The Effect of Financial Ratio on Corporate Income Tax in Manufacturing Sector Companies for the 2018-2022 Period

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Abstract. The manufacturing industry is a major contributor to the national tax revenue, primarily through Corporate Income Tax, yet there is still no clear empirical evidence regarding the relationship between financial ratios and Corporate Income Tax. The purpose of this study is to analyze the influence of financial ratios, including Solvency, Liquidity, and Activity Ratios, on Corporate Income Tax in the Manufacturing Sector. This research employs purposive sampling technique, obtaining financial reports from 21 manufacturing companies in 2018-2022. Through multiple linear regression analysis, it is found that overall Financial Ratios, encompassing solvency, liquidity, and activity ratio, positively affect corporate income tax. Therefore, this study is expected to contribute to assisting manufacturing companies in managing their tax obligations more effectively and optimizing financial performance, considering the largest portion of national tax revenue comes from the manufacturing sector.

Keywords: Tax, Finance, Solvency, Liquidity, Activity Ratio

1 Introduction

The manufacturing sector plays a significant role in the Indonesian economy, contributing to state revenue and employment opportunities. The Ministry of Industry emphasises this, stating that when compared to other industries, the manufacturing sector continues to be the biggest source of tax revenue. From January to June 2023, the manufacturing industry contributed 27.4 percent to total tax revenue, reaching Rp 970.20 trillion, emphasizing its importance in supporting the nation's finances through corporate income tax. Corporate income tax is a primary tax obligation for manufacturing companies.

Enterprises, especially manufacturing enterprises, are subject to corporate income tax on their earnings. Financial ratios are one of the factors that can affect how much Corporate Income Tax manufacturing companies pay. Metrics like financial ratios are used to evaluate the financial health of an organisation. Healthy financial ratios may indicate a company's ability to fulfill its obligations, including their tax liabilities. However, previous research has not empirically proven that financial ratios influence Corporate Income Tax. Therefore, an empirical study on the relationship between financial ratios and Corporate Income Tax is necessary.

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Financial ratios can be categorized into three types: solvency, liquidity, and activity ratios. Solvency, measured by the debt-to-equity ratio, assesses a company's ability to fulfill their long-term obligations.[1] Studies by Nursasmita, Digdowiseiso et al., and Falensy & Kuntadi demonstrate a positive influence of solvency on Corporate Income Tax.[2][3][4] On the other hand, liquidity, measured by the quick ratio, serves as an indicator of a company's ability to meet its short-term obligations. Previous studies by Puspitasari & Amah and Sari empirically show a positive effect of liquidity on Corporate Income Tax.[5][6]

Activity ratios evaluate how effectively a business utilizes its resources. In other words, these ratios aim to measure the efficiency of resource usage.[7] They can also assess how efficiently a company employs its assets to generate profits. The activity ratio employed in this study is fixed asset turnover (FAT). However, no prior research has empirically examined the impact of activity ratios on Corporate Income Tax.

The aforementioned suggests that further research is necessary to examine how financial ratios affect corporate income tax by examining how manufacturing companies' solvency, liquidity, and activity ratios differ. The findings can assist companies in developing more effective tax planning strategies. Additionally, it is hoped that this research can be used to formulate more targeted tax policies and serve as a foundation for future studies.

2 Research Methods

2.1 Types of research

This research uses a quantitative research method known as inferential analysis. This method involves analyzing data through testing hypotheses and making choices based on calculations using the company's financial reports. The following are the hypotheses in this research:

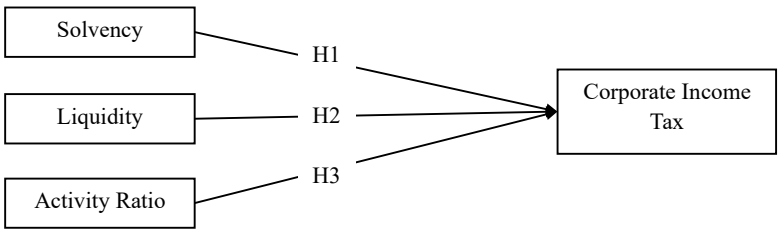

Figure 1. Research framework

H1 : Solvency Ratios Have a Positive Influence on Corporate Income Tax
H2 : Liquidity Ratios Have a Positive Influence on Corporate Income Tax
H3 : Activity Ratios Have a Positive Influence on Corporate Income Tax

