



The Effect of Profitability, Leverage, and Firm Size on Tax Avoidance: A Case Study of Manufacturing Companies Listed on the Indonesia Stock Exchange in 2020

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Abstract: *Tax avoidance is a significant concern because it can reduce state revenue, while companies attempt to optimize their tax burden through tax planning within the legal framework. This study aims to analyze the influence of profitability, leverage, and company size on tax avoidance in manufacturing companies listed on the Indonesia Stock Exchange from 2020 to 2023. This study uses a quantitative approach with a causal associative method. The study population includes all manufacturing companies listed on the Indonesia Stock Exchange, while a sample of 40 observations was selected using a purposive sampling technique. The research instruments consisted of annual report documentation and financial statements. Data analysis was conducted through descriptive statistics, classical assumption tests, multiple linear regression, t-tests, F-tests, and coefficients of determination. The results show that profitability, leverage, and company size have negative relationships with Cash Effective Tax Rate (CETR) as a proxy for tax avoidance, with significance values of 0.000, 0.000, and 0.004, respectively. The negative coefficients indicate that increases in these variables are associated with lower CETR, which according to the operational definition used in this study indicates a higher tendency toward tax avoidance. Simultaneously, the three variables significantly explain CETR, with an Adjusted R Square value of 0.501.*

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Introduction



Taxes are a primary source of state revenue, playing a crucial role in financing development and public services. More than 70% of state budget revenues come from the tax sector, making the effectiveness of the tax system and taxpayer compliance crucial for national economic stability (Kirchler, 2016; OECD, 2021; Torgler, 2016). However, for companies, taxes are viewed as a burden that reduces profits, thus encouraging the emergence of tax planning strategies, including tax avoidance, a legal effort to minimize the tax burden by exploiting loopholes in tax regulations (Hanlon & Heitzman, 2010; Lanis & Richardson, 2015; Dyreng et al., 2019; Beer et al., 2020).

The manufacturing sector is a relevant sector because it is the largest contributor to tax revenue in Indonesia. From 2020 to 2023, this sector faced the impacts of the COVID-19 pandemic, tax incentive policies, and the economic recovery period (Shen et al., 2020). Furthermore, a report by the Tax Justice Network shows that Indonesia continues to experience tax revenue losses due to tax avoidance practices, including Base Erosion and Profit Shifting (BEPS), treaty shopping, and transfer pricing.

One factor suspected of influencing tax avoidance is profitability. Companies with high profits have an incentive to reduce their tax burden to maintain cash flow (Richardson et al., 2016). Conversely, more profitable companies also tend to be under stricter tax oversight and therefore potentially have higher tax compliance (Lanis & Richardson, 2015). These differing views indicate that the relationship between profitability and tax avoidance requires further examination.

In addition to profitability, leverage and firm size are also thought to influence tax avoidance. Leverage allows firms to reduce taxable income through deductible interest expenses, thus encouraging the adoption of thin capitalization strategies (Taylor & Richardson, 2014). Meanwhile, larger firms have more resources for tax planning but also face greater reputational pressures and public scrutiny (Rego, 2016; Watts & Zimmerman, 1990; Richardson & Taylor, 2015).

Previous research on the influence of profitability, leverage, and company size on tax avoidance has shown inconsistent results. This inconsistency indicates a research gap, particularly in manufacturing companies, which have different operational characteristics than other sectors (Salaudeen & Eze, 2018).

Based on these conditions, this study aims to analyze the influence of profitability, leverage, and company size on tax avoidance in manufacturing companies listed on the Indonesia Stock Exchange from 2020 to 2023, both partially and simultaneously. This study is significant because it provides empirical evidence regarding the determinants of tax avoidance in the manufacturing sector, with the novelty of using the observation period from 2020 to 2023, which encompasses the COVID-19 pandemic and economic recovery.

Research methods

This study uses a quantitative approach with a causal associative method to analyze the effect of profitability, leverage, and company size on tax avoidance in manufacturing companies listed on the Indonesia Stock Exchange for the period 2020 to 2023. The data used are secondary data obtained from annual reports and company financial reports.

The research population includes all manufacturing companies listed on the Indonesia Stock Exchange during the period 2020 to 2023. The sample was determined using a purposive sampling technique with the criteria of companies being consistently listed, publishing audited financial reports in Rupiah, earning profit before tax, and having complete research data.

The research instruments consisted of annual report documentation and financial statements. The dependent variable was tax avoidance, proxied by the Cash Effective Tax Rate (CETR), while the independent variables included profitability, proxied by Return on Assets (ROA), leverage, proxied by the Debt to Equity Ratio (DER), and company size, proxied by the natural logarithm of total assets.

Data analysis began with descriptive statistics, followed by classical assumption tests, including normality, multicollinearity, heteroscedasticity, and autocorrelation. Hypothesis testing was conducted using multiple linear regression analysis, t-tests, and the coefficient of determination (R^2) to measure the influence of independent variables on tax avoidance.

The research procedure began with the collection of annual reports and financial statements from companies that met the sample criteria, followed by the calculation of all research variables, database construction, and statistical analysis. The final stage involved interpreting the test results to explain the influence of profitability, leverage, and company size on tax avoidance in manufacturing companies.

