



Determinants of Cash Effective Tax Rate in Energy Sector Companies on the Indonesia Stock Exchange for the Period 2020-2024

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Abstract. This study aims to examine the influence of capital intensity, Return on Assets (ROA), liquidity, and company size on the Cash Effective Tax Rate (CETR) as a proxy for tax avoidance in energy sector companies listed on the Indonesia Stock Exchange for the 2020–2024 period. This study uses a quantitative approach with secondary data in the form of annual financial statements. The sample was determined using a purposive sampling technique and obtained 16 companies during five years of observation, resulting in 80 observation data. Data analysis was carried out using multiple linear regression with the help of SPSS 29 software. The analysis stage began with a classical assumption test, then continued with multiple linear regression analysis, as well as hypothesis testing. The results showed that partially capital intensity and ROA had a significant effect on CETR, while liquidity and company size had no significant effect on CETR. Simultaneously, all independent variables had a significant effect on CETR, with a determination coefficient value of 25%.

Keywords: Capital Intensity; Cash Effective Tax Rate; Company Size; Liquidity; ROA.

1. INTRODUCTION

The Energy sector is a strategic sector that is the main support of the national economy and makes a substantial contribution to state revenue (Wayan & Apriani, 2025). Based on data from the Ministry of Energy and Mineral Resources (2024), in 2023, the contribution of PNBP from the energy sector will reach IDR 300.3 trillion, exceeding the state budget target. However, this large contribution does not necessarily reflect the optimal state revenue from the energy sector. The results of research by Herlin & Mu'arif, (2024) reveal that the potential for tax avoidance practices can occur at the corporate level. One case of tax avoidance practices occurred at PT Adaro Energy Tbk in the 2009–2017 period which transferred part of the profits to its affiliated entities in Singapore through a *transfer pricing* mechanism, thereby reducing state tax revenues by around US\$125 million or Rp 1.75 trillion (Wahyuningtias et al., 2025). This phenomenon has a double impact, on the one hand the company seeks to maintain financial liquidity and efficiency through tax optimization, but on the other hand reduces its fiscal contribution to the state through tax avoidance practices (Pratiwi et al., 2025).

Tax avoidance according to Septanta (2023) is a legal effort that has the potential to reduce state revenue through the use of tax regulatory loopholes. From a managerial perspective, this action can be seen as a fiscal efficiency strategy because of the cash tax savings that strengthen the company's liquidity position. Under certain conditions, when companies face financial pressure, tax avoidance becomes an alternative to internal financing that supports the continuity of the company's operations (Athira & Ramesh, 2023). Thus, fiscal compliance is not only determined by formal rules but also by management strategies in

managing tax burdens (Brugman & Chariri, 2025). Therefore, tax avoidance needs to be studied empirically to understand the extent to which these managerial practices affect the optimization of corporate tax liabilities.

One of the commonly applied measures in assessing the level of corporate tax avoidance is *the Effective Tax Rate* (ETR) or *Cash Effective Tax Rate* (CETR). Tang (2020) explained that the measurement of tax avoidance with ETR emphasizes accrual tax burden, so it does not reflect the actual cash tax paid by the company. Previous research is still dominated by measuring tax avoidance using ETR proxies such as research conducted by Anggun et al., (2021), L. S. Halim, (2024), T. K. Halim, (2021), Handayani & Murniati, (2023), Hidayat et al., (2024), Kristanti et al., (2024), Muzzaki & Tumirin, (2025), Putri & Digdowiseiso, (2023), Sanyora et al., (2021), Saparinda et al., (2023), Saragih et al., (2022), Tarigan & Ubaidillah, (2023), and Urrahmah & Mukti, (2021).

The measurement of CETR proxy tax avoidance is considered more representative because it depicts the ratio of cash tax to profit before tax, thus reflecting the level of compliance more realistically (Pratama, 2023). Several studies have begun to use CETR as a proxy for tax avoidance, including those applied in the research of Fadilah et al., (2021), Siboro & Santoso (2021), Rosa et al., (2022), Helen & Haninun (2024) and Tami & Muthaher (2025). Thus, there is still a research gap, namely the dominance of the use of ETR proxies to measure tax avoidance, while the use of CETR proxies is still limited, especially in the energy sector which has capital-intensive characteristics. In addition, no research has been found that simultaneously analyzes capital intensity, ROA, liquidity, and company size on CETR in energy sector companies.

