capital structure, as measured by the level of financial leverage, of manufacturing firms listed on the IDX

before the Covid-19 pandemic and during the Covid-19 pandemic. The results of previous study by Indriyani (2020) show that leverage, assets, and profitability simultaneously affect the firm value, however leverage alone does not affect the firm value. This indicates that a firm should not consider using debt financing if internal funding sources have been sufficient. This study highlights the importance of capital structure and how the Covid-19 pandemic impacted it. There are three formulas in the leverage ratio calculation:

1. Debt to Total Asset Ratio (DAR) or Debt Ratio

   The DAR measures the ratio between total debt and total assets (assets). The DAR can be formulated as follows:

   Debt Ratio (DAR) = Total of Liabilities (Debt) / Total of Assets

2. Debt to Equity Ratio

   The DER measures the capability of equity (own capital) in paying all of the obligations (liabilities/debts). The DER can be formulated as follows:

   DER = Total of Liabilities (Debt): Total of Shareholder's Equity

3. Long-term Debt to Equity Ratio (LTDtER)

   The LTDtER measures the capability of own capital as the collateral for the long-term debt, such as bonds. The LTDtER can be formulated as follows:

   LTDtER = Long-term Debt / Equity

Based on the description of the rationale above, the author develops the following framework:
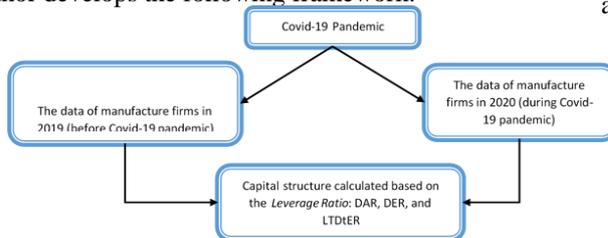

Fg. 2.1. Framework

III. METHOD

This study utilizes the quantitative method by conducting the mean difference test using the SPSS test tool. The mean difference test model is to analyze the pre-post or before-and-after research model, and is used to evaluate certain treatments on the same set of samples in two different observation periods. The capital structure is the variable analyzed in this study using the leverage ratio. The 2019-2020 financial statements data of manufacturing firms listed on the Indonesia Stock Exchange (IDX) are used in this study. The selection of samples uses purposive sampling technique with following criteria:

a) Financial reports are available from the year of 2019-2020.

b) The financial reporting period ends on December 31.

c) The currency used in the financial reports is in Rupiah.

d) The firm has been listed for more than five years on the IDX.

Samples that have met the above criteria are analyzed with the mean difference test. The steps are shown in Figure 3.1 below:
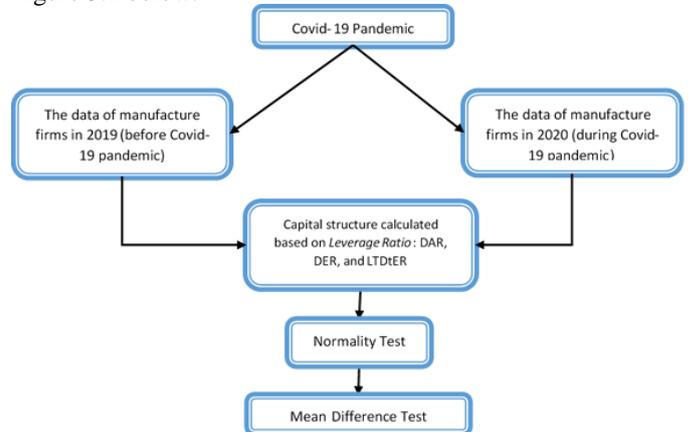

Fg. 3.1. Quantitative Method Steps with the Mean Difference Test

IV. RESULT

4.1 Statistical Test Results

The capital structure is calculated using the leverage ratio: DAR, DER, and LTDtER. The data analysis is completed with descriptive statistics, normality test, and comparison of two means

1) *Descriptive Statistics*

   Descriptive statistics show the comparison of the DAR, DER, and LTDtER data. And, the results are presented in figure 4.1 below:

Variable	N	Minimum	Maximum	Mean	Standard Deviation
DAR before the Covid-19 pandemic	83	0,07	3,74	0,5123	0,47960
DAR during the Covid-19 pandemic	83	0,04	8,21	0,5741	0,96578
DER before the Covid-19 pandemic	83	-2,13	23,92	1,2441	2,87481
DER during the Covid-19 pandemic	83	-2,01	4,95	0,9029	1,00810
LTDtER before the Covid-19 pandemic	83	-1,43	7,06	0,3295	0,84659
LTDtER before the Covid-19 pandemic	83	-1,30	1,82	0,2853	0,40764

Source: data processed by the author, 2021

Fg. 4.1. Descriptive statistics

The results of descriptive statistics show that the mean value of DAR before the Covid-19 pandemic is 0.5123. This value illustrates that 51.23% of the firm's assets is financed by debt, both the short-term debt and the long-term debt. The mean value of the DAR during the Covid-19 pandemic is 0.5741. This value illustrates that 57.41% of the firm's assets is financed by debt, both the short-term debt and the long-term debt. The mean value of the DER before the Covid-19 pandemic is 1.2441, which means the firm's debt before the pandemic is 1.2441 times of the firm's equity. The mean value of the DER during the Covid-19 pandemic is 0.9029, which means the firm's

debt during the pandemic is 0.9029 times of the firm's equity. The mean value of the LTDtER before the Covid-19 pandemic is 0.3295, which means the firm's long-term debt before the pandemic is around 32.95% of the firm's equity. The mean value of the LTDtER during the Covid-19 pandemic is 0.2853, which means the firm's long-term debt during the pandemic is around 28.53% of the firm's equity.