Results and Discussion

Descriptive Statistical Analysis

Table 1 Descriptive Statistics Results of Research Variables

Variables	N	Minimum	Maximum	Mean	Standard Deviation
CETR	40	0.276	0.357	0.317	0.021
ROA	40	0.038	0.127	0.084	0.021
DER	40	0.145	1,568	0.922	0.393
SIZE	40	29,410	31,322	30,742	0.521
Valid N (listwise)	40				

Based on Table 1, the average CETR value of 0.317 indicates that the sample companies paid an average cash tax of 31.7% of their pre-tax profit. The average ROA of 0.084, DER of 0.922, and SIZE of 30.742 indicate relatively varied profitability, leverage, and company size characteristics but still within a reasonable range.

Classical Assumption Test

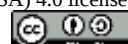
Table 2 Normality Test Results

Information	Mark
N	40
Kolmogorov-Smirnov Z / Test Statistics	0.107
Asymp. Sig. (2-tailed)	0.705
Conclusion	Normally distributed residuals

Table 2The Asymp. Sig. (2-tailed) value of 0.705 is greater than 0.05. Thus, the residuals in the regression model are normally distributed. This result indicates that the model meets the normality assumption, so the analysis can continue to the next stage of classical assumption testing..

Table 3 Multicollinearity Test Results

Independent Variables	Tolerance	VIF	Conclusion
ROA	0.892	1,121	There is no multicollinearity
DER	0.661	1,513	There is no multicollinearity



Independent Variables	Tolerance	VIF	Conclusion
SIZE	0.724	1,382	There is no multicollinearity

Table 3 All independent variables have a tolerance value above 0.10 and a VIF value below 10. ROA has a tolerance of 0.892 and a VIF of 1.121; DER has a tolerance of 0.661 and a VIF of 1.513; while SIZE has a tolerance of 0.724 and a VIF of 1.382. Thus, there are no symptoms of multicollinearity in the regression model, so that each independent variable can be interpreted individually.

Table 4 Heteroscedasticity Test Results

Independent Variables	Sig.	Criteria	Conclusion
ROA	0.446	> 0.05	There is no heteroscedasticity
DER	0.987	> 0.05	There is no heteroscedasticity
SIZE	0.463	> 0.05	There is no heteroscedasticity

Based on table 4 The significance value for ROA is 0.446, DER is 0.987, and SIZE is 0.463. All of these values are greater than 0.05, indicating that the regression model does not exhibit heteroscedasticity. This means that the residual variance in the model is relatively constant, and the estimated coefficients can be used for hypothesis testing..

Table 5 Autocorrelation Test Results

Model	Durbin-Watson	Information
1	2,291	No autocorrelation occurs

Based on Table 5, the Durbin-Watson value is 2.291. This value is around 2, indicating no serious autocorrelation in the regression model residuals. Thus, the model meets the assumption of residual independence.

Multiple Linear Regression Analysis

Table 6 Results of Multiple Linear Regression Analysis

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	0.910	0.168	-	5,402	0,000

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
ROA	-0.646	0.117	-0.661	-5,519	0,000
DER	-0.037	0.007	-0.691	-4,962	0,000
SIZE	-0.016	0.005	-0.413	-3,101	0.004

Based on table 6, The regression equation obtained is $CETR = 0.910 - 0.646 ROA - 0.037 DER - 0.016 SIZE + e$. The coefficient values of ROA, DER, and SIZE are negative, so that an increase in these three variables tends to decrease CETR. Because a low CETR indicates a higher tendency for tax avoidance, the direction of the coefficient indicates that profitability, leverage, and company size are positively related to the tendency for tax avoidance.

Hypothesis Testing

Table 7 Summary of t-Test Results

Hypothesis	Tested Relationships	t count	Sig.	Decision
H1	ROA against CETR/tax avoidance	-5,519	0,000	Accepted
H2	DER against CETR/tax avoidance	-4,962	0,000	Accepted
H3	SIZE against CETR/tax avoidance	-3,101	0.004	Accepted

Based on Table 7, ROA has a t-value of -5.519 with a significance of 0.000, DER has a t-value of -4.962 with a significance of 0.000, and SIZE has a t-value of -3.101 with a significance of 0.004. All significance values are less than 0.05, so H1, H2, and H3 are declared accepted. This means that profitability, leverage, and company size have a partial effect on CETR as a proxy for tax avoidance.

Table 8 F Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.009	3	0.003	14,027	0,000
Residual	0.008	36	0.000215		
Total	0.017	39			

Based on Table 8, the calculated F value is 14.027 with a significance level of 0.000. This significance value is less than 0.05, so it can be concluded that ROA, DER, and SIZE simultaneously influence CETR. Thus, the regression model is suitable for explaining the relationship between the independent variables and tax avoidance.

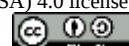


Table 9 Results of the Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.734	0.539	0.501	0.01468

Based on the results of the R Square value of 0.539 and Adjusted R Square of 0.501. This shows that 50.1% of the variation in CETR can be explained by profitability, leverage, and company size, while the remaining 49.9% is influenced by other factors outside the research model, such as capital intensity, sales growth, corporate governance, institutional ownership, and corporate tax policy.

