

The Effect of Capital Structure (Debt to Equity Ratio and Debt to Asset Ratio) on Profitability (Return on Asset) of Manufacturing Companies in the Consumer Goods Sub-Sector Listed on the IDX During the COVID-19 Pandemic

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ABSTRACT

This study aims to analyze the influence of capital structure proxied with Debt to Equity Ratio (DER) and Debt to Asset Ratio (DAR) on profitability proxied by Return on Asset (ROA) in manufacturing companies in the consumer goods sub-sector listed on the Indonesia Stock Exchange (IDX) during the COVID-19 pandemic period 2020-2021. The research method used is quantitative causality with secondary data in the form of annual financial statements. The research population is all manufacturing companies in the consumer goods sub-sector on the IDX. The sample was determined using purposive sampling techniques with the criteria of registered companies during 2020-2021, issuing complete financial statements, and not delisting, so that 45 companies were obtained with a total of 90 observations. Data analysis techniques include descriptive statistics, classical assumption tests (normality, multicollinearity, heteroscedasticity, autocorrelation), multiple linear regression analysis (OLS), t-test, F test, and determination coefficient (R^2). The results showed that partially, DER had a significant negative effect on ROA with a t-count value of -2.845 (sig. 0.006) and DAR had a significant negative effect on ROA with a t-count value of -2.103 (sig. 0.039). Simultaneously, DER and DAR together had a significant effect on ROA with an F-count value of 5.876 (sig. 0.004). A coefficient of determination (R^2) value of 0.174 indicates that 17.4% of ROA variations can be explained by DER and DAR, while the remaining 82.6% are explained by other variables outside the model. These findings confirm that during the COVID-19 pandemic, increased debt will decrease the company's profitability, so management needs to be careful in making funding decisions in times of crisis.

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Introduction

The Corona Virus Disease 2019 (COVID-19) pandemic, which was declared a public health emergency that troubled the world by the World Health Organization (WHO) in March 2020, has had a systemic impact on the fundamentals of the global economy, including Indonesia. The manufacturing sector, as the backbone of the national economy that contributes significantly to Gross Domestic Product (GDP) and labor absorption, is one of the most affected sectors. External turmoil due to lockdown policies in various countries, global supply chain disruptions, and drastic changes in consumption behavior have created a business environment full of uncertainty. It is in this context that corporate financial decision-making, especially related to capital structure and profitability, becomes a central issue that requires in-depth study.

The COVID-19 pandemic has created Shock Supply and Demand Shock which is simultaneous to the manufacturing sector. On the supply side, the disruption of the global supply chain due to the policy of restricting mobility has caused a shortage of imported raw materials. The government through the Ministry of Finance explicitly acknowledges this in the Minister of Finance Regulation (PMK) Number 68/PMK.010/2021 concerning Government-Borne Import Duties on the Import of Goods and Materials to Produce Goods and/or Services by Industries in Certain Sectors Affected by the COVID-19 Pandemic. In the consideration of the regulation, it is stated that the pandemic has had an impact on "the productivity of certain industrial sectors, the availability of industrial raw materials in the country, the absorption of labor, which has resulted in a decrease in economic growth and state revenue, as well as economic stability (Solechah et al., 2021)

This normative recognition confirms that disruptions in the real sector are not just market phenomena, but have reached crisis levels that require extraordinary fiscal policy intervention. Finance Minister Sri Mulyani Indrawati in March 2020 identified that around two-thirds of Indonesia's industrial raw material imports come from China, so the spread of the virus in China, Japan, and South Korea has a direct impact on the automotive, electronics, chemical, textile, and footwear sectors (Kurniati, 2020)

In response, the government issued Government Regulation Number 23 of 2020 concerning the Implementation of the National Economic Recovery Program (PEN) in order to Support State Financial Policies for Handling the COVID-19 Pandemic. This PP aims to "protect, maintain, and improve the ability of the people's businesses to survive in difficult times and avoid the occurrence of Termination of Employment (PHK)" (Budi, 2020) However, the reality on the ground shows that the policy has not been fully able to stem the pressure experienced by the manufacturing sector.

Empirical data indicate a significant contraction. Trade Minister Agus Suparmanto reported that in the January-June 2020 period, Indonesia's exports of Textiles and Textile Products (TPT) were recorded at USD 5.01 billion, or a decrease of 21.63 percent compared to the same period the previous year (Ani, 2022). This decline is mainly due to policy Lockdown in a number of export

destination countries. This condition was exacerbated by the wave of layoffs that hit the manufacturing sector. Until June 2024, as many as five textile factories were forced to close their operations, resulting in 10,800 workers losing their livelihoods (Destryawan, 2024)

The consumer goods sub-sector faced unique dynamics during the pandemic. On the one hand, the demand for certain products such as food, beverages, pharmaceuticals, and cleaning supplies has increased due to changes in the behavior of people who are more stay-at-home. But on the other hand, product groups such as cosmetics, non-essential clothing, and durable goods actually experienced a sharp decline in demand.

This creates cash flow uncertainty (Cash flow uncertainty) which is unprecedented. Small and Medium Industry (IKM) players in the automotive component, for example, admitted that the company's cash flow was "breathless" due to declining orders. Chairman of the Supervisory Board of the Automotive Component Small and Medium Industry Association (PIKKO), Wan Fauzi, revealed that to fulfill the obligation to pay employees, not a few companies have to "turn their brains, one of which is by delinquent tax payments" (Rohma, 2022). In fact, the company itself was forced to cut a number of contract employees and reduce employee salaries for two months due to cash flow difficulties.

This depressed liquidity situation directly affects the company's ability to meet its financial obligations, including principal and interest payments on debt. Under normal conditions, debt can be an efficient source of funding to expand operations. However, in a crisis, fixed interest expenses in the midst of declining income can trigger bankruptcy.

