

The effect of capital intensity, leverage, liquidity, moderated by company size on tax aggressiveness (Empirical study on energy companies listed on the Indonesia Stock Exchange for the 2018-2022 period)

Tassha Billy Gunawan¹, Agoestina Mappadang²

Universitas Budi Luhur, Indonesia^{1&2}

2232600177@student.budiluhur.ac.id¹, agustina.mappadang@budiluhur.ac.id²



Article History

Received on 12 April 2024

1st Revision on 20 April 2024

2nd Revision on 23 April 2024

Accepted on 27 April 2024

Abstract

Purpose: This study examines the effect of capital intensity, leverage, and liquidity on tax aggressiveness and profitability as moderating variables on tax aggressiveness.

Method: This study used Energy companies listed on the Indonesia Stock Exchange, selected using the purposive sampling method from 2018 to 2022 and there were 23 companies chosen. The data analysis in this study used panel data regression with views.

Results: Capital intensity has a negative effect on tax aggressiveness; leverage and liquidity have no effect on tax aggressiveness; company size can moderate the effect of capital intensity on tax aggressiveness, but company size cannot moderate the effect of leverage and liquidity on tax aggressiveness.

Keywords: *Capital Intensity, Company size, Liquidity, Leverage, Tax Aggressive*

How to Cite: Gunawan, T. B., & Mappadang, A. (2024). The effect of capital intensity, leverage, liquidity, moderated by company size on tax aggressiveness (Empirical study on energy companies listed on the Indonesia Stock Exchange for the 2018-2022 period). *Journal of Multidisciplinary Academic Business Studies*, 1(3), 305-321.

1. Introduction

Taxes are a source of income that contributes 77% of state income to the realization of the 2022 APBN, namely 2,034.5 trillion rupiah, and contributes 76.9% to the realization of the 2021 APBN, namely 1,547.8 trillion rupiah. The amount of tax revenue will increase by 31.4% in 2022 compared to that in 2021. This shows how important and large the role of tax revenue is in state spending needs, so that tax revenue must be further optimized to finance state spending.

In research (Pramaiswari & Fidiana, 2022), tax avoidance is defined as an explicit reduction in tax payments through various strategies, including tax management, tax planning, tax aggression, tax evasion (tax avoidance), and tax sheltering. According to Frank et al. (2019), tax aggressiveness can take the form of tax avoidance or evasion. Tax avoidance is a scheme that aims to minimize the tax burden by exploiting loopholes in a country's tax provisions (Lathifa, 2022). According to Darma (2019) an example of tax avoidance is determining unreasonable prices so that the reported income or expenses are not reasonable.

Tax aggressiveness often occurs in various sectors in the form of taxpayers' efforts to avoid tax. In 2021, the PWC stated that only 30 percent of the 40 large energy companies had adopted tax transparency reporting in 2020. Meanwhile, for the rest, the tax reports were not transparent (Suwiknyo, 2021). This case proves that some companies are still trying to avoid taxes by implementing tax aggressiveness to

minimize and even manipulate financial reports and fiscal profits. According to Dewi and Oktaviani (2021), the greater the capital intensity ratio, the greater the depreciation burden, and the higher the tax avoidance measures. Research related to the capital intensity ratio stated by (Budiadnyani, 2020) that the capital intensity ratio influences tax aggressiveness. The results of this study are in line with those of previous research (Utomo & Fitria, 2021). However, Adisamartha and Noviari (2015) show that capital intensity does not affect tax aggressiveness..

Apart from capital intensity, leverage is another variable that can trigger companies to avoid tax. Leverage is the use of debt or loan funds to increase returns or profits in a business or investment (Idris, 2021). Research related to the effect of leverage on tax aggressiveness is stated in (Andhari & Sukartha, 2017) that leverage has a negative effect on tax aggressiveness. However, the results of this research are not in line with those of (Purwanto, Yusraini, & Susilatri, 2016) which states that leverage has a significant positive effect on tax aggressiveness. In addition to capital intensity and leverage, a company's liquidity is another variable that influences tax aggressiveness. Previous research has attempted to find factors in company conditions that might influence tax aggressiveness. One of them is liquidity. (Purwanto et al., 2016) stated that liquidity has a positive effect on tax aggressiveness. The results of this study are in line with those of Yuliana and Wahyudi (2018).

The Company's high liquidity ratio reflects that it can easily pay off its short-term obligations; however, a low liquidity ratio reflects the condition of the company, which has a low ability to pay off its short-term obligations, including tax debts. This then triggers the possibility that the company does not comply with the applicable tax regulations. (Purwanto et al., 2016) found that companies with low ratios tend to engage in tax aggressiveness to maintain their cash flow.

This study has a moderating variable: company size. According to Luke and Zulaikha (2016), company size is a measurement grouped based on the size of the company and describes the company's activities and income. Company size can be measured through the company's total assets, which are calculated using logarithmic values (Utomo & Fitria, 2021). Company size was divided into three groups: small, medium, and large. Large companies are said to have a low ETR because they can maximize tax planning to reduce tax costs. However, there is also a theory that states otherwise, because large companies are in the public spotlight, their tax costs tend to be high.

According to Luke and Zulaikha (2016) and Yuliana and Wahyudi (2018), company size positively affects tax aggressiveness. Utomo and Fitria (2021) stated that company size moderates the influence of capital intensity on tax aggressiveness. Based on the background above, the title of this research is "The Effect of Capital Intensity, Leverage and Liquidity on Tax Aggressiveness with Company Size as a Moderating Variable."

1.1 Problem Formulation

The problem formulation in this study is formulated in detail as follows:

1. Does capital intensity affect tax aggressiveness?
2. Does leverage affect tax aggressiveness?
3. Does liquidity affect tax aggressiveness?
4. Does the company size moderate the effect of capital intensity on tax aggressiveness?
5. Does the company size moderate the effect of leverage on tax aggressiveness?
6. Does company size moderate liquidity's effect on tax aggressiveness?