Based on these gaps, this study aims to examine the influence of capital intensity, ROA, liquidity, and company size on CETR. This analysis is expected to provide a comprehensive understanding of tax avoidance practices in the energy sector and enrich empirical studies in the field of accounting and taxation in Indonesia.

2. LITERATURE REVIEW

Agency Theory

Theoretically, this study uses agency theory as a conceptual foundation. Jensen & Meckling (1976) stated that the relationship between the principal and the management (*agent*) often causes a conflict of interest, especially when the manager seeks to maximize his welfare through policies that are not necessarily in line with the interests of the owner. In the context of taxation, conflicts can arise when managers carry out tax avoidance strategies to reduce

fiscal burdens and increase the company's cash flow (Ningrum et al., 2025). Thus, tax avoidance strategies can be seen as a form of management opportunistic behavior influenced by the company's internal factors, such as asset structure, profitability, and liquidity (Sutisna et al., 2024). In this study, agency theory is applied to explain how managerial decisions in managing actual tax expenses are reflected through CETR, as well as how these internal variables play a role in influencing tax avoidance practices.

CETR as a Tax Avoidance Measure

CETR is a cash-based measure that shows the extent to which a company meets its tax obligations by comparing the amount of cash tax paid and profit before tax (Pratama, 2023). A low CETR value indicates the possibility of tax avoidance practices because the amount of cash tax paid is relatively small compared to the profit generated (Tania & Iskandar, 2021). Based on this understanding, this study will examine the influence of several internal factors of the company, namely capital intensity, ROA, liquidity, and company size on CETR as a proxy for tax avoidance. According to Nilasari & Arisyahidin (2021), CETR can be calculated with the following formula:

$$\text{CETR} = \frac{\text{Cash Tax Payment}}{\text{Profit Before Tax}}$$

Capital Intensity

According to Bernhard & Venny (2024), capital intensity provides an idea of the extent to which a company allocates resources to long-term assets. The measurement is by comparing the total fixed assets to the total assets of the company as formulated (Kristanti et al., 2024):

$$\text{CI} = \frac{\text{Total Fixed Assets}}{\text{Total Assets}}$$

High capital intensity can be used through depreciation expenses to reduce taxable profits, thereby triggering tax avoidance practices (Awaliyah et al., 2021). Research by Rosa et al., (2022) and Siboro & Santoso (2021) proves that capital intensity has a significant effect on CETR, which indicates that increasing investment in fixed assets will increase companies' chances of tax avoidance. However, different results were shown in the study of Fadilah et al., (2021) found that capital intensity had no effect on CETR, thus indicating that the proportion of fixed assets does not necessarily affect the amount of cash tax paid by companies. The difference in the results of the above study reflects that the relationship between the variables of capital intensity and tax avoidance still needs further testing. Therefore, this study establishes the following hypothesis: H1 : Capital Intensity affects CETR

Return on Assets (ROA)

ROA serves as a measure that describes the extent to which management is able to optimize the use of all company assets to generate net profit, so this ratio describes the effectiveness of resource management in creating profits (Hasanah et al., 2024). The magnitude of a company's ability to generate profits from systematically managed assets according to Tami & Muthaher, (2025) can be calculated using the following ratio:

$$\text{ROA} = \frac{\text{Net Profit}}{\text{Total Assets}}$$

The level of profitability projected through the value of ROA is often a consideration for companies in determining their tax strategy (Wedatara & Yasa, 2024). Research by Tami & Muthaher, (2025), Siboro & Santoso, (2021) and Helen & Haninun, (2024) shows that ROA has an influence on CETR so that reflecting high profit levels tends to affect companies to achieve tax efficiency. Meanwhile, the results of the research by Rosa et al., (2022) stated that ROA has no influence on CETR, which shows that high corporate profits are not always followed by cash-based tax avoidance practices. The difference in the results of the study shows that further testing is still needed. Therefore, this study establishes the following hypotheses:
H2 : ROA affects CETR.