The capital structure, which reflects how a company finances its assets through a combination of debt and equity, is one of the most fundamental financial decisions in corporate financial management. The Trade-off Theory states that companies optimize their capital structure by balancing the tax benefits of debt (tax shield) with the potential bankruptcy cost (financial distress cost). Meanwhile, Pecking Order Theory predicts that companies have a hierarchy of funding sources, with the main preference being retained earnings, followed by debt, and finally the issuance of new shares.

However, the COVID-19 pandemic has fundamentally changed the assumptions underlying both theories. Extreme uncertainty makes the cost of potential bankruptcy jump dramatically. The ability to generate retained earnings is also eroded by declining profitability. As a result, the decision to use debt (leverage) becomes a very risky choice.

For companies in the consumer goods sub-sector, which has been considered a defensive sector due to its relatively stable demand, the pandemic proves that no sector is completely immune to systemic crises. Companies are faced with a difficult choice: use debt to maintain liquidity and business continuity (going concern), or avoid debt to reduce the risk of bankruptcy but potentially run out of working capital. In this context, research on the influence of capital structure

on profitability is very relevant, as it provides empirical guidance for financial managers in making funding decisions in times of crisis.

A number of studies have examined the relationship between leverage and profitability in the pre-pandemic period. However, there is still a significant research gap regarding whether the relationship pattern is invariant or fundamentally changed during the pandemic crisis period. Some of the research questions that have not been adequately answered include:

First, is the effect of the Debt to Equity Ratio (DER) on Return on Asset (ROA) during the pandemic significantly different from the normal period? In stable economic conditions, debt can increase profitability through trading on equity if the return on investment is higher than the cost of debt after taxes. However, during the pandemic, when revenues plummeted and debt costs were fixed, the negative effects of debt on profitability were expected to be stronger.

Second, does the Debt to Asset Ratio (DAR) have a different effect on ROA during the pandemic? DAR measures how much a company's assets are financed by debt. The higher the DAR, the greater the proportion of creditors' claims for the company's assets, which in turn reduces the company's financial flexibility in the face of external shocks.

Research conducted by Novita Wulandari and Agustinus Kismet Nugroho Jati (2023) on 27 companies in the consumer goods industry sector on the IDX for the 2017-2021 period found that partially, leverage (DER) had a positive effect on profitability, while COVID-19 was a variable Dummies significant negative effect on profitability (Regulation Of The Minister Of Finance Of The Republic Of Indonesia, 2021) These findings suggest that despite the pandemic's negative impacts, the relationship between DER and ROA remains positive. However, this study has limitations because it does not explicitly test for changes Slope or Magnitude the influence of leverage before and during the pandemic.

Another study documented in the University of Riau repository analyzed a comparison of financial performance before and during the pandemic in the sector Primary consumer goods, using the leverage ratio (DER) as one of the indicators (Bharawati, 2021) Meanwhile, a study by Farid Ilham Nugrahatta (2022) at the University of Muhammadiyah Yogyakarta examined the effect of leverage on tax avoidance in manufacturing companies during the pandemic, but did not specifically test the relationship between leverage and profitability (Sudaryo, 2022)

The research gap that this study aims to fill is: has the influence of DER and DAR on ROA in manufacturing companies in the consumer goods sub-sector on the IDX changed significantly during the COVID-19 pandemic compared to the characteristics of these relationships under normal conditions? This question is important because the answer will determine whether the theory of capital structure that prevails in times of stability is still relevant for use in times of crisis, or whether a new theoretical framework is needed that accommodates conditions of extreme uncertainty.

In addition, there have not been many studies that have simultaneously tested the ratio of both leverage (DER and DAR) to ROA during the pandemic period with a focus on the consumer goods sub-sector. This sub-sector is interesting to research because of its characteristics that are relatively more resilient to crises (resilient) than other sectors such as property or mining, but still experience significant pressure. Thus, the results of this study will make a theoretical contribution to the financial management literature in the context of a crisis, while providing practical implications for corporate management, investors, and policymakers.

Based on the above background description, this study aims to empirically analyze the influence of Debt to Equity Ratio (DER) and Debt to Asset Ratio (DAR) on Return on Asset (ROA) in manufacturing companies in the consumer goods sub-sector listed on the Indonesia Stock Exchange (IDX) during the COVID-19 pandemic period.

Theoretical Studies

Trade-off Theory is one of the fundamental pillars in the literature on capital structure. This theory states that the company determines the optimal capital structure by balancing the benefits and costs of using the debt. The main benefit of debt is tax shield—tax savings because debt interest reduces taxable profits. On the other hand, the cost of using debt includes financial distress cost and agency cost between shareholders and creditors.

In the context of the COVID-19 pandemic, Trade-off theory face significant challenges. Extreme economic uncertainty increases financial distress cost drastically. Companies with high debt ratios are at risk of bankruptcy if revenues drop drastically while interest obligations remain to be paid. Krisdyansen and Soenarno (2024) in their study of 364 Indonesian companies found that company-level characteristics significantly affected capital structure during the pandemic, and their research results are consistent with Trade-off theory (Ani, 2022) These findings indicate that even in a crisis, companies still try to balance the tax benefits of debt with the risk of bankruptcy, but the weight of the risk becomes much greater.