2. Literature review

2.1 Agency theory

Agency theory, as proposed by Jensen and Meckling (1976), suggests that separation between the owner (principal) and manager (agent) of a company can give rise to agency problems. The owner is the principal and the manager is the agent who runs the company; thus, agency problems will arise. Each party always tries to maximize its utility function. The difference in interests between the management (agent) and principal can give rise to agency conflicts. General fund principals want large profits. Principals and agents also avoid risks. This conflict is referred to as agency theory.

Based on this, agency theory is closely related to companies' tax avoidance or tax aggressiveness. The differences in the interests of owners and agents from a tax perspective are similar to those of a company and state. The company will implement various policies to maximize profits, one of which is to reduce the company's tax burden. Therefore, this study examines whether capital intensity, leverage, and liquidity, with profitability as moderating variables, have an effect on tax aggressiveness.

2.2 Company Size

Company size is a value that classifies a company based on its assets into large and small categories (Utomo & Fitria, 2021). According to Utomo and Fitria (2021), companies that fall into the large category have resources that can be utilized to manage their taxes well, in contrast to small companies. Low company profits mean that the company's tax burden is low and reduces the level of aggressiveness of the company.

According to Utomo and Fitria (2021), when a company grows, capital and asset intensity increase. With these resources, the depreciation costs borne by the company increase, so the company's taxable profit will decrease, and the income tax borne by the company will decrease. Companies can use it to reduce their tax burden, thereby reducing corporate tax aggressiveness will be reduced.

Many studies have examined the effect of company size on tax aggressiveness based on various research results. According to there are 2 theories that discuss company size. These theories include political power and costs. These two theories have different views of company size. The first theory states that large companies tend to have low ETR or tax aggressiveness. However, the second theory states that otherwise. This is because in the first theory, the bigger the company, the more resources it has to carry out good tax planning, thereby reducing the company's tax aggressiveness. However, in the second theory, it is said that large companies are in the public spotlight, this causes these large companies to have to pay higher income taxes than they should. The moderating variable in this study is company size, which is measured using the size ratio:

$$SIZE = Ln(Total Asset)$$

Source: Luke dan Zulaikha (2016)

The reason for choosing the SIZE proxy using the natural logarithm as an indicator of company size in this study is to reduce data fluctuations without changing the proportion of the original value (Luke and Zulaikha, 2016).

2.3 Capital intensity

According to Utomo and Fitria (2021), capital intensity is an investment activity carried out by a company linked to investment in the form of fixed assets. High ownership of fixed assets will also result in high depreciation expenses, which will have an impact on the company's profits, which will become smaller due to these depreciation expenses. Thus, a higher number of assets owned by the company encourages it to take aggressive tax action. This research measures capital intensity with the following calculation: The measurement of capital intensity in this research is the capital intensity ratio, namely:

$$Capital Intensity Ratio (CIR) = \frac{Fixed Assets}{Total Assets}$$

Source: Maulidah dan Prastiwi (2019)

Capital intensity measures a company's capital in the form of fixed assets. When capital intensity is high, depreciation expenses arise because of assets. As depreciation expenses increase, taxable profits decrease, resulting in a decrease in tax payables on corporate income tax.

The reason for choosing the capital intensity ratio to measure the capital intensity variable is that the greater the depreciation costs, the greater the deductible expense, and ultimately, the smaller the company's tax payable (Maulidah & Prastiwi, 2019). Depreciation expenses later add to the company's expenses and reduce the profits generated by the company (Simamora & Rahayu, 2020).

2.4 *Leverage*

According to Adisamartha and Noviari (2015), leverage is a ratio that indicates the amount of external capital a company uses to carry out its operational activities. Debt is included in the category of external capital. According to Simamora and Rahayu (2020), leverage is an act of tax aggressiveness carried out by a company by considering the funding policy that will be used by the company. According to Purwanto et al. (2016), companies with high tax liabilities will also have high debt, so they deliberately have high debt to reduce the tax burden. The ideal total debt ratio is 4:1 or 40%. The reason for choosing the debt ratio to calculate leverage is that this ratio shows the amount of debt that the company has. According to Friandi, Soeksin, and Rifai (2020), leverage shows that companies in procuring debt are allocated to finance investment. The higher the leverage value in each company, the higher the level of tax aggressiveness in that company. The measurement of leverage in this study is the debt-to-equity ratio, that is,

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Source: Purwanto (2016)

2.1.1 *Liquidity*

According to Yuliana and Wahyudi (2018), liquidity is defined as having adequate sources of funds to meet maturing needs and obligations and the ability to buy and sell assets quickly. According to Adisamartha and Noviari (2015), a company's ability to carry out short-term obligations can be seen in the liquidity ratio. If the company has a high liquidity ratio, then it is in a smooth cash flow condition. According to Purwanto et al. (2016), low liquidity can reflect that a company has difficulty meeting short-term obligations.

Difficulties with liquidity can trigger companies to disobey tax regulations. The current ratio (current ratio) was used in this study. This variable is measured using the current ratio by comparing current assets with current liabilities. This ratio shows the extent to which the company can meet its short-term obligations with its current assets. The lower the ratio, the lower the company's ability to fulfill its long-term obligations.

The current ratio variable was chosen because, according to Wahhab (2022), a good current ratio is in the range 1.5 3. However, the ideal current ratio depends on industry. A good current ratio figure shows that the company can pay all of its short-term debt with its current assets, so there is little risk of delay. The liquidity measurement in this research uses the current ratio (current ratio) as follows:

$$\text{Current Ratio}(CR) = \frac{\text{Current assets}}{\text{Current Liabilities}}$$

Source: Purwanto (2016)

2.5 *Theoretical Framework*

According to Maulidah and Prastiwi (2019), the capital intensity ratio is the amount of capital owned by a company in the form of fixed assets, which are used as company investments. Companies use fixed assets to generate profits. However, the company's large investment in assets triggers an increase in depreciation expenses, which reduces the company's taxable profit. Companies use depreciation expenses to minimize corporate income tax. The higher the depreciation expense, the greater the expenses that can be deducted, which means that the company's tax payable is smaller. This research is in line with Budiadnyani (2020) finding that capital intensity has a positive effect on tax aggressiveness. This finding is in line with the results of Yuliana and Wahyudi (2018), who state that capital intensity influences tax aggressiveness.