2.2 Research Population and Sample

This study uses 21 manufacturing businesses with 105 samples overall that were listed on the Indonesia Stock Exchange between 2018 and 2022. The purposive sampling method was used

to choose the study's sample. A sampling technique called purposeful sampling is a conscious selection process based on predetermined standards. Therefore, the number of samples collected, taking into account certain factors, follows the following criteria:

Table 1. Manufacturing Company Sample Selection Criteria

Criteria	Amount
Has a complete data period according to the research title, namely 2018 -2022	166
Companies that have complete financial reports according to research variable requirements for 2018 - 2022	21
Research Year (2018 – 2022)	5 (years)
Total Research Sample	105

2.3 Operational Variables

A research variable is a characteristic, attribute, or value of an individual, object, or activity that the researcher manipulates and observes to make conclusions. The variables used to measure financial ratios in this research are liquidity, solvency and activity ratios. The dependent variable is corporate income tax.

Table 2. Operational Variables

Variable	Operational definition	Indicator	Scale
Solvency	Analysis to evaluate a company's debt relative to its capital (Sudjiman, 2022).	$DER = \frac{Total\ Debt}{Equity}$	Ratio
Liquidity	Ensuring the company can meet its short-term obligations quickly is crucial (Devi, 2022).	$QR = \frac{Current\ Assets - Inventory}{Current\ \ Liabilities}$	Ratio
Activity Ratio	The company's capacity to generate sales through its assets is very impressive (Ardila, 2021).	$FAT = \frac{Income}{Fixed\ Assets}$	Ratio
Corporate Income Tax/(PPh)	Tax on income generated by corporate taxpayers (Fitria & Taufik, 2020)	$CTTOR = \frac{PPh\ In\ Debt}{Sale} \times 100\%$	Ratio

2.4 Data analysis technique

Multiple linear regression analysis techniques are used in this study to analyse data using SPSS 22 software. A method for determining the direction and degree of the association between independent and dependent variables is multiple linear regression. This research uses a significance level of 0.05 or 5%. The equation used for the regression model is as follows:

$$PPh = \beta_0 + \beta_1 SOL + \beta_2 LKD + \beta_3 AKTV + e \quad (1)$$

Keterangan :

PPh	: Corporate Income Tax
β_0	: Constant
$\beta_1, \beta_2, \beta_3$	: Independent Variable Coefficients Financial Ratios (Solvability, Liquidity, Activity Ratio
SOL	: Solvency (*Debt to Equity Ratio*)
LKD	: Liquidity (*Quick Ratio*)
$AKTV$	: Activity Ratio (*Fixed Assed Turnover*)
e	: Error

To ensure that the regression model obtained has accuracy in estimation, is not biased, and is consistent, multiple linear regression analysis must carry out classical assumption tests. In the regression model, normality, multicollinearity, autocorrelation and heteroscedasticity tests are one of the basic assumptions that must be correct. Autocorrelation tests look for correlations between confounding errors from previous periods; heteroscedasticity test looks for differences in residual variance between observations; normality test looks for normal distribution of residuals; and the multicollinearity test looks for correlation between independent variables.

3 Results And Discussion

3.1 Results

This research analyzes the effect of financial ratios on corporate income tax from 21 companies in the manufacturing sector in 2018-2022. Before carrying out the analysis, classical assumptions need to be made to ensure the data is not biased.

a) Normality Test

Normality tests are carried out using graphs and normality tests using the Shapiro Wilk and Kolmogorov Smirnov methods to assess the normality of residuals and determine whether a variable follows a normal distribution. The following are the results of the normality test as shown in Figure 2.