2) *Normality Test*

The normality test is used to determine if the data is normally distributed. The procedure used in this test is the One-Sample Kolmogorov-Smirnov test. And, the results are presented in figure 4.2 below:

		DAR before the Covid-19 pandemic	DAR during the Covid-19 pandemic	DER before the Covid-19 pandemic	DER during the Covid-19 pandemic	LTDtER before the Covid-19 pandemic	LTDtER before the Covid-19 pandemic
N		83	83	83	83	83	83
Normal Parameters	Mean	0,5123	0,5741	1,2441	0,9029	0,3295	0,2853
	Std. Deviation	0,47960	0,96578	2,87481	1,00810	0,84659	0,40764
Most Extreme Differences	Absolute	0,263	0,365	0,327	0,168	0,319	0,218
	Positive	0,263	0,365	0,327	0,124	0,252	0,145
	Negative	-0,179	-0,291	-0,305	-0,168	-0,319	-0,218
Kolmogorov		2,398	3,328	2,976	1,533	2,903	1,985
Asymp. Sig. (2-tailed)		0,000	0,000	0,000	0,018	0,000	0,001

Source: data processed by the author, 2021

Fg. 4.2. Normality test

The One-Sample Kolmogorov-Smirnov test indicates that if the significance value is ≥ 0.05 then the data is normally distributed. On the contrary, if the significance value is < 0.05 then the data is not normally distributed (Ghozali, 2013). The results of the test show that the significance values are < 0.5, which indicate that the DAR, DER and LTDtER data are not normally distributed.

3) *Mean Difference test*

Since the data are not normally distributed, this study will use the Wilcoxon Signed Rank test. And, the results are presented in figure 4.3 below:

	DAR 2020 – DAR 2019	DER 2020 – DER 2019	LTDtER 2020 - LTDtER 2019
Z	-0,858	-0,758	-0,486
Asymp. Sig. (2-tailed)	0,391	0,448	0,627

Source: data processed by the author, 2021

Fg. 4.3.Mean difference test

The mean difference of the DAR values before and during the Covid-19 pandemic shows a significance value of 0.391. A significance value of > 0.05 indicates that there is no difference in the DAR before and during the Covid-19 pandemic. Then, the mean difference of the DER values before and during the Covid-19 pandemic is 0.448. A significance value of > 0.05 indicates that there is no difference in the DER before and during the Covid-19 pandemic. Moreover, the mean difference of the LTDtER values before and during the Covid-19 pandemic is 0.627. Again, a significance value of > 0.05 indicates that there is no difference in the LTDtER before and during the Covid-19 pandemic.

4.2 *Discussion*

Financial statement is one of the data used by investors to assess the sustainability of a firm. The financial statement consists of the firm's funding policy, known as the capital structure. This study uses the leverage ratio test to analyze the capital structure. The leverage ratio provides the information about a firm's funding decisions by comparing the amount of debt and the amount of own capital. This ratio is also used to determine a firm's ability to pay the obligations.

The result shows that the mean value of the DAR before the Covid-19 pandemic is 0.5123 and the mean value of the DAR during the Covid-19 pandemic is 0.5741. The result of the mean difference test shows that there is no difference between the DAR before the Covid-19 pandemic and during the Covid-19 pandemic. The result also shows that the mean value of the DER before the Covid-19 pandemic is 1.2441, while the mean value of the DER during the Covid-19 pandemic is 0.9029. These values show that the DER has decreased during the pandemic, however the result of the mean difference test concludes that there is no difference in the DER. This means that the difference of debt financing before and during the Covid-19 pandemic is not significant. Furthermore, the mean value of the LTDtER before the Covid-19 pandemic is 0.3295 and the mean value of the LTDtER during the Covid-19 pandemic is 0.2853. Even though the LTDtER value during the pandemic has also decreased, but the difference of debt financing before and during the Covid-19 pandemic is not significant.

The results conclude that there is no difference in the leverage ratio before the Covid-19 pandemic and during the Covid-19 pandemic, which means that the firms are still able to fulfill the obligations. The firms also maintain the optimal performance by making profit, even though the profit is reduced due to the Covid-19 pandemic. This conclusion is supported by the data available from the financial statements of PT Indofood CBP Sukses Makmur Tbk where the DAR, DER and LTDtER values are increased in 2020 compared to the DAR, DER and LTDtER values in 2019. PT Indofood CBP Sukses Makmur Tbk maintains its financial position by maintaining a positive cash flow. Therefore, it can be concluded that there is no significant difference between the debt financing both before and during the Covid-19 pandemic.

V. CONCLUSION

This study analyzes the capital structure of manufacturing firms listed on the Indonesia Stock Exchange (IDX) in the Covid-19 era with the leverage ratio. This ratio calculates the Debt to Total Asset Ratio (DAR) or the Debt Ratio, the Debt to Equity Ratio (DER), and the Long-term Debt to Equity Ratio (LTDtER). The results show that the data is not normally distributed and there is no significant difference in the capital structure before and during the Covid-19 pandemic. The firms maintain the optimal performance by maintaining a positive cash flow and making profit, even though the profit is reduced due to the Covid-19. Therefore, this research is expected to provide information to business actors or entrepreneurs that the Covid-19 incident will not have a significant impact on company performance if the company can manage the company's capital structure properly. In addition, further research is expected to add other variables that can be used to assess company performance.

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