Leverage is the ratio that indicates the amount of external capital used by a company to carry out its operational activities. Debt is included in the category of external capital (Simamora & Rahayu, 2020). Funding from debt is a burden on the company. These expenses take the form of loan interest expenses on debt. This burden reduces a company's taxable income. The higher the company's leverage value, the higher the risk of managing its debt. The lower the company's leverage ratio, the better it can manage its debt and its funding does not depend on debt, so it does not incur costs on loan interest. This study

is in line with Purwanto et al. (2016), who states that leverage influences tax aggressiveness. The results of this study are also in line with Friandi et al. (2020), who state that leverage influences tax aggressiveness.

According to Adisamartha and Noviari (2015), a company's ability to carry out short-term obligations can be seen in the liquidity ratio. If a company has a high liquidity ratio, then it is in a condition of smooth cash flow. The Company's high liquidity ratio reflects that it can easily pay off its short-term obligations; however, a low liquidity ratio reflects the condition of the company, which has a low ability to pay off its short-term obligations, including tax debts. This then triggers the possibility that the company does not comply with the applicable tax regulations. Companies with low liquidity ratios tend to be tax-aggressive in maintaining cash flow. This study is in line with Purwanto et al. (2016), who states that liquidity influences tax aggressiveness. In line with research by Adisamartha and Noviari (2015) which states that liquidity influences tax aggressiveness. The results of this research are also in line with those of Yuliana and Wahyudi (2018), who state that liquidity influences tax aggressiveness.

2.6 Development of Research Hypothesis

2.6.1. The Effect of Capital Intensity on Tax Aggressiveness

Capital intensity is the ratio of investment activities carried out by a company associated with investment in fixed assets and inventory. Investing in fixed assets is considered to be more profitable from the company's side because depreciation costs can be allocated over several future periods. By allocating depreciation costs, taxable income and fiscal profit also decrease or minimize the corporate tax payable.

Budiadnyani (2020) stated that capital intensity has a positive effect on tax aggressiveness. The results of this study are also in line with Andhari and Sukartha (2017); however, according to Utomo and Fitria (2021), capital intensity negatively affects tax aggressiveness. This study re-examines the effect of capital intensity on tax aggressiveness to formulate the following hypothesis:

H1: Capital intensity has a positive effect on tax aggressiveness.

2.6.2. The Effect of Leverage on Tax Aggressiveness

Leverage measures the percentage of a company's debt used as a source of funding. The higher the company's leverage value, the higher the possibility of a company engaging in tax aggressiveness. Companies can use debt to minimize income tax by paying interest to loans.

Putri and Halmawati (2023) stated that leverage has a positive effect on tax aggressiveness. The results of this study are in line with those of Purwanto et al. (2016) and Friandi et al. (2020). This study re-examines the effect of leverage on tax aggressiveness to formulate the following hypothesis:

H2: Leverage has a positive effect on tax aggressiveness.

2.6.3. The Effect of Liquidity on Tax Aggressiveness

The liquidity ratio shows the company's ability to pay off its short-term obligations. A higher liquidity ratio indicates that the company has more assets than liabilities and implies that the company has a smooth cash flow. The higher the company's liquidity, the higher the company's possibility of avoiding tax burdens to maintain its cash flow.

Yuliana and Wahyudi (2018) stated that liquidity has a positive effect on tax aggressiveness. This study is in line with that of Adisamartha and Noviari (2015). However, Purwanto et al. (2016) states that liquidity has a significantly negative effect on corporate tax aggressiveness. This study re-examines the effect of liquidity on tax aggressiveness to formulate the following hypothesis:

H3: Liquidity positively affects tax aggressiveness.

2.6.4. Company Size Moderates the Effect of Capital Intensity on Tax Aggressiveness

According to Utomo and Fitria (2021), capital intensity is an investment activity carried out by a company linked to investment in the form of fixed assets. The higher the fixed assets owned, the higher

the depreciation costs the company must bear. These depreciation costs reduce the company's profits, thereby decreasing income tax costs.

A high capital-intensity ratio triggers high company depreciation costs. Depreciation costs are the allocation of the economic benefit value of assets during the accounting period (Maulidah & Prastiwi, 2019). The higher the depreciation costs, the higher are the costs that the company can use to reduce its profit. A company in the large company size category indicates that it is in good condition. Large companies tend to attempt to minimize tax costs, one of which is by using fixed asset depreciation costs. The research results of Utomo and Fitria (2021) state that company size moderates capital intensity on tax aggressiveness. Yuliana and Wahyudi (2018) stated that company size influences tax aggressiveness. However, Malau (2021) states that company size has no effect on tax aggressiveness. H4: Company size strengthens the positive effect of capital intensity on tax aggressiveness.

2.6.5. Company Size Moderates the Effect of Leverage on Tax Aggressiveness

Leverage is the ratio that indicates the amount of external capital used by a company to carry out its operational activities. Debt is included in the category of external capital (Adisamartha & Noviari, 2015).

Companies with a high leverage ratio experience a decrease in company profits due to loan interest costs. As income profits decrease, the company's payable income tax also decreases. Large companies have a high level of leverage because debt is used to finance operational activities. The higher the value of the debt the company has, the higher the loan interest burden it will bear, which will affect the amount of income tax, or the company's costs. Thus, companies use leverage to avoid taxes.

The research results of Suyanto and Kurniawati (2022) state that company size weakens the effect of leverage on tax aggressiveness.

H5: Company size strengthens the positive influence of leverage on tax aggressiveness.

2.6.6. Company Size Moderates the Effect of Liquidity on Tax Aggressiveness

Based on agency theory, the relationship between shareholders and management depends on shareholder research on performance; if management is unable to manage liquidity, it will reduce creditors' trust in the company (Malau, 2021). Creditor trust influences whether a company can easily obtain funding as additional capital.

A high liquidity ratio indicates that the company can meet its short-term obligations. Companies with a high liquidity ratio tend to be tax aggressive to maintain cash flow. A company's high profitability ratio influences its liquidity ratio. Companies with good liquidity have more current assets than liabilities. A company's size can be used to assess its financial capabilities. Companies with large sizes provide a high credibility value to investors in the hope that the company will provide large profits.