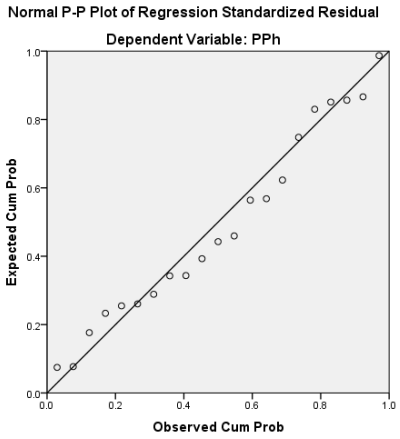

Figure 2. *Scatterplot* Normality test

The data is spread around the diagonal line and follows its direction, as seen in Figure 2, or the histogram graph shows that the distribution pattern is normal, which indicates that the regression model meets the requirements for normality. Inferential testing using the Kolmogorov-Smirnov and Shapiro-Wilk procedures is an alternative to using standard graphs.

Table 3. Normality test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	variabel	Statistic	df	Sig.	Statistic	df	Sig.
rasiokeuangan	SOL	.171	21	.113	.942	21	.243
	LKD	.123	21	.200*	.941	21	.227
	AKTV	.116	21	.200*	.967	21	.673
	PPh	.142	21	.200*	.965	21	.623

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the data in Table 3, the significance test value is greater than the actual intensity. This is demonstrated by Asiymp. Sig (2-tailed) is 0.150. The observed value exceeds the actual intensity, namely 0.05, which shows that the data supports the assumption of normality. Thus it can be concluded that the regression model is normally distributed.

b) Multicollinearity Test

Finding out whether there is a relationship between independent variables in an effective regression model—that is, a model in which there is no relationship between independent variables—is the goal of the multicollinearity test. The tolerance value and the VIF value, which stands for Variance Inflation Factor, can be tested to see if multicollinearity is present or not. The regression model between the independent variables does not exhibit multicollinearity if the tolerance value is more than 0.1 and the VIF is less than 10.

Table 4. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.063	.017		3.729	.002		
	SOL	.453	.008	.135	2.547	.026	.894	1.118
	LKD	.048	.006	-.186	3.797	.004	.992	1.008
	AKTV	.425	.006	-.189	3.767	.005	.896	1.116

a. Dependent Variable: PPh

Each independent variable produces a tolerance number that is more than 0.1 based on the information in Table 4. Every independent variable has a VIF value of less than 10. This demonstrates that the independent variables do not exhibit multicollinearity.

c) Heteroscedasticity Test

The heteroscedasticity test is used to ascertain whether there is inequality in the variance between the residuals from various observations in a regression model. If the variance remains constant, it is known as homoscedasticity, but if the variance is different, it is known as heteroscedasticity. Heteroskedasticity can be identified by examining a scatterplot that depicts the relationship between the predicted values of the independent variables and the corresponding residual values.

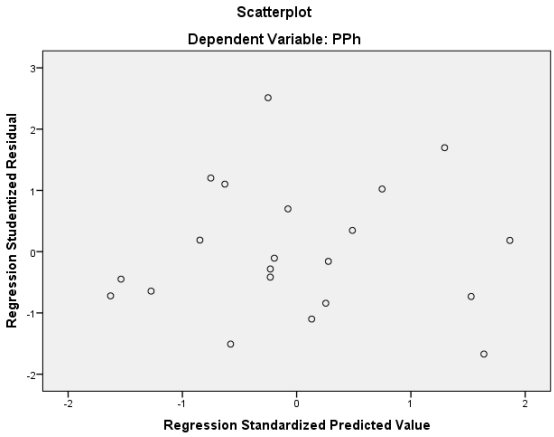

Figure 3. *Scatterplot* Heteroskedasticity Test

Figure 3. It can be seen that there is no clear pattern and it is not distributed regularly so that heteroscedasticity does not occur. Thus the heteroscedasticity assumption is met.

d) Autocorrelation Test

Based on the Durbin-Watson statistical table, if there is k=3, the significance level is 0.05 (5%), and the dU value or upper limit is 2.4137. The findings of the autocorrelation test with Durbin Watson carried out in this research are:

Table 5. Autocorrelation Test

Durbin Watson	2.303

Based on data analysis in Table 5, the DW value obtained was 2.303, indicating that there was no autocorrelation in this study. This happens when the Durbin-Watson value is in the interval 4-dU = 1.5863 and dU = 2.4137. These results show no indication of autocorrelation. The autocorrelation assumption test is met.

e) Multiple linear regression

Multiple linear regression analysis is used to determine the impact of two or more independent variables on one dependent variable. This research uses multiple linear regression analysis to understand the extent of the impact of financial ratios consisting of Solvency, Liquidity, Activity Ratio on Corporate Income Tax with SPSS 22. The initial stage of multiple linear regression analysis is that the test carried out is a simultaneous test or F test. Objectives The F test is to ascertain whether the independent factors collectively have a significant impact on the dependent variable simultaneously.