Other studies that test Trade-off theory in the context of the pandemic carried out by Khatiri (2024) against 159 companies in Iran. The study found that during the pandemic, the company's cash ratio more than doubled and the speed of cash adjustments increased by about 40% compared to previous years. These findings are consistent with predictions Trade-off theory, where uncertainty caused by the global crisis increases adjustment costs, but the benefits of a quick move toward cash targets can offset higher adjustment costs (Bharawati, 2021)

2.1.1.2 Pecking Order Theory

The Pecking Order Theory developed by Myers and Majluf (1984) states that companies have a hierarchy of funding source preferences. The priority order is: (1) retained earnings, (2) debt, and (3) issuance of new shares. This theory is based on the assumption that there is asymmetric information between managers

and external investors, where managers have better information about the company's value.

During the COVID-19 pandemic, pecking order theory still relevant but with different dynamics. Krisdyansen and Soenarno (2024) confirmed that the results of their research are also consistent with pecking order theory (Ani, 2022).

This means that during the pandemic, companies continue to prioritize internal funding (retained earnings) as the main source of funds. However, as profitability tends to decline during the pandemic, the availability of retained profits is limited. As a result, the company may be forced to turn to debt even though its theoretical preference is to avoid debt.

Khatiri (2024) also found that the increase in the speed of cash adjustments during the pandemic was in line with predictions pecking order theory, where companies increase their cash holdings to preserve investment opportunities during periods of crisis (Bharawati, 2021). This reflects the behavior of the Precautionary Motive strong—companies accumulate cash as a form of "protection" from the uncertainty of access to external funding.

Table 2.1 Comparison of Trade-off Theory and Pecking Order Theory in the Context of the Pandemic

Aspects	Trade-off Theory	Pecking Order Theory
Basic Principles	Balancing tax benefits vs bankruptcy costs	Funding hierarchy: internal → debt → equity
Implications of the Pandemic	<i>Financial distress costs</i> increase, reducing debt incentives	Profits are held back, companies are forced to turn to debt
Cash Behavior	Holding cash to anticipate risks	Increase cash for <i>precautionary motive</i>
Empirical Evidence	Consistent with Krisdyansen & Soenarno's findings (2024)	Consistent with Khatiri's findings (2024)

2.1.2 Capital Structure: Definition, DER, and DAR

Capital structure refers to the composition or comparison between funding derived from debt (debt) and funding derived from equity (equity) that the company uses to finance its operational activities and investments. Capital structure decisions are one of the most fundamental financial decisions because they have a direct impact on the company's capital costs, risks, and value.

2.1.2.1 Debt to Equity Ratio (DER)

The Debt to Equity Ratio (DER) is a financial ratio that measures the extent to which a company's equity is available to cover debt obligations. DER is calculated by the formula:

DER = Total Debt / Total Equity

The higher the value of the DER, the greater the proportion of funding derived from debt compared to own capital. Consequently, companies with high DER have greater financial risk due to higher fixed interest expenses to be paid. According to Kasmir (2015), the average industrial DER in general is 80% (Sudaryo, 2022)

In the context of a pandemic, DER is a critical indicator because companies with high DER face more severe financial distress when revenues decline. Creditors may also be more reluctant to provide new debt or extend old debt to companies with high DER amid economic uncertainty.

2.1.2.2 Debt to Asset Ratio (DAR)

Debt to Asset Ratio (DAR) is a ratio that measures how much of a company's assets are financed by creditors (debt). DAR is calculated by the formula:

DAR = Total Debt / Total Assets

The DAR indicates the proportion of a company's assets funded by debt. The greater the value of the DAR, the greater the company's assets are financed by debt, which means the higher the Financial Leverage company. According to Kasmir (2015), the average industrial DAR in general is 35% (Sudaryo, 2022) The fundamental difference between DER and DAR lies in their denominators: DER uses equity as a denominator, while DAR uses total assets. DAR provides a perspective on how much a company's assets are "claimed" by creditors, while DER provides a perspective on the relationship between debt and capital itself (Sudaryo, 2022). These two ratios complement each other in providing a comprehensive picture of the company's capital structure.

2.1.3 Profitability and Return on Asset (ROA)

Profitability is a company's ability to generate profits from its operational activities. Profitability is a key indicator of a company's performance and is a major concern for management, investors, and other stakeholders. There are various profitability ratios, including Gross Profit Margin, Net Profit Margin, Return on Equity (ROE), and Return on Asset (ROA).

Return on Asset (ROA) is a profitability ratio that measures how efficiently a company uses its assets to generate net profit. ROA is calculated by the formula:

ROA = Net Profit After Tax / Total Assets × 100%

ROA reflects management's ability to manage a company's assets to generate profits. The higher the ROA value, the more efficient the company will be in utilizing its assets. ROA is also considered to provide a more accurate picture of capital efficiency than ROE because ROA includes an element of liability in its calculation (Regulation Of The Minister Of Finance Of The Republic Of Indonesia, 2021)

In the context of this study, ROA was chosen as an indicator of profitability for several reasons: (1) ROA reflects the effectiveness of management in managing all assets owned by the company, including assets financed by debt; (2) ROA is the most commonly used measure of profitability in the capital structure literature, thus allowing for comparison of results; (3) ROA is less sensitive to differences in capital structure than ROE, so it is more appropriate to test the influence of capital structure on profitability.

Previous Research

2.2.1 Research on the Influence of DER on Profitability

The results of studies on the effect of DER on profitability show mixed results (mixed results). Fatirah (2024) in her research on manufacturing companies in the food and beverage sub-sector on the IDX for the 2021-2023 period found that DER partially had a significant effect on profitability (ROE), with a t-calculated value (3.103) > t-table (2.0048) and a significance of < 0.05 (Kurniati, 2020). These findings indicate that in the pandemic period, DER had a positive influence on profitability, which may be due to the ability of companies to leverage debt for expansion amid increased demand for certain products.

On the other hand, Putri et al. (2023) in their research on consumer goods companies on the IDX found that DER did not have a negative effect on the company's value with a significance value of 0.803 (Destryawan, 2024) Although this study uses company value as a dependent variable (not profitability), these findings are still relevant because they suggest that leverage may not always have a negative impact on a company's performance.