Purwanto et al. (2016) research results show that liquidity influences tax aggressiveness. The research results of Rahmadian et al. (2023) stated that company size moderates the effect of liquidity on tax aggressiveness.

H6: Company size strengthens liquidity's positive influence on tax aggressiveness.

Based on the above explanation, the framework of thought can be described as follows:

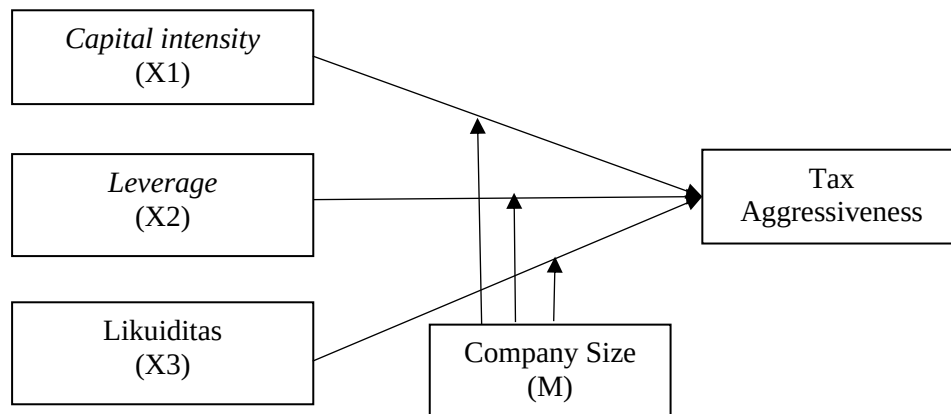


Figure 1. Structural Model

3. Research method

3.1 Research Sample

This study used secondary data, namely, financial reports of energy sector companies listed on the Indonesia Stock Exchange from 2018 to 2022. The sample in this study was selected using the following selection criteria:

1. The company did not have any restitution or tax refund transactions during the study period.
2. The company reports financial reports for 2018-2022 in full, and is not delisted.
3. The company uses December 31, 2022, as the final financial reporting period.
4. The company does not experience losses
5. These criteria were selected based on the general criteria in research models and each company's financial reports.

3.2 Variable Operationalization

In this research, there are three main variables: dependent, independent, and moderating variables. The dependent variable in this study is tax aggressiveness, which is calculated using the ETR formula:

$$\text{Effective Tax Rates} = \frac{\text{Income Tax Expense}}{\text{Profit Before Income Tax}}$$

Source: Modjo, et al (2023)

Information:

ETR_{it} = Effective tax rate of company i in period t-th
 Income tax expense_{it} = the amount of company i's income tax expense in the t-th period
 Profit before income tax_{it} = profit before income tax of company i in the t-th period

3.3 Data Analysis Techniques

The analysis technique used in this research was multiple linear regression analysis and EVIEWS 12.

3.6.1 Multiple Linear Regression Analysis

Multiple linear regression analysis was used to test whether the independent variable influenced the dependent variable simultaneously (together) or partially. This analysis determines the direction of the relationship between the independent variable and the dependent variable, whether each independent variable is positively or negatively related, and predicts the value of the dependent variable if the value of the independent variable increases or decreases. The multiple linear regression model used in this study can be described as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 M_1 + \beta_5 M_1 X_1 + \beta_6 M_1 X_2 + \beta_7 M_1 X_3 + \varepsilon$$

Note:

Y = Tax Aggressiveness
X₁ = Capital intensity
X₂ = Leverage
X₃ = Liquidity
M₁ = Company Size
β₁–β₇ = Regression Coefficient
α = Constant
ε = Error term

3.6.2 Moderated Regression Analysis Test (MRA)

According to Ghazali (2018), MRA is an analytical approach that maintains sample integrity and provides a basis for controlling for the influence of moderator variables. The regression equation model that will be tested is

$$\text{Equality1: } Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 M_1 + \varepsilon$$

$$\text{Equality2: } Y = \alpha + \beta_5 M_1 X_1 + \beta_6 M_1 X_2 + \beta_7 M_1 X_3 + \varepsilon$$

Note:

Y = Tax Aggressiveness
X₁ = Capital intensity
X₂ = Leverage
X₃ = Liquidity
M₁ = Company Size
β₁–β₇ = Regression Coefficient
α = Constant
ε = Error term

3.6.3 Hypothesis Testing

1. T test

The t-test shows the extent to which the influence of an independent variable individually explains the variations in the dependent variable. The error rate used in this study was 5% (0.05). Drawing conclusions in the t-test is done by comparing the t statistical value with the critical point according to the label. Under the condition:

- 1) If significance < error level, then the independent variable has a partially significant effect on the dependent variable.
- 2) If significance > error level, the independent variable has no partial effect on the dependent variable.

2. Model Fit Test (F Test)

According to Ghazali (2013), the F-test shows whether all independent or free variables included in the model have a simultaneous influence on the dependent variable. To test this hypothesis, the F statistic was used with the following decision-making criteria:

- 1) Quick look: If the F value is greater than 4, H₀ can be rejected with an error rate of 5%.
- 2) The calculated F value was compared with the F value according to the table. If the calculated F value is greater than the Table F value, H₀ is rejected and H_a is accepted.

Information:

H₀ = There is no significant influence between independent variables on the dependent variable.

H₁ = There is a significant relationship between independent and dependent variables.

3. Coefficient of Determination

The coefficient of determination (R²) was used to measure the model's ability to explain the variations in the dependent variable. The R² value was between zero and one. A small coefficient of determination value indicates that the ability of the independent variable to explain the dependent variable is very limited. If the R² value is less than 0.5, variable X can explain variable Y to be less than 50% (weak). Meanwhile, an R² value equal to 0.5 indicates that the coefficient of determination is moderate, while an R² value more than 0.5 indicates a strong ability to explain variable Y.