Table 6. F Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.392	3	2.790	3.484	.003[b]
	Residual	.323	17	.158		
	Total	.292	20			

a. Dependent Variable: PPh

b. Predictors: (Constant), AKTV, LKD, SOL

Table 6 shows that solvency, liquidity and activity ratios together have a large impact on corporate income tax. This happens because the calculated findings have a significance level that is < the required significance level. The findings show that the calculated significance level is 0.000 < the required significance level of 0.05. Therefore the null hypothesis (H0) is rejected. These findings show that there is a large simultaneous influence between solvency, liquidity, activity ratio and corporate income tax.

After determining the variables that influence simultaneously, continue testing the independent variable on the dependent variable partially with the T test. If the probability is <0.05, then the hypothesis being tested has a partial impact between the independent variables on the dependent variable.

Table 7. T Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.063	.017		3.729	.002
	SOL	.453	.008	.135	2.547	.026
	LKD	.048	.006	.186	3.797	.004
	AKTV	.425	.006	.189	3.767	.005

a. Dependent Variable: PPh

Table 7 shows that all financial ratio variables: solvency, liquidity and activation ratio have an effect on corporate income tax where the Sig. the three independent variables are greater than 0.05. Thus, hypotheses H1, H2, and H3 are accepted where Solvency, Liquidity, and Activation Ratio have a positive (partial) effect on Corporate Income Tax. The regression model obtained is as follows.

$$PPh = 0.063 + 0.453SOL + 0.048LKD + 0.425AKTV + e \quad (2)$$

The SOL coefficient is 0.453, indicating that Solvency has a positive impact on Corporate Income Tax. An increase in Solvency of 1 unit will cause an increase in Corporate Income Tax of 0.453. The LKD coefficient is 0.048, indicating that liquidity has a positive impact on Corporate Income Tax. An increase in Liquidity of 1 unit will cause an increase in Corporate Income Tax of 0.048. Furthermore, the AKTV coefficient is 0.425, indicating that the Activity Ratio has a positive impact on Corporate Income Tax. An increase in the Activity Ratio of 1 unit will result in an increase in Corporate Income Tax of 0.425.

After testing the hypothesis of the F test and T test, the researcher continued with the coefficient of determination test to measure the performance of the estimation model (2) in interpreting the dependent variable for corporate income tax. The coefficient of determination, denoted by R2, ranges from 0 to 1. This experiment utilizes the results of the Adjusted R Square to determine the coefficient of determination in this study which is presented in Table 8.

Table 8. Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780[a]	.746	.714	.0125799

a. Predictors: (Constant), AKTV, LKD, SOL

Table 8 displays R2 and the Adjusted R Square value, namely 0.714. This shows that 71.4% of the variability in the Corporate Income Tax variable is likely caused by the impact of Solvency, Liquidity and Activity Ratios. The remaining 28.6% of the Corporate Income Tax variable for Manufacturing Sector Companies is affected by other variables which have not been discussed in this research.

3.2 Discussion

a) Solvency to Corporate Income Tax

The research results show that the Sig. (0.026) < 0.05 where Solvency has a positive effect on Corporate Income Tax. The results of this research are in line with the empirical results from Nursasmita, Digdowiseiso et al., and Falensy & Kuntadi.[2][3][4] Solvency is the company's ability to meet its financial obligations, including corporate income tax, using the resources it has. In the context of manufacturing sector companies, solvency is a crucial factor that influences financial performance. A high level of solvency indicates that the company is able to generate sufficient income to pay corporate income tax and fulfill its financial obligations easily.[8] Manufacturing companies that have strong solvency tend to be more stable in carrying out their operations, because they can allocate funds efficiently to meet various needs, including tax payments. However, low solvency can cause serious problems for manufacturing companies. If a company is unable to pay corporate income taxes or other financial obligations, this can lead to liquidity problems and potential legal problems.[9] Additionally, companies with low solvency have difficulty obtaining additional financing or attracting new investors, which can limit a company's growth and ability to compete in the market. Therefore, maintaining a healthy level of solvency is an important aspect in the financial management of manufacturing companies, and appropriate strategies in asset and debt management must be implemented to ensure smooth operational continuity.