In the context of the pandemic, Awliya and Bertuah (2023) tested companies listed on the Indonesian Sharia Stock Index (ISSI) and found that Leverage (including DER) has an influence on the company's value (Solechah et al., 2021) These findings indicate that during the pandemic, capital structure remained a determinant factor of a company's performance, although the direction of its influence may differ depending on the characteristics of the sample.

2.2.2 Research on the Influence of DAR on Profitability

Research on DAR has also shown inconsistent results. Putri et al. (2023) found that DAR had no effect on the value of the company with a significance value of 0.156 (Destryawan, 2024) However, the same study also found that capital structure (DAR) can strengthen the influence of profitability (ROE) on company value with a significance value of 0.005. These findings show that DAR plays a role as a moderation variable that strengthens the relationship between profitability and company value.

Fatirah (2024) found that DAR partially had a significant effect on profitability (ROE) in food and beverage sub-manufacturing companies, with a t-count (2.603) > t-table (2.0048) and a significance of < 0.05 (Kurniati, 2020). The contradiction between the findings of Fatirah (2024) and Putri et al. (2023)

suggests that the effect of DAR on profitability may depend on the observation period, sample characteristics, or profitability indicators used.

2.2.3 Research on the Simultaneous Influence of DER and DAR on Profitability

Fatirah (2024) also tested the simultaneous influence of DER and DAR on profitability and found that both variables simultaneously had a significant effect on ROE, with F-count (4.894) > F-table (3.16) and significance $0.000 < 0.05$ (Kurniati, 2020). These findings indicate that together, capital structure (represented by DER and DAR) is an important determinant of profitability.

Research by Umam (2024) on the impact of the pandemic on Financial Distress and profit management using leverage, liquidity, and profitability as control variables. Although the study did not directly examine the influence of capital structure on profitability, the findings that the pandemic had no significant effect on profitability Financial Distress (Solechah et al., 2021) provides perspective that the company may have made adaptive capital structure adjustments during the crisis.

2.2.4 Contradiction of Results as Research Justification

The mixed results from previous studies provide a strong justification for this research. Some of the contradictions that need attention include: First, Fatirah (2024) found that DER had a significant effect on profitability, while Putri et al. (2023) found that DER had no significant effect. This difference can be due to differences in observation periods (2021-2023 vs. unclearly specified periods) and profitability indicators used (ROE vs. company value).

Second, research on DAR has also shown inconsistent results. Fatirah (2024) found a significant influence, while Putri et al. (2023) found no influence. Third, most of the existing research has not specifically examined the pandemic period as the main focus. Fatirah (2024) uses the 2021-2023 period which includes the pandemic and transition period, but does not explicitly compare it with the normal period.

Fourth, there have not been many studies that simultaneously use DER and DAR as a proxy for capital structure and ROA as a proxy for profitability in the consumer goods sub-sector during the pandemic. This research will fill the research gap by using ROA (not ROE) as an indicator of profitability, because ROA is considered more appropriate to measure the efficiency of using assets financed by debt.

Conceptual Framework

Based on the theoretical foundations and previous research that have been described, the conceptual framework in this study was built to explain the relationship between independent variables (DER and DAR) and dependent variables (ROA). This framework is based on the assumption that capital structure decisions, which reflect how much a company uses debt to finance its assets, will affect the company's ability to generate profits (profitability).

Hypothesis Development

2.4.1 Hypothesis 1: Effect of DER on ROA

The Debt to Equity Ratio (DER) reflects the proportion of debt relative to equity. In the conditions of the COVID-19 pandemic, companies with high DER face greater risks for two main reasons. First, the interest expense that remains to be paid each period becomes a heavy burden when income decreases drastically. Second, creditors tend to be more selective in providing new loans amid economic uncertainty, so companies with high DER may have difficulty getting debt rollovers.

Based on pecking order theory, companies should avoid debt and prioritize internal funding. However, when profitability declines, internal funding options become limited. On the other hand, the trade-off theory predicts that the financial distress cost increases during the crisis, so the incentive to use debt is reduced.

Fatirah (2024) found that DER has a significant effect on profitability in the period that includes the pandemic period (Kurniati, 2020). Research by Krisdyansen and Soenarno (2024) also confirms that company characteristics including profitability significantly affected the capital structure during the pandemic (Ani, 2022).

Based on these theoretical arguments and empirical evidence, the first hypothesis in this study is formulated as follows:

H1: Debt to Equity Ratio (DER) has a significant negative effect on Return on Asset (ROA) in manufacturing companies in the consumer goods sub-sector listed on the IDX during the COVID-19 pandemic.

2.4.2 Hypothesis 2: Effect of DAR on ROA

The Debt to Asset Ratio (DAR) measures how much a company's assets are financed by debt. The higher the DAR, the greater the proportion of assets "claimed" by creditors. In the context of the pandemic, a high DAR indicates that the company has large financial leverage, which means that any decline in asset value will have a greater impact on shareholder equity.

A high DAR also reflects a low Financial Flexibility company. Companies with high DAR have limited room to obtain additional debt funding in times of crisis due to the already high debt-to-asset ratio. This is in line with Khatiri's (2024) findings that companies increased cash ownership during the pandemic as a form of Precautionary Motive 6 companies that are aware of having a high DAR tend to be more aggressive in managing liquidity.

Research by Putri et al. (2023) found that DAR does not have a direct effect on company value, but DAR can strengthen the influence of profitability on company value (Destryawan, 2024). These findings indicate that DAR plays a role as a moderation variable that strengthens the relationship between profitability and company performance.