4. Results and discussions

4.1 Description of Research Sample

The objects in this study include Capital Intensity (CIR), leverage (RH), and liquidity (CR) as independent variables, Company Size (size) as the moderating variable, and Tax Aggressiveness (ETR) as the dependent variable. The sample in this study comprised 23 companies operating in the energy sector that were listed on the Indonesia Stock Exchange during 2018–2022. Thus, the total sample used in this study comprised 115 observational data points. Data collection in this research used purposive sampling, that is, collecting data using certain criteria.

Table 1. Research Sample Results

No	Criteria	Number of Companies
1	Energy sector companies listed on the Indonesia Stock Exchange (BEI) for the 2018 – 2022 period.	76
2	The company reported financial reports for 2018-2022 in full and was not delisted.	(22)
3	The company uses December 31, 2022, as the final financial reporting period.	
4	The company did not suffer any losses	(31)
	Total research data	23
	Number of data observations 2018 – 2022	115

4.2 Data Analysis

In this study, the author used a multiple linear regression test with the dependent variable being Tax Aggressiveness, the moderating variable Company Size, and the independent variables capital intensity, leverage, and liquidity. The collected research data were then processed using the Statistical Package for the Social Sciences (SPSS) version 22 and Eviews version 12.

4.3 Classic Assumption Test

According to Sugiyono (2019:148), inferential analysis is a statistical technique used to analyze sample data, and the results can be interpreted as a population. In this inferential analysis, researchers used data collection techniques such as Multiple Linear Regression and Moderated Regression Analysis (MRA), which are parametric statistical methods. Therefore, before carrying out regression estimates, classic assumption tests are first carried out, including the normality, heteroscedasticity, and multicollinearity tests, which are described as follows:

4.3.1 Normality Test

The normality test aims to test whether the regression of the dependent variable and the independent variable have a normal distribution. A good regression model has a normal or close to normal distribution. The Kolmogorov–Smirnov–Monte Carlo test was used in this study. The decision-making criteria for the Kolmogorov Smirnov - Monte Carlo test are that if the significance value is > 0.05 , then the residuals are normally distributed, which means they meet the normality assumption (Ghozali, 2018). The results of the Kolmogorov-Smirnov Monte Carlo test in this study are as follows.

Table 2. Kolmogorov Smirnov - Monte Carlo Test Results

One-Sample Kolmogorov-Smirnov Test	
	Unstandardize d Residual
N	115

Normal Parameters ^{a,b}	Mean		-1,4411396
	Std. Deviation		12,32335950
Most Extreme Differences	Absolute		,101
	Positive		,101
	Negative		-,057
Test Statistic			,101
Asymp. Sig. (2-tailed)			,006 ^c
Monte Carlo Sig. (2-tailed)	Sig.		,183 ^d
	99% Confidence Interval	Lower Bound	,173
		Upper Bound	,193

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Based on 10000 sampled tables with starting seed 299883525.

Source: SPSS Processed Data version 26, 2023

Based on the normality test results in accordance with Table 2, the Kolmogorov-Smirnov Significance (Sig.) value of 0.183 (> 0.05) was obtained, indicating that the model had a normal distribution. Thus, it can be concluded that the normality assumption has been met so that it can be stated that the panel data regression model is suitable for use.

4.3.2 Multicollinearity Test

The multicollinearity test aims to test the regression model to determine whether there is a correlation between independent variables. This test can be seen from the Tolerance Value number and the variance inflation factor (VIF) value, namely, if the Value Variance Inflation Factor (VIF) value is > 10 or if the tolerance value is < 0.1 , multicollinearity occurs.

Table 3. Multicollinearity Test Results

		Coefficients ^a					Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
Model		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-20,258	30,163		-,672	,503		
	CIR	-,077	,046	-,170	-1,693	,093	,836	1,196
	RH	,019	,090	,026	,212	,832	,583	1,715
	CR	-,001	,008	-,008	-,065	,948	,561	1,784
	size	,015	,010	,152	1,570	,119	,902	1,109

a. Dependent Variable: ETR

Source: SPSS Processed Data version 26, 2023

Based on the table above, it can be stated that the independent variable, namely capital intensity, which is proxied by the code CIR, has a VIF value of 1.196, where the value is < 10 and the tolerance value is > 0.1 , the leverage variable, which is proxied by the code RH, has a VIF value of 1,715, where the value is < 10 and the tolerance value is > 0.1 , the liquidity variable which is proxied by the CR code has a VIF value of 1.784 where the value is < 10 and the tolerance value is > 0.1 , and the profitability variable which is proxied by Size has a VIF value of 1.109 where the value is < 10 and the tolerance

value is > 0.1 . Thus, it can be concluded that the panel data regression model used in this study does not exhibit multicollinearity. Therefore, this can be continued in the next stage.

4.3.3 Heteroscedasticity Test

According to Ghazali (2016), one way to detect the occurrence of homoscedasticity or heteroscedasticity is with the results of graphic analysis, namely, scatterplot charts. For decision making using a scatterplot graph, that is, the points formed must be spread randomly (not patterned) and spread both above and below the number 0 on the Y-axis. If this condition is met, heteroscedasticity does not occur, and the regression model is suitable for use.

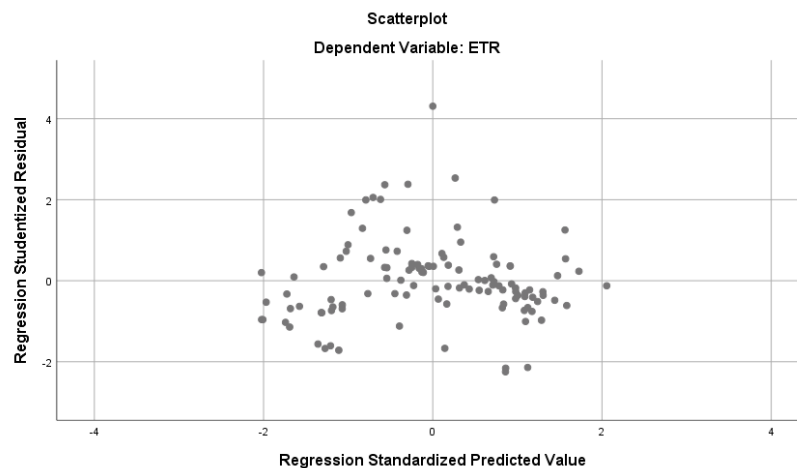


Figure 2. Heteroscedasticity Test Scatterplot Graph
Source: SPSS Processed Data version 26, 2023

Based on the image above, the heteroscedasticity test scatter plot graph shows that the points are spread randomly and are spread both above and below number 0 on the Y-axis. Thus, it can be concluded that there is no heteroscedasticity in this research model; therefore, it is appropriate to carry out further testing.