Liquidity

Tarigan & Ubaidillah (2023) in their research revealed that liquidity describes a company's capacity to pay off its short-term obligations through the utilization of available current assets. According to Pratiwi et al., (2025) the liquidity level of a company can be measured using *the Current Ratio* (CR) with the following formulation:

$$\text{CR} = \frac{\text{Current Assets}}{\text{Current Liability}}$$

The availability of current assets proxied through the value of CR reflects the company's ability to provide cash, including to meet its tax obligations (O. Handayani et al., 2023). The results of Tami & Muthaher's research, (2025) prove that there is a significant influence of liquidity variables on CETR, which reflects that a company's capacity to fulfill short-term obligations is related to the cash tax paid. However, different results were found by Helen & Haninun, (2024) who concluded that liquidity has no influence on CETR, so the condition of the company's liquidity does not always play a role as the main factor influencing the company's decision to do tax avoidance. The difference in the results of the study shows that

further testing is still needed. Therefore, this study establishes the following hypothesis: H3 : Liquidity affects CETR.

Company Size

Company size according to Rizal & Sari (2022) is a scale that shows the size and size of a company, usually measured by certain financial and operational indicators. In order to equalize the total value of very large assets with other variables, according to Saparinda et al., (2023) measurements are carried out using *natural logarithms* as follows:

$$\text{SIZE} = \ln \text{ Total Assets}$$

The large scale of a company often reflects the complexity of the transactions carried out, which can ultimately affect the company's tax planning policies (Sudarmanto et al., 2025). Based on the research of Noviaty et al. (2022), Tami & Muthaher, (2025), Pramesthi & Winoto (2025) proves the significant influence of the company size variable on CETR, which indicates that companies with larger scale tend to have more aggressive tax avoidance strategies so that the effective cash tax rate paid is lower. However, the results differ from Oktaviani et al. (2021) who conclude that company size has no influence on CETR, so the size of the company does not always play a determining factor in the decision to do tax avoidance. The difference in the results of the study shows that further testing is still needed to clarify the relationship between company size and tax avoidance measured by CETR. Therefore, this study establishes the following hypothesis: H4 : Company Size Affects CETR

3. RESEARCH METHOD(S)

This section includes the study design, population/sample, data collection techniques and instruments, data analysis tools, and research models employed. The overall procedure does not need to be described in full; it is necessary to provide a reference (eg: F-test formula, t-test, etc.). It is required to present the test findings and their interpretation in order to demonstrate the validity and reliability of the research instruments. The symbols on the model are described in sentences.

This study aims to examine the influence between capital intensity, ROA, liquidity, and company size on CETR. Visually, this research model is depicted in the following frame of mind:

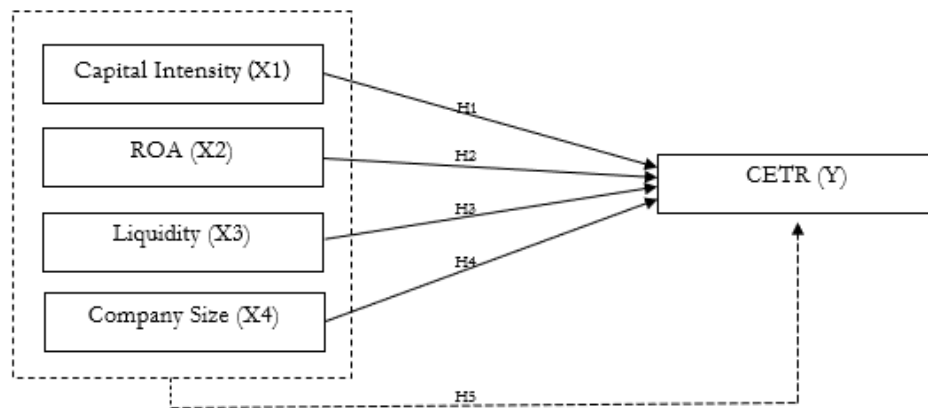


Figure 1. Research Model

Based on the above model, the summary of the hypotheses that will be tested in this study is as follows:

H1 : Capital Intensity has a partial effect on CETR.

H2 : ROA has a partial effect on CETR.

H3 : Liquidity has a partial effect on CETR.

H4 : Company size partially affects CETR.

H5 : Capital Intensity, ROA, Liquidity and Company Size simultaneously affect CETR.

The approach of this research is quantitative with a type of causal associative research using secondary data sourced from annual financial statements. Research data is accessed through the IDX's official website at: <https://www.idx.co.id> as well as reference publications such as OJK.