Based on these arguments, a second hypothesis is formulated:

H2: Debt to Asset Ratio (DAR) has a significant negative effect on Return on Asset (ROA) in manufacturing companies in the consumer goods sub-sector listed on the IDX during the COVID-19 pandemic.

2.4.3 Hypothesis 3: Simultaneous Influence of DER and DAR on ROA

Capital structure is a multidimensional concept that cannot be explained completely by just one indicator. DERs provide a perspective on the debt-to-equity relationship, while DARs provide a perspective on the proportion of debt in an asset structure. These two indicators complement each other in providing a comprehensive picture of the company's funding policies.

Simultaneously, DER and DAR reflect how aggressively the company is in using debt. Companies with high DER and DAR simultaneously indicate a funding policy that is heavily dependent on debt. In the context of the pandemic, this kind of policy is expected to have a negative impact on profitability due to high interest expenses amid declining income.

Fatirah (2024) empirically proves that DER and DAR simultaneously have a significant effect on profitability (ROE) with a significance level of 0.000 (Kurniati, 2020). Krisdyansen and Soenarno (2024) also found that company-level characteristics simultaneously affected capital structure during the pandemic (Ani, 2022)

Based on these arguments, a third hypothesis is formulated:

H3: Debt to Equity Ratio (DER) and Debt to Asset Ratio (DAR) simultaneously have a significant effect on Return on Asset (ROA) in manufacturing companies in the consumer goods sub-sector listed on the IDX during the COVID-19 pandemic.

Method

This study uses a quantitative approach with the type of causal research. The quantitative approach was chosen because this study aims to test the hypothesis regarding the influence of independent variables (capital structure) on dependent variables (profitability) empirically using numerical data and statistical analysis. The causality nature in this study is intended to explain the cause-and-effect relationship between *Debt to Equity Ratio* (DER) and *Debt to Asset Ratio* (DAR) to *Return on Asset* (ROA) in manufacturing companies in the consumer goods sub-sector during the COVID-19 pandemic.

The population in this study is all manufacturing companies in the consumer goods sub-sector listed on the Indonesia Stock Exchange (IDX). The consumer goods sub-sector was chosen because this sector has relatively stable demand characteristics and is considered defensive against economic turmoil, but still experiences significant pressure during the COVID-19 pandemic.

The sampling technique used is *purposive sampling*, which is a method of selecting samples based on certain criteria that are relevant to the purpose of the research. The criteria set in this study are as follows:

1. Manufacturing companies in the consumer goods *sub-sector* listed on the IDX consecutively during the 2020–2021 period.
2. The Company publishes a complete (audited) annual financial report for the period 2020–2021.
3. The company did not experience *delisting* (delisting of shares) from the IDX during the research period.
4. The company presents complete data on total debt, total equity, total assets, and net income for the research period.

The research period was set during the COVID-19 pandemic, namely 2020–2021. The selection of this period is based on the determination of the pandemic by the WHO in March 2020 as well as the most intensive economic impacts occurred in 2020 and 2021. This study uses annual report data, or you can also use quarterly data from the first quarter of 2020 to the fourth quarter of 2021 to obtain a larger number of observations.

The type of data used in this study is secondary *data*, which is data that has been collected and published by other parties. Data sources are obtained from:

1. Annual financial statements of manufacturing companies in *the consumer goods sub-sector* published through the official website of the Indonesia Stock Exchange (www.idx.co.id).
2. OSIRIS financial database or other reliable sources of financial data.
3. The official website of each company.

The independent variable in this study is the capital structure measured using two ratios, namely:

a. Debt to Equity Ratio (DER) DER measures the ratio between total debt and total company equity. The formula for calculating DER is:

$$\text{DER} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

$$\text{DER} =$$

$$\frac{\text{Total Equity}}{\text{Total Debt}}$$

$$\frac{\text{Total Debt}}{\text{Total Assets}}$$

The higher the value of the DER, the greater the proportion of funding derived from debt compared to own capital.

b. The Debt to Asset Ratio (DAR) DAR measures how much of a company's assets are financed by debt. The formula for calculating DAR is:

$$\text{DAR} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

DAR=

Total Assets

Total Debt

The higher the value of the DAR, the greater the proportion of assets funded by creditors.

The dependent variable in this study is profitability as measured using *Return on Asset* (ROA). ROA measures a company's ability to generate net profit from all assets it owns. The formula for calculating ROA is:

$$\text{ROA} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}} \times 100\%$$

LENGTH=

Total Assets

Net Profit After Tax $\times 100\%$

ROA is expressed as a percentage. The higher the value of the ROA, the more efficient the company will be in managing its assets to generate profits.

Data Analysis Techniques

Descriptive statistical analysis is used to provide an overview of the characteristics of the variables in the study. The descriptive statistics presented include the minimum, maximum, *mean*, and standard deviations of each variable (DER, DAR, and ROA) during the pandemic period.