4.3.4 Autocorrelation Test

The autocorrelation test aims to determine whether there is a correlation between confounding errors in period t and confounding errors in period $t-1$ (previous) in the linear regression model. Thus, the autocorrelation test can only be carried out on time series data because what is meant by autocorrelation is a value in a particular sample or observation that is greatly influenced by the value of the previous observation. Based on the explanation above, this research only carried out three classical assumption tests: the normality test, multicollinearity test, and heteroscedasticity test.

4.4 Feasibility Test of Panel Data Regression Model

In this study, panel data path analysis calculations were performed using the statistical software Eviews Version 12. To determine the best estimation/estimation of the parameters of the regression equation, tests were performed using the Chow, Hausman, and Lagrange Multiplier (LM) tests.

4.4.1 Chow Test

The Chow test was used to compare or choose which model was the best between the Common Effect Model and the Fixed Effect Model. The hypotheses in the Chow test are as follows:

H0: The right model is the Common Effect Model

H1: The correct model is the Fixed Effect Model

This research uses a significance level or alpha of 5% so that the hypothesis decision is made, namely, if the probability value (Prob.) of the chi-square cross-section ≤ 0.05 , then reject H0 or accept H1, which means that the selected model is the Fixed Effect Model. However, if the cross-sectional chi-square

probability (Prob.) value is > 0.05 , then accept H_0 or reject H_1 , which means that the selected model is a Common Effect Model. The following are the results of the Chow Test in this study:

Table 4. Chow Test Results

Redundant Fixed Effects Tests			
Equation: JENDELAEQ			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.319171	(22,85)	0.0000
Cross-section Chi-square	71.309366	22	0.0000

Source: Eviews Data Processing Results Version 12, 2023

Based on the above table, the probability value (Prob.) of the cross-sectional Chi-square model is 0.0000 (≤ 0.05), which means that H_0 is rejected or H_1 is rejected. Thus, based on the Chow test, the fixed-effect model was chosen. Therefore, testing the best model continues using the Hausman test, namely, to compare or choose which model is the best between the Fixed Effect Model or the Random Effect Model.

4.4.2 Hausman Test

The Hausman test is used to compare or choose which model is the best between the random effects model and the fixed effects model. The hypotheses of the Hausman test are as follows:

H_0 : The right model is the Random Effect Model

H_1 : The correct model is the Fixed Effect Model

This research uses a significance level or alpha of 5% so that the hypothesis decision is made, namely, if the random cross-section probability (Prob.) value is ≤ 0.05 , then reject H_0 or accept H_1 , which means that the selected model is a Fixed Effect Model. However, if the probability value (prob.) of a random cross-section is > 0.05 , then accept H_0 or reject H_1 , which means that the selected model is the Random Effect Model. The following are the results of the Hausman Test in this study:

Table 5. Hausman Test Results

Correlated Random Effects - Hausman Test			
Equation: JENDELAEQ			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.748626	7	0.2712

Based on this table, the probability value (Prob.) of the cross-sectional random model is 0.2712 (> 0.05), which means that H_0 is accepted or H_1 is rejected. Thus, based on the Hausman test, the selected model is a random-effects model. Therefore, testing the best model is continued using the Lagrange Multiplier test, namely, to compare or choose which model is the best between the Common Effect Model or Random Effect Model.

4.5 Results of Panel Data Regression Analysis

4.5.1 Structure of Model Equations

Table 6. Random Effect Model Panel Data Test Results

Dependent Variable: ETR
Method: Panel EGLS (Cross-section random effects)
Date: 02/09/24 Time: 16:14
Sample: 1 115
Periods included: 5
Cross-sections included: 23
Total panel (balanced) observations: 115
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	172.0261	174.9549	0.983260	0.3277
CIR	-6.377894	1.738357	-3.668922	0.0004
CR	-0.072729	0.250152	-0.290740	0.7718
RH	1.784255	2.736883	0.651929	0.5158
SIZE	-0.048422	0.058301	-0.830538	0.4081
CIRXSIZE	0.002127	0.000585	3.633755	0.0004
CRXSIZE	2.08E-05	8.33E-05	0.249598	0.8034
RHXSIZE	-0.000589	0.000918	-0.642428	0.5220

Source: Eviews Data Processing Results Version 12, 2023

The results of the panel data regression using the random effects model method obtained the following equation:

$$\text{ETR} = 172,0261 + -6,377894\text{CIR} + 1,784255\text{RH} + -0,072729\text{CR} - 0,048422\text{Size} - 0,002127\text{CIR*Size} - 0,000589\text{RH*Size} + 2,08\text{CR*Size}$$

The regression equation is as follows:

1. The ETR constant value is 172.0261, which can be interpreted as if all the independent variables, namely RH, CR, CIR, ROA, RH*Size, CR* Size, and CIR* Size, are considered constant or have not changed; then, the ETR is 30.23280. In the positive constant value equation model, this means that there is an increase in Tax Aggressiveness, as proxied by the ETR code, in energy sector companies for the 2018-2022 period, amounting to 172.0261.
2. The coefficient value of the capital intensity variable proxied by the CIR code is -6.377894, indicating that for every 1% increase in the value of the CIR, assuming the other independent variables remain constant, the ETR will experience a decrease of 6.377894.
3. The coefficient value of the leverage variable proxied by the code RH is -1.784255, indicating that for every 1% increase in the value of RH, assuming the other independent variables are fixed/constant, the ETR will experience a decrease of 1.784255.
4. The coefficient value of the liquidity variable proxied by the CR code is -0.072729, indicating that for every 1% increase in the value of CR, assuming the other independent variables remain constant, the ETR will experience a decrease of 0.072729.
5. The coefficient value of the profitability variable proxied by the Size code is -0.048422, indicating that for every 1% increase in the value of Size, assuming the other independent variables remain constant, the ETR will experience a decrease of 0.048422.
6. The coefficient value of the independent variable capital intensity with profitability as moderation, with the code CIR*Size (0.002127), states that for every 1% increase in the value of the interaction of CIR and Size, assuming the other independent variables are fixed or constant, the ETR will experience an increase of 0.002127.
7. The coefficient value of the independent variable leverage with profitability as moderation, with the code RH* Size of -0.000589, states that for every 1% increase in the value of the interaction of RH and Size, assuming the other independent variables are fixed or constant, the ETR will experience a decrease of 0,000589.
8. The coefficient value of the independent variable liquidity with profitability as moderation, with the CR*Size code of 2.08, states that for every 1% increase in the value of the CR and Size interaction,

assuming the other independent variables are fixed or constant, the ETR will experience an increase of 2, 08.