Population and Sample

All energy sector companies listed on the IDX for the 2020-2024 period are used as a population in this study. Based on official data from the IDX *Industrial Classification* (IDX-IC), there are 91 energy sector issuers. The sampling technique applies *purposive sampling*, which is a determination technique based on criteria. This technique was chosen, because not all energy sector companies have complete and consistent data during the research period to support the research objectives. Thus, this technique allows researchers to obtain a representative sample that is relevant to the research objectives. The sampling criteria are as follows:

Table 1. Sample Criteria

No	Criteria	Quantity
1.	Energy Companies listed on the Indonesia Stock Exchange for the period 2020-2024.	91
2.	Companies that do not publish full annual financial statements during the period 2020-2024.	(33)
3.	Companies that do not publish financial statements in USD format during the period of 2020-2024.	(19)
4.	Companies that did not earn positive profits during the 2020-2024 research period.	(21)
5.	The company does not have the complete data required variables during the research period of 2020-2024.	(2)
	Number of samples selected	16
	Total sample with 5 years of research (16 x 5)	80

Based on the *purposive sampling* criteria that have been set, as many as 16 energy sector companies were obtained that were qualified as samples in this study. Considering that the observation period was carried out for 5 years, namely from 2020 to 2024, the total final sample used in the data analysis amounted to 80 observation data (16 companies x 5 years).

Data Analysis Techniques

The data analysis in this study uses the multiple linear regression analysis method to determine the direction and extent of the influence of two or more independent variables on dependent variables at once (Ghozali, 2018). With the help of SPSS 29 software. This method was chosen to test the influence of independent variables consisting of capital intensity, ROA, liquidity, and company size on dependent variables, namely CETR partially or simultaneously in energy sector companies for the period 2020-2024. This approach is also in accordance with the opinion of Sugiyono, (2019) that multiple linear regression analysis aims to predict how the state (up and down) of dependent variables when two or more independent variables undergo changes.

After the regression model is determined, a classical assumption test is carried out consisting of a normality test, a multicollinearity test, an autocorrelation test, and a heteroscedasticity test to ensure that the regression model meets the *criteria of Best Linear Unbiased Estimator* (BLUE). After the model is declared to have passed the classical assumption test, hypothesis testing is carried out through a partial significance test (t-test) to see the influence of each variable individually, a simultaneous significance test (F test) to see the influence together, and a determination coefficient analysis (R²) to measure the extent of the model's ability to explain the variation of dependent variables (Ghozali, 2018).

4. RESULT AND DUSCUSSION

Results

Statistics Descriptive

Table 2. Statistics Descriptive

	N	Descriptive Statistics			
		Minimum	Maximum	Mean	Std. Deviation
CETR	80	,00	3,78	,3691	,55294
Capital Intensity	80	,00	2,09	,3017	,33109
ROA	80	,01	1,68	,1665	,22956
Liquidity	80	,20	10,07	22,803	180,143
Company Size	80	18,80	23,10	202,970	109,024
<i>Valid N (listwise)</i>	80				

Source : Data Processing, SPSS 29 (2026)

Based on the results of descriptive statistics, the number of observations in this study is 80 data. The Cash Effective Tax Rate (CETR) variable has an average value of 0.3691 with a standard deviation of 0.55294, which shows a variation in the rate of cash tax payments between companies in the energy sector. The minimum CETR value of 0.00 and the maximum value of 3.78 indicates a significant difference in the Company's tax policy.

The capital intensity variable has an average value of 0.3017 with a standard deviation of 0.33109. The value range from 0.00 to 2.09 indicates heterogeneity in the Company's fixed asset structure. Meanwhile, the profitability variable (ROA) has an average value of 0.1665 with a standard deviation of 0.22956. The relatively high maximum value indicates that some companies are able to generate significant profits from their assets. The liquidity variable proxied with *the current ratio* shows an average value of 2.2803 with a standard deviation of 1.80143, and a fairly wide range of values between 0.20-10.07. This indicates a difference in the company's ability to fulfill its short-term obligations, including in this case tax obligations. Meanwhile, the company size had an average value of 20.2970 with a standard deviation of 1.09024. The relatively smaller variation compared to other variables shows that the scale of the company in the study sample tends to be homogeneous.