b) Liquidity Against Corporate Income Tax

The research results show that the Sig. (0.004) < 0.05 where liquidity has a positive effect on Corporate Income Tax. The results of this research are in line with the empirical results of Puspitasari & Amah and Sari which empirically show that liquidity has a positive influence on corporate income tax.[5][6] Liquidity is the ability of a company to fulfill its financial obligations using the assets it owns. In the context of manufacturing sector companies, liquidity is a key factor that has a direct influence on the company's ability to pay corporate income tax on time.[10] Companies that have a high level of liquidity tend to be able to pay corporate income taxes and other financial obligations without difficulty, because they have assets that can be easily converted into cash. Sufficient liquidity allows companies to manage cash efficiently, meet daily operational needs, and account for regular tax payments. However, low liquidity can pose serious challenges for manufacturing companies. Companies that have difficulty converting their assets into cash in a short time have difficulty paying corporate income taxes on time. This can result in fines or tax sanctions that have the potential to harm the company's finances. Apart from that, low liquidity can also limit a company's ability to make strategic decisions, such as investing in product development or market expansion.[11] Therefore, maintaining a healthy level of liquidity is an important aspect in the financial management of manufacturing companies, and appropriate strategies in cash and asset management must be implemented to avoid unwanted tax payment problems.

c) Activity Ratio to Corporate Income Tax

The research results show that the Sig. (0.005) < 0.05 where liquidity has a positive effect on Corporate Income Tax. The activity ratio measures how efficiently a company uses its assets to generate income. In the context of manufacturing sector companies, the activity ratio is an important indicator for understanding the company's operational efficiency in generating income that can be used to pay corporate income tax. Manufacturing companies that have a high

activity ratio tend to be able to optimize the use of their assets, such as inventory and production equipment, to generate greater income.[12] Thus, they have a greater ability to pay taxes on time and fulfill their tax obligations properly. However, companies with a low activity ratio face challenges in paying corporate income tax. This can occur due to inefficient use of assets or less than optimal production processes, resulting in lower income. In this situation, companies find it difficult to pay taxes on time, especially if revenues are insufficient to cover their tax obligations. Therefore, manufacturing companies need to pay attention to their activity ratios and take steps to improve their operational efficiency, such as making improvements to production processes, managing inventory better, or increasing the use of technology to increase productivity. In this way, they can ensure that they have sufficient income to pay corporate income tax and maintain the company's financial sustainability.

4 Conclusion

This research reveals that financial ratios, especially solvency, liquidity and activity ratios, have a significant influence on corporate income tax in 21 manufacturing sector companies during the 2018-2022 period. The results of normality, multicollinearity, heteroscedasticity and autocorrelation tests show that the regression model meets classical assumptions. The analysis shows that increasing solvency, liquidity and activity ratios is proven to contribute to increasing corporate income tax. Overall, it can be concluded that financial ratios can influence corporate income tax in the manufacturing sector.

The implications of this research highlight the importance of careful financial management in manufacturing companies, especially in terms of maintaining solvency levels, liquidity and activity ratios. Companies need to understand that strong solvency can increase financial stability and the ability to fulfill tax obligations on time, while sufficient levels of liquidity support smooth tax payments. In addition, operational efficiency obtained through a high activity ratio can help companies optimize asset use and increase income, thereby supporting better tax payments. Recommendations for future research include more in-depth research on other factors that may influence the relationship between financial ratios and corporate income tax. In addition, research can consider mediating or moderating variables that can deepen understanding of the mechanisms behind the relationship between financial ratios and corporate income tax.

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