4.5.2 Analysis of Determination Coefficient

Table 7. R-Square Coefficient Results

	Model REM
R-squared	0.27

Source: EvIEWS Data Processing Results Version 12, 2023

Based on Table 3, the R-squared value is 0.27, indicating that capital intensity, leverage, liquidity, profitability, the interaction of capital intensity with profitability, the interaction of leverage with profitability, and the interaction of liquidity with profitability simultaneously influence tax aggressiveness by 0.27 or 27. % while the remaining 73% is influenced by other factors that are not included in this research's panel data model.

4.5.3 Hypothesis Testing

In this study, a significance test was performed using a 5% significance level. Thus, if the t-statistic value is < 0.05 , hypothesis (H_a) is accepted. Conversely, if the t-statistic value is ≥ 0.05 , the hypothesis is (H_0). The t-table value in this study (number of observations = 60, number of variables in the model = 8) was 2.006. The results of hypothesis testing in this study are as follows.

Table 8. Testing the Direct Effect Hypothesis

Panel Data Regression Model	Hypothesis	Connection	Regression Coefficients	T-Statistic	P-Value	Information
Direct Influence	H1	CIR $\rightarrow$ ETR	-6,377894	-3.668922	0.0004	Significant negative effect
	H2	RH $\rightarrow$ ETR	1,784255	0,651929	0.5158	Not significant
	H3	CR $\rightarrow$ ETR	-0,072729	-0,290740	0,7718	Not significant
	H4	Size $\rightarrow$ ETR	-0,048422	-0,830538	0,4081	Not significant
Moderating Influence	H5	CIR*Size $\rightarrow$ ETR	0,002127	3,633755	0,0004	Significant
	H6	RH*Size $\rightarrow$ ETR	-0,000589	-0,642428	0,5220	Not significant
	H7	CR*Size $\rightarrow$ ETR	2.08	0,249598	0,8034	Not significant

Source: EvIEWS Data Processing Results Version 12, 2023

Based on the results of hypothesis testing directly based on the t-test, the following conclusions are obtained:

1. Hypothesis 1: Capital Intensity (CIR) Has a Significant Influence on Tax Aggressiveness (ETR)
Based on the results in Table 4, the CIR $\rightarrow$ ETR t-statistic value is -3.6689 (< 2.006) with a p-value of 0.0004 (< 0.05). Thus, it can be interpreted that capital intensity has a negative effect on the tax

aggressiveness of energy sector companies for the 2018-2022 period. Therefore, the first hypothesis (H1) in this study was rejected, or the data did not support the hypothesis.

2. Hypothesis 2: Leverage (RH) has a significant effect on tax aggressiveness (ETR)

Based on the results in Table 4, the t-Statistic RH $\rightarrow$ ETR value is 0.651929 (< 2.006) with a p-value of 0.5158 (> 0.05). Thus, it can be interpreted that leverage has no effect on the tax aggressiveness of energy sector companies for the 2018-2022 period. Therefore, the second hypothesis (H2) in this study was rejected, or the data did not support the hypothesis.

3. Hypothesis 3: Liquidity has a significant influence on tax aggressiveness

Based on the results in Table 4, the CR $\rightarrow$ ETR t-statistic value is -0.290740 (≤ 2.006) with a p-value of 0.7718 (≥ 0.05). Thus, it can be interpreted that liquidity has no significant effect on the tax aggressiveness of energy sector companies for the 2018-2022 period. Therefore, the third hypothesis (H3) in this study was rejected or the data did not support this hypothesis.

4. Hypothesis 4: Company Size Moderates the Effect of Capital Intensity on Tax Aggressiveness

Based on the results in Table 4, the CIR*Size $\rightarrow$ ETR t-statistic value is -3.633755 (> 2.006) with a p-value of 0.0004 (< 0.05). Thus, it can be interpreted that company size moderates the influence of capital intensity on the tax aggressiveness of energy sector companies for the 2018-2022 period. Therefore, the fourth hypothesis (H4) in this study is accepted, or the data support the hypothesis.

5. Hypothesis 6: Company Size Moderates the Effect of Leverage on Tax Aggressiveness

Based on the results in Table 4, the t-Statistic RH*Size $\rightarrow$ ETR value is -0.642428 (≤ 2.006) with a p-value of 0.5220 (≥ 0.05). Thus, it can be interpreted that company size cannot moderate the influence of leverage on the tax aggressiveness of energy sector companies for the 2018-2022 period. Thus, the fifth hypothesis (H5) in this study was rejected or the data did not support this hypothesis.

6. Hypothesis 6: Company Size Moderates the Effect of Liquidity on Tax Aggressiveness

Based on the results in Table 4, the CR*Size $\rightarrow$ ETR t-statistic value is 0.249598 (≤ 2.006) with a p-value of 0.8034 (≥ 0.05). Thus, it can be interpreted that profitability does not moderate the effect of liquidity on the tax aggressiveness of energy sector companies for the 2018-2022 period. Therefore, the seventh hypothesis (H6) in this study was rejected, or the data did not support the hypothesis.