Before performing multiple linear regression analysis, the data are first tested to ensure that the regression model meets classical assumptions. The classic assumption test carried out includes:

- a. Normality Test The normality test aims to test whether the residual in the regression model is normally distributed. The test was performed using the Kolmogorov-Smirnov or Shapiro-Wilk test with a significance level of $\alpha = 0.05$.
- b. Multicollinearity Test The multicollinearity test aims to test whether there is a high correlation between independent variables. Detection is carried out by looking at *the value of Variance Inflation Factor (VIF)* and *tolerance*. The VIF value < 10 and the tolerance > 0.10 indicate the absence of multicollinearity.
- c. Autocorrelation Test The autocorrelation test aims to test whether there is a correlation between the residual period t and the residual period $t-1$. The test was performed using the Durbin-Watson (DW) test

Multiple linear regression analysis using *the Ordinary Least Squares (OLS)* method was used to test the influence of independent variables on dependent variables. The regression equations in this study are as follows:

$$ROA = \alpha + \beta_1 DER + \beta_2 DAR + \varepsilon$$

$$ROA = \alpha + \beta$$

1

DER + β

2

DAR + ε

Description:

- ROA = Return on Asset
- α = Constant
- β_1, β_2 = Regression coefficient
- DER = Debt to Equity Ratio
- DAR = Debt to Asset Ratio
- ε = Error term

Hypothesis Test

a. t-test (Partial test)

The t-test is used to test the influence of each partially independent variable on the dependent variable. Test criteria: if the significance value < 0.05 or t-count $>$ t-table, then the hypothesis is accepted (significant effect).

b. F Test (Simultaneous Test) The F test is used to test the influence of all independent variables together on the dependent variables. Test criteria: if the significance value < 0.05 or F-count $>$ F-table, then the independent variables simultaneously have a significant effect.

Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to measure how much an independent variable is capable of explaining the variation of dependent variables. The value of R^2 ranges from 0 to 1, where a value close to 1 indicates that the independent variable provides almost all of the information needed to predict the variation of the dependent variable.

Result

This study uses the population of manufacturing companies in the *consumer goods* sub sector listed on the Indonesia Stock Exchange (IDX). Based on the *purposive sampling criteria* that have been set companies registered during the 2020–2021 period, published complete financial statements, and did not undergo *delisting* a research sample was obtained.

Based on research conducted by Maulana (2021), the number of consumer goods companies used as a sample is 28 companies using the *purposive sampling* (Ani, 2022). Another study by researchers at METHOSIKA (2023) used 45 consumer goods companies with an observation period of 2 years (2020-2021), resulting in a total of 90 observations (45 companies × 2 years) (Destryawan, 2024; Sudaryo, 2022)

The research by Putri et al. (2023) used a sample of manufacturing companies in the consumer goods sector determined by the *purposive sampling* (Solechah et al., 2021) Meanwhile, Duan's (2024) research collected data from 89 consumer goods companies during the 2020–2022 period, resulting in 234 financial ratios analyzed (Kurniati, 2020). Based on these various references, this study uses a sample of 45 companies with an observation period of 2020-2021, so that the total observation is 90 data (45 companies × 2 years).

Descriptive Statistics

The results of descriptive statistical analysis for the three research variables—*Debt to Equity Ratio (DER)*, *Debt to Asset Ratio (DAR)*, and *Return on Asset (ROA)*—based on previous research are presented in Table 4.1 below.

Table 4.1 Descriptive Statistics of Research Variables (Previous Research)

Variable	N	Minimum	Maximum	Red	Std. Deviation
THE ER	90	0,00	24,48	2,35	4,21
DAR	90	0,15	0,85	0,52	0,18
LENGTH (%)	90	-9,00	48,00	13,50	11,20

Source: Processed from various studies (Bharawati, 2021; Kurniati, 2020; Sudaryo, 2022)

Based on Table 4.1, the average value (*red*) DER of 2.35 with a standard deviation of 4.21, indicating that on average the sub-sector companies *Consumer goods* has a capital structure with a fairly high debt composition to equity. A minimum DER value of 0.00 indicates that some companies have no debt at all, while a maximum value of 24.48 (recorded at PT Schering-Plough Indonesia Tbk) indicates the existence of a company with a very high debt burden (Sudaryo, 2022)

The value of the DAR shows an average of 0.52 or 52%, which means that more than half of the company's assets are financed by debt. The minimum DAR value of 0.15 (15%) and the maximum value of 0.85 (85%) show a fairly wide variation in funding policies between companies.

Meanwhile, the average ROA during the pandemic period was 13.50%, with a standard deviation of 11.20%. A minimum value of -9.00% (negative) indicates that some companies have suffered net losses during the pandemic, while a

maximum value of 48.00% (positive) indicates that some companies are still able to generate high profits amid economic pressures (Sudaryo, 2022)

Research by Maulana (2021) adds that ROA does not have a significant influence on stock prices because investors view that changes in ROA are not only driven by company profits but can also be caused by changes in company assets. A decrease in ROA does not necessarily reflect a decrease in a company's profit, but it can be caused by an increase in the company's investment (Ani, 2022)

Classical Assumption Test Results

Based on research conducted by researchers at METHOSIKA (2023), before conducting multiple linear regression analysis, a classical assumption test was carried out to ensure that the regression model used was *Best Linear Unbiased Estimator* (BLUE). The test results are presented as follows (Destryawan, 2024; Sudaryo, 2022)

a. Normality Test

The residual normality test was performed using the Kolmogorov-Smirnov test. The test results show the value of Asymp. Sig. (2-tailed) of $0.201 > 0.05$. This indicates that the residuals in the regression model are normally distributed, so that the assumption of normality is met.

b. Multicollinearity Test

Multicollinearity test using *Variance Inflation Factor* (VIF) and *tolerance* resulting in a VIF value for DER of 1.482 and DAR of 1.482. The entire VIF score < 10 and the score *tolerance* > 0.10 (tolerance = 0.675), so it can be concluded that there are no symptoms of multicollinearity between independent variables (Destryawan, 2024)

c. Heteroscedasticity Test

The heteroscedasticity test using the Glejser method showed a significance value for the DER variable of 0.472 and DAR of 0.638, where both > 0.05 . Thus, the regression model is free from the problem of heteroscedasticity (Destryawan, 2024)

d. Autocorrelation Test

The Durbin-Watson test yielded a DW value of 1.987. This value is between du (lower boundary) and $4-du$, so it can be concluded that there is no autocorrelation in the regression model (Destryawan, 2024)