Discussion

1. The Effect of Profitability on Tax Avoidance

The partial test results show that profitability, as proxied by ROA, has a significant effect on CETR, with a coefficient of -0.646 and a significance value of 0.000. A negative coefficient indicates that the higher the ROA, the lower the company's CETR. Since a low CETR reflects lower cash tax payments compared to pre-tax profit, these results indicate that increased profitability is associated with an increased tendency to tax avoidance.

Theoretically, companies with high profitability face the consequence of increasing taxable income. This situation can encourage management to engage in tax planning to legally reduce the tax burden. This finding aligns with agency theory, as management, as an agent, has an incentive to maintain net profit after tax to maintain a favorable image for shareholders. These results also support research that finds profitability can influence tax avoidance (Hitjahubessy et al., 2022; Prang et al., 2024).

2. The Effect of Leverage on Tax Avoidance

Leverage is measured using the Debt-to-Equity Ratio (DER). The effect of DER on tax avoidance is related to the use of debt in a company's financing structure. Debt can incur interest expenses, which under certain conditions can reduce taxable profit. Therefore, leverage is often viewed as a factor related to a company's tax-efficiency strategy.

The partial test results show that leverage, proxied by DER, has a significant effect on CETR, with a coefficient of -0.037 and a significance value of 0.000. A negative coefficient indicates that the higher the DER, the lower the company's CETR. This means that the greater the use of debt in the financing structure, the greater the company's tendency to reduce cash tax payments by utilizing interest expense as a taxable profit reduction.

3. The Effect of Company Size on Tax Avoidance

Firm size is proxied by the natural logarithm of total assets. Larger firms generally have more resources for tax planning, but at the same time, they also face greater scrutiny from tax authorities, investors, and the public. Therefore, the relationship between firm size and tax avoidance can be directional.

The partial test results show that company size, proxied by SIZE, has a significant effect on CETR, with a coefficient of -0.016 and a significance value of 0.004. A negative coefficient indicates that the larger the company size, the lower the CETR paid. These results indicate that large-scale companies have a higher tendency to engage in tax avoidance due to their more adequate resources, administrative systems, and tax planning capabilities.

4. The Simultaneous Effect of Profitability, Leverage, and Company Size

The simultaneous test results show that ROA, DER, and SIZE jointly influence CETR with a calculated F value of 14.027 and a significance level of 0.000. These results indicate that tax avoidance is not solely explained by a single financial ratio, but is formed through a combination of profitability, funding structure, and company scale. With an Adjusted R Square of 0.501, the model is able to explain 50.1% of the variation in CETR in the dummy data used.

In the context of manufacturing companies, this simultaneous relationship is understandable because corporate tax decisions are related to many operational aspects. Profitability determines the amount of taxable profit, leverage influences interest expense and financing structure, and company size reflects resource capacity and transaction complexity. Previous research also shows that a combination of financial variables is often more effective in explaining tax avoidance than examining each variable separately (Aini & Kartika, 2022; Prabowo & Sahlan, 2022).

5. Implications of Research Results

The results of this dummy study suggest that companies with high profitability, high leverage, and larger size tend to have lower CETRs. For academics, these results can serve as a framework for discussions on the determinants of tax avoidance in manufacturing companies. For companies, these findings emphasize the importance of tax planning that remains within the law and does not pose reputational risks.

For investors and creditors, the CETR can be used as an indicator to assess a company's fiscal compliance. For tax authorities, profitability, leverage, and company size can be initial considerations in risk-based supervision. However, because the data in this section is dummy data, the final interpretation must be adjusted based on the actual data processing output to ensure the research conclusions are valid.

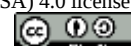
Conclusion

This study aims to analyze the influence of profitability, leverage, and company size on tax avoidance in manufacturing companies listed on the Indonesia Stock Exchange from 2020 to 2023. The results of the analysis indicate that profitability, leverage, and company size each have a significant effect on the Cash Effective Tax Rate (CETR) as a proxy for tax avoidance. Negative regression coefficients indicate that an increase in profitability, leverage, and company size is followed by a decrease in the CETR value, indicating a higher tendency for tax avoidance. In addition, these three variables are also proven to have a simultaneous effect on tax avoidance with the model's ability to explain 50.1% of the variation in CETR. These findings indicate that company financial characteristics are an important factor in explaining tax avoidance practices in the manufacturing sector.

This study still has limitations because it only used manufacturing companies as research objects, the observation period was limited to 2020 to 2023, and only included profitability, leverage, and company size as independent variables. Therefore, further research is recommended to expand the sector coverage, increase the observation period, and include other variables that have the potential to influence tax avoidance, such as capital intensity, sales growth, corporate governance, institutional ownership, and tax policy factors. Practically, the results of this study can be used as considerations for company management in developing tax planning strategies that remain in accordance with tax regulations, for investors in assessing corporate tax compliance risks, and for tax authorities as supporting information in developing supervisory strategies based on company characteristics.

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