5. Conclusion

5.1 Conclusions

Based on the research results, data analysis, and interpretation, the following conclusions were drawn:

1. Capital Intensity negatively affects Tax Aggressiveness.
2. Leverage has no effect on Tax Aggressiveness.
3. Liquidity has no effect on Tax Aggressiveness.
4. The company size moderates the effect of Capital Intensity on Tax Aggressiveness.
5. Company size does not moderate the influence of Leverage on Tax Aggressiveness.
6. Company size cannot moderate liquidity's influence on tax aggressiveness.

5.2 Implications of Research Results

This research is expected to provide information to management for consideration when analyzing companies that have the potential to carry out tax aggressiveness and by looking at the influence of capital intensity, leverage, liquidity, and profitability. Managerial implications

1. Management is expected to provide information about a company's main financial performance to the public to create accurate information.
2. Company management is expected to be more effective and efficient in managing a company's fixed assets in all aspects of taxation. Management is expected to comply with regulations regarding procedures for depreciation and amortization of fixed assets in accordance with applicable regulations.
3. Company management is expected to increase company income to make current assets more efficient so that it does not depend on other sources of funds, such as loan debts to third parties.

4. Management must always control the company's leverage level so that it does not exceed applicable regulations as well as increasing investor confidence in the company.

5.3 Research Limitations

This study has the following limitations.

1. This research is limited to a sample of energy sector companies, and further research can be conducted by increasing the number of samples, such as banking, property, and real estate companies, to obtain more accurate results.
2. This study uses only three independent variables, namely capital intensity, leverage, and liquidity; one moderating variable, profitability; and one dependent variable, tax aggressiveness. Meanwhile, there are other variables and factors that can add variables outside the variables in this research, which may have an influence on tax aggressiveness.
3. This research only took a period of five years, and future research is expected to use a research period longer than that to obtain more accurate results.

5.4 Suggestions for Further Researchers

Based on the conclusions, implications of the research results, and limitations of the research, the author provides the following suggestions:

1. In connection with capital intensity, leverage, and liquidity having no effect on tax aggressiveness, further research can use other variables or factors that can influence tax aggressiveness. These include earnings management (Purwanto, 2016), inventory intensity (Adisamartha & Noviari, 2015), and transfer pricing.
2. Future researchers are expected to make observations in other sectors to describe the trend of the tax aggressiveness of other companies outside the energy sector.
3. In connection with several variables that do not have a significant effect on tax aggressiveness, future researchers can add years to the research period so that the research results are more representative and depict actual conditions.

References

- Adisamartha, I., & Noviari, N. (2015). Pengaruh likuiditas, leverage, intensitas persediaan dan intensitas aset tetap pada tingkat agresivitas wajib pajak badan. *E-Jurnal akuntansi universitas udayana*, 13(3), 973-1000.
- Andhari, P. A. S., & Sukartha, I. M. (2017). Pengaruh pengungkapan corporate social responsibility, profitabilitas, inventory intensity, capital intensity dan leverage pada agresivitas pajak. *E-Jurnal akuntansi universitas udayana*, 18(3), 2115-2142.
- Budiadnyani, N. (2020). Kepemilikan Manajerial Sebagai Pemoderasi Pengaruh Capital Intensity Pada Agresivitas Pajak. *E-Jurnal Akuntansi*, 30(9), 2244.
- Darma, S. S. (2019). Pengaruh related party transaction dan thin capitalization terhadap strategi penghindaran pajak. *Jurnal Ilmiah Akuntansi Universitas Pamulang*, 7(1), 58-75.
- Dewi, S. L., & Oktaviani, R. M. (2021). Pengaruh Leverage, Capital Intensity, Komisaris Independen Dan Kepemilikan Institusional Terhadap Tax Avoidance. *Akurasi: Jurnal Studi Akuntansi Dan Keuangan*, 4(2), 179-194.
- Friandi, S. Z., Soeksin, S. D., & Rifai, D. (2020). Pengaruh Leverage Dan Agresivitas Pajak Terhadap Intensitas Inventori Serta Intensitas Aset Perusahaan. *JAMAN (Jurnal Aplikasi Manajemen dan Akuntansi)*, 1(01), 81-95.
- Idris, M. (2021). Apa Arti Leverage Dan Leverage Ratio? .
- Lathifa, D. (2022). Tax Avoidance: Definisi dan Pencegahannya di Indonesia.
- Maulidah, H. A., & Prastiwi, D. (2019). Pengaruh Corporate Social Responsibility, Intensitas Modal, dan Persaingan Terhadap Agresivitas Pajak Perusahaan. *AKUNESA: Jurnal Akuntansi Unesa*, 8(1), 1-9.
- Pramaiswari, G. A., & Fidiana, F. (2022). Pengaruh Profitabilitas, Capital Intensity Dan Corporate Governance Terhadap Tax Avoidance. *Jurnal Ilmiah Akuntansi dan Keuangan*, 1(2).
- Purwanto, A., Yusraini, Y., & Susilatri, S. (2016). Pengaruh likuiditas, leverage, manajemen laba, dan kompensasi rugi fiskal terhadap agresivitas pajak perusahaan pada perusahaan pertanian dan pertambangan yang terdaftar di bursa efek indonesia periode 2011-2013. Riau University.

- Simamora, A. M., & Rahayu, S. (2020). Pengaruh Capital Intensity, Profitabilitas Dan Leverage Terhadap Agresivitas Pajak (Studi Empiris Pada Sub Sektor Makanan Dan Minuman Yang Terdaftar Di Bursa Efek Indonesia Periode 2015-2018). *Jurnal Mitra Manajemen*, 4(1), 140-155.
- Suwiknyo, E. (2021). Mayoritas Perusahaan Tambang Belum Transparan Soal Pajak.
- Utomo, A. B., & Fitria, G. N. (2021). Ukuran Perusahaan Memoderasi Pengaruh Capital Intensity dan Profitabilitas Terhadap Agresivitas Pajak. *Esensi: Jurnal Bisnis Dan Manajemen*, 10(2), 231-246.
- Yuliana, I. F., & Wahyudi, D. (2018). Likuiditas, profitabilitas, leverage, ukuran perusahaan, capital intensity dan inventory intensity terhadap agresivitas pajak (studi empiris pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia tahun 2013–2017). *Dinamika Akuntansi Keuangan Dan Perbankan*, 7(2).