Uji Asumsi Klasik

a. Normalitas

Table 3. Normality Test (Before Outlier)

One-Sample Kolmogorov-Smirnov Test			Unstandardized Residual
N			80
Normal Parameters ^{a,b}	Mean		,0000000
	Std. Deviation		,51030270
	Absolute		,234
Most Extreme Differences	Positive		,234
	Negative		-,169
Test Statistic			,234
Asymp. Sig. (2-tailed) ^c			<,001
Monte Carlo Sig. (2-tailed) ^d	Sig.		<,001
	99% Confidence Interval	Lower Bound	,000
		Upper Bound	,000

Source : Data Processing, SPSS 29 (2026)

Based on the results of the *Kolmogorov-Smirnov One-Sample test* in the table above, an Asymp. Sig. (2-tailed) value of < 0.001 was obtained. This value is smaller than the significance level of 0.05, which indicates that the regression model residual has not been distributed normally. According to Ghazali (2018), this condition can be caused by the presence of outlier data, which is data with extreme values that deviate far from other observations. In order to meet the assumption of normality, an outlier data handling procedure was carried out, with the following follow-up test results:

Table 4. Normality Test (After Outlier)

One-Sample Kolmogorov-Smirnov Test			Unstandardized Residual
N			70
Normal Parameters ^{a,b}	Mean		,0000000
	Std. Deviation		,17562117
	Absolute		,056
Most Extreme Differences	Positive		,056
	Negative		-,053
Test Statistic			,056
Asymp. Sig. (2-tailed) ^c			,200 ^d
Monte Carlo Sig. (2-tailed) ^e	Sig.		,844
	99% Confidence Interval	Lower Bound	,835
		Upper Bound	,854

Sumber : Olah Data, SPSS 29 (2026)

Based on the table above obtained after handling the outlier data, the number of observations in this study was reduced from 80 to 70 data. A total of 10 observation data were identified as outliers so that they were excluded from the analysis to meet the assumption of normality without changing the main characteristics of the sample. The results of the normality test after adjustment showed a significance value of $0.200 > 0.05$, which indicated that the residual data had been distributed normally.

b. Multikolinearitas

Table 5. Multicollinearity Test

Model	Coefficients	Collinearity Statistics	
		Tolerance	VIF
	(Constant)		
1	Capital Intensity	,794	1,260
	ROA	,830	1,204
	Liquidity	,943	1,060
	Company Size	,888	1,126

Source : Data Processing, SPSS 29 (2026)

Based on the table above, the results of the multicollinearity test show that the Capital Intensity variable has a *tolerance value* of 0.794 and VIF of 1.260, the ROA variable of 0.830 and VIF of 1.204, the Liquidity variable of 0.943 and VIF of 1.060, and the variable of Company Size of 0.888 and VIF of 1.126. Thus, all independent variables meet the tolerance criteria of > 0.10 and $VIF < 10$, so it can be concluded that the regression model is free from multicollinearity problems.

c. Autokorelasi

Table 6. Autocorrelation Test

Model Summary

Model	Durbin-Watson
1	1,766

Source : Data Processing, SPSS 29 (2026)

Based on the *Durbin-Watson* distribution table for $n = 70$ and $k = 4$ at a significance level of 5%, a *dU value* of 1.735 was obtained. The test results showed that the study's *Durbin-Watson* value was 1.766, where the value was greater than the dU limit ($1.766 > 1.735$) and smaller than the 4-dU limit of 2.265. Thus, the Durbin-Watson value is between dU and ($4 - dU$), which indicates that the regression model does not undergo autocorrelation, either positive or negative, so the residual independence assumption has been met.

Heterokedastisitas

Table 7. Heterokedasticity Test

Model	Coefficients				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-,267	,202		-1,322	,191
Capital Intensity	-,201	,040	-,541	-4,985	,066
1 ROA	-,215	,069	-,331	-3,121	,083
Liquidity	,005	,008	,064	,645	,521
Company Size	,024	,010	,256	2,499	,215

Source : Data Processing, SPSS 29 (2026)

Based on the results of the heteroscedasticity test using the *Glejser* method in the *Coefficients* table above, it is known that the significance value for the Capital Intensity variable is 0.066, ROA is 0.083, Liquidity is 0.521, and Company Size is 0.215. Thus, all independent variables have significance values above 0.05, which indicates that the regression model does not experience symptoms of heteroscedasticity, so the assumption of homogeneity has been met.

d. Analisis Regresi Linear Berganda

Table 8. Multiple Linear Regression Analysis

Model	Coefficients					Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
(Constant)	,023	,443		,053	,958		
Capital Intensity	-,376	,089	-,495	-4,234	,001	,794	1,260
1 ROA	-,531	,152	-,400	-3,499	,001	,830	1,204
Liquidity	-,007	,017	-,044	-,407	,685	,943	1,060
Company Size	,022	,021	,115	1,039	,303	,888	1,126