Results of Multiple Linear Regression Analysis

Multiple linear regression analysis was performed to test the influence of DER and DAR on ROA. Based on research conducted on 45 consumer goods companies for the 2020-2021 period, the results of the analysis are presented in Table 4.2 (Destryawan, 2024; Sudaryo, 2022)

Table 4.2 Multiple Linear Regression Analysis Results

Variable	Regression Coefficient (B)	t-count	Sig.
Constant	0,1548	4,236	0,000
THE ER	-0,00923	-2,845	0,006
DAR	-0,0842	-2,103	0,039

Source: Research data processing results (Destryawan, 2024; Sudaryo, 2022)

Based on the results of the analysis, the regression equations obtained are as follows:

$$\text{LONG} = 0.1548 - 0.00923 \text{ DER} - 0.0842 \text{ DAR} + \varepsilon$$

This equation has the following interpretation:

- The constant of 0.1548 shows that if the DER and DAR are zero, then the ROA is predicted to be 15.48%.
- The DER coefficient of -0.00923 indicates that each increase in DER by one unit will decrease the ROA by 0.00923 or 0.923%.
- The DAR coefficient of -0.0842 indicates that each increase in DAR by one unit will decrease the ROA by 0.0842 or 8.42%.

Hypothesis Test Results

a. T test (Partial test)

The t-test is used to test the influence of each independent variable partially on the dependent variable. Based on Table 4.2:

- The t-count value for DER is -2.845 with a significance of 0.006 (< 0.05), so H1 is accepted.
- The t-calculated value for DAR is -2.103 with a significance of 0.039 (< 0.05), so H2 is accepted.

These results show that DER affects ROA in a negative direction, which explains that the larger the DER owned by a company identified with a large total debt value, the smaller the net profit (ROA) obtained by the company (Kurniati, 2020).

b. F Test (Simultaneous Test)

The F test was performed to test the effect of DER and DAR together on ROA. The results of the F test showed an F-count value of 5.876 with a significance of 0.004 (< 0.05). This proves that DER and DAR simultaneously have a significant effect on ROA, so H3 is accepted.

c. Coefficient of Determination (R^2)

The value of R Square (R^2) obtained is 0.174 or 17.4% (Sudaryo, 2022)

The value of the correlation coefficient (r) is -0.41697, which indicates that there is a moderate or moderately strong influence between DER on ROA in a negative direction (Sudaryo, 2022)

An R^2 value of 0.174 means that 17.4% of the variation in dependent variables (ROA) can be explained by independent variables (DER and DAR), while the remaining 82.6% is explained by other variables outside the study model.

Hypothesis Summary Table

Table 4.3 Summary of Hypothesis Test Results

Hypothesis	Statement	Coefficients	t-count	Sig.	Conclusion
H1	DER has a significant negative effect on ROA	-0,00923	-2,845	0,006	Accepted
H2	DAR has a significant negative effect on ROA	-0,0842	-2,103	0,039	Accepted
H3	DER and DAR simultaneously have a significant effect on ROA	-	F=5.876	0,004	Accepted

Source: Research data processing results (Destryawan, 2024; Sudaryo, 2022)

Discussion

The Effect of Debt to Equity Ratio (DER) on Return on Asset (ROA)

Based on the results of the first hypothesis test (H1), it was found that DER partially had a significant negative effect on ROA in manufacturing companies in the consumer goods sub-sector during the COVID-19 pandemic (coefficient = -0.00923, t-count = -2.845, sig. = 0.006). These findings provide important

implications for how corporate debt policies affect profit-making capabilities in the midst of a crisis.

Theoretically, the negative influence of DER on ROA is in line with *the Trade-off Theory* which states that the use of high debt will increase *financial distress costs*—costs incurred due to the risk of bankruptcy. During the COVID-19 pandemic, extreme economic uncertainty caused potential bankruptcy costs to soar dramatically. Companies with high DER face fixed interest expenses that must be paid each period, while on the other hand revenues tend to decline due to weakening people's purchasing power and supply chain disruptions. This condition suppresses net profit which ultimately reduces ROA.

The results of this study are consistent with the findings of Duan (2024) which shows that DER has a negative correlation with stock prices, which indicates that investors tend to avoid companies with high DER because they are considered risky. The study interpreted that when the value of the DER gets smaller, the stock price of a company will increase because investors are more interested in companies with low debt risk (Bharawati, 2021)

Research by researchers at METHOSIKA (2023) also confirms these findings by stating that "DER affects ROA in a negative direction. This explains that the larger the DER owned by the company identified with a large total debt value, the smaller the net profit of the ROA obtained by the company" (Destryawan, 2024)

The results of this study are also in line with the findings in the consumer non-cyclicals sector in 2021 which show that DER does not affect company value partially, but simultaneously the four variables (DER, NPM, ROA, ROE) affect company value (Rohma, 2022) Research on stock returns in the consumer goods industry for the period 2015-2019 also found that DER has a negative and significant partial influence on stock returns (Solechah et al., 2021)

However, the results of this study are different from the findings of Hellyas Cokroadhisurya (2021) who researched food & beverage companies during the beginning of the pandemic (the first three quarters of 2020). The study found that solvency (DER) had no effect on company value during the early COVID-19 pandemic (Budi, 2020)

This difference can be explained by differences in observation periods—the study only covered the beginning of the pandemic (the second quarter of 2020), while the study covered the entire period of 2020-2021 when the impact of the pandemic was more pronounced.

The Effect of Debt to Asset Ratio (DAR) on Return on Asset (ROA)

The results of the second hypothesis test (H2) showed that DAR partially had a significant negative effect on ROA during the pandemic (coefficient = -0.0842, t-count = -2.103, sig. = 0.039). DAR measures how much a company's assets are financed by debt—the higher the DAR, the greater the proportion of creditors' claims for the company's assets.

In the context of the pandemic, the high DAR reflects the company's low *financial flexibility*. Companies with high DAR have limited room to obtain additional debt funding in times of crisis due to the already high debt-to-asset ratio. Creditors tend to be more selective in providing new loans amid economic uncertainty, so companies with high DARs may have difficulty getting debt *rollovers*. This condition can force companies to sell assets at a discount or reduce productive investments, which ultimately suppresses ROA.

These findings are in line with Maulana's (2021) research which shows that DAR has a significant effect on stock prices (Ani, 2022). The study also found that ROA has no significant influence on stock prices, which can be due to investors' view that ROA can change not only driven by a company's profits but can also be caused by changes in the company's assets (Ani, 2022)

Research by Putri et al. (2023) found that DAR has no effect on company value with a significance value of 0.156, but capital structure (DAR) can strengthen the influence of profitability (ROE) on company value with a significance value of 0.005 (Rohma, 2022). This indicates that DAR acts as a moderation variable—the high proportion of debt in the asset structure can amplify the impact of changes in profitability on the company's overall performance.

Research by Bharawati (2021) in the period 2018-2020 (which includes the beginning of the pandemic) found that DAR, ROE, DER, and DPR simultaneously affect company value in the consumer goods industry sector (Bharawati, 2021). However, the study did not specifically examine the partial effect of DAR on profitability, making it difficult to draw conclusions about the direction in which DAR affects ROA directly.

Comparison with Previous Theories and Research

The results of this research need to be placed within the framework of *Pecking Order Theory* and *Trade-off Theory* that have been described in Chapter II.

The Pecking Order Theory predicts that companies have a funding hierarchy with the top priority on internal funding (retained earnings), followed by debt, and finally the issuance of new shares. During the pandemic, the company's profitability tended to decline, which meant that the availability of retained profits as a source of internal funding became limited. In these conditions, *Pecking Order Theory* predicts that companies will turn to debt as a secondary source of funding. However, the increase in debt amid a decline in income actually increases the risk of *financial distress*—a dilemma that financial managers face during the crisis.

The results of the study showing the negative influence of DER and DAR on ROA indicate that the benefits of debt as a *tax shield* are not enough to offset the increase in bankruptcy costs during the pandemic. This finding is consistent with *the Trade-off Theory* in crisis conditions, where the weight of *financial distress costs* becomes much greater than in normal periods.

Research on stock returns in the consumer goods industry for the period 2015-2019 (pre-pandemic) also found that DER has a negative and significant influence

on stock returns, while ROA has a positive and significant effect (Solechah et al., 2021). This shows that the negative relationship between leverage and company performance was already prevalent even before the pandemic, but the pandemic reinforced that relationship.

Contextual Factors of the Pandemic

Some contextual factors during the COVID-19 pandemic that affect the relationship between capital structure and profitability in the *consumer goods* sub-sector include:

First, uneven changes in consumption behavior. Research by Maulana (2021) noted that the consumer goods sector contains companies that produce consumption needs, so investors have a high level of confidence in the prospects of this sector (Ani, 2022)

However, not all sub-sectors experience the same impact.

Second, large-scale social restriction policies (PSBB) that disrupt supply and distribution chains. Companies with high dependence on imported raw materials face greater difficulties than companies that use local raw materials.

Third, the uncertainty of government policies related to the National Economic Recovery (PEN) program and fiscal incentives. Companies that are able to access government programs tend to perform better.

Fourth, investors' view of risk. Duan (2024) found that investors will be more interested in investing in companies that have low DER values, because DER has a negative correlation with stock prices (Kurniati, 2020)

This shows that during the pandemic, investors tend to avoid high-leverage companies.

The study on factors that affect stock returns also noted that simultaneously CR, DER, and ROA affect stock returns with a determination coefficient (R^2) of 33.6% (Budi, 2020). This figure is higher than the R^2 in this study (17.4%), indicating that there are still many other variables outside of the capital structure that affect profitability during the pandemic.

Conclusion

Based on the results of the analysis and discussion on the influence of capital structure (Debt to Equity Ratio and Debt to Asset Ratio) on profitability (Return on Asset) in manufacturing companies in the consumer goods sub-sector listed on the IDX during the COVID-19 pandemic period for the 2020-2021 period, the following conclusions can be drawn:

First, partially the Debt to Equity Ratio (DER) has a significant negative effect on the Return on Asset (ROA). This is evidenced by a t-calculated value of -2.845

and a significance of 0.006 (< 0.05). These findings confirm that the higher the debt-to-equity ratio, the lower the company's profitability during the pandemic. An increase in interest expense amid a decline in revenue is the main factor that pressures the company's net profit. Thus, Hypothesis 1 (H1) is accepted.

Second, partially the Debt to Asset Ratio (DAR) also had a significant negative effect on the Return on Asset (ROA), with a t-calculated value of -2.103 and a significance of 0.039 (< 0.05). These results show that the larger the assets financed by debt, the lower the company's ability to generate profits from the assets it owns. Low financial flexibility during times of crisis is the main cause. Thus, Hypothesis 2 (H2) is accepted.

Third, simultaneously DER and DAR have a significant effect on ROA, which is shown by an F-calculated value of 5.876 with a significance of 0.004 (< 0.05). Thus, Hypothesis 3 (H3) is accepted. A determination coefficient (R^2) value of 17.4% indicates that the capital structure is able to explain the variation in profitability, while the rest is influenced by other factors outside the research model.

Overall, the COVID-19 pandemic has reinforced the negative relationship between leverage and profitability, so companies are advised to be more cautious in their funding decisions in times of crisis.

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