Source : Data Processing, SPSS 29 (2026)

Based on the results of the estimation in Table 8, the regression equation is obtained:

$$Y = 0.023 - 0.376X_1 - 0.531X_2 - 0.007X_3 + 0.022X_4 + \varepsilon \quad (I)$$

Where Y is capital intensity, X_1 is ROA, X_2 is liquidity, and X_3 is the size of the company. X_4

In general, a constant value of 0.023 indicates that when all independent variables are at a constant state, then the value of the Cash Effective Tax Rate (CETR) is estimated to be 0.023. While the value of the regression coefficient indicates the direction and magnitude of

the influence of each independent variable on CETR. The capital intensity has a coefficient of -0.376, which indicates that an increase in capital intensity tends to decrease CETR. Similarly, the ROA variable has a negative coefficient of -0.531 which indicates that the increase in profitability is related to a decrease in CETR.

Meanwhile, liquidity has a coefficient of -0.007, which indicates a relatively small negative influence of liquidity on CETR. In contrast, company size has a positive coefficient of 0.022, indicating that an increase in company scale tends to increase the value of CETR. These findings show that capital intensity and profitability factors have a more dominant role in influencing cash tax policy than liquidity factors and company size.

Test Hypothesis

a. Test t (Partial)

Table 9. Test t

Model	Coefficients			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	,023	,443		,053	,958
1 Capital Intensity	-,376	,089	-,495	-4,234	,001
ROA	-,531	,152	-,400	-3,499	,001
Liquidity	-,007	,017	-,044	-,407	,685
Company Size	,022	,021	,115	1,039	,303

Source : Data Processing, SPSS 29 (2026)

Based on the results of the partial test in Table 9, the variables of capital intensity and ROA were shown to have a significant effect on *the Cash Effective Tax Rate* (CETR) which was indicated by the significance value of each below 0.05. These findings indicate that the increase in capital intensity and the level of profitability of the company have a role in influencing the company's cash tax policy. On the other hand, the liquidity and size variables of the Company did not show a significant influence on CETR, as they had a significance value above 0.05. This indicates that the company's ability to meet short-term obligations as well as the size of the company are not the main factors in determining the level of cash tax payments in companies in the energy sector.

This result is also supported by a t-calculated value greater than the t-table of 1.997 for the variable that shows a significant value. Thus, the results of the hypothesis test show that the H1 and H2 hypotheses are accepted, while H3 and H4 are rejected. These findings confirm that profitability factors and asset structure have a more dominant role than liquidity factors and company size in explaining the variation in CETR.

b. Test F (Simultan)

Table 10. Test F

ANOVA						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	,887	4	,222	6,772	,001
	Residual	2,128	65	,033		
	Total	3,015	69			

Source : Data Processing, SPSS 29 (2026)

Based on the results of the simultaneous test in Table 10, the regression model shows a significance value of 0.001 which is smaller than 0.05 which indicates that together the variables of capital intensity, ROA, liquidity, and company size have a significant effect on CETR. Thus, the H5 hypothesis is accepted. This is also supported by a greater F_{cal} value than F_{table} of 2.51. This finding confirms that corporate tax policies are not only influenced by a single factor, but are the result of an interaction of various internal characteristics of the company.

c. Coefficient of Determination (R^2)**Table 11.** Coefficient Determination Test

Model Summary			
Model	R	R Square	Adjusted R Square
1	,542	,294	,251

Source : Data Processing, SPSS 29 (2026)

Based on the results of the analysis in Table 11, the *Adjusted R Square* value obtained of 0.251 shows that the variables of capital intensity, ROA, liquidity, and company size together are able to explain CETR by 25.1% while the remaining 74.9% CETR variation is explained by other factors outside this research model. This indicates that the model used has a moderate explanatory ability (Chin, 1998), so there are still other variables that have the potential to affect corporate tax policy, such as corporate governance mechanisms, leverage, and other external factors. These findings show that tax avoidance behavior is not only influenced by internal financial factors, but also by governance factors and the company's external environment.

Discussion***The Effect of Capital Intensity on CETR***

Based on the test results, it shows that the capital intensity variable has a significance value of $0.001 < 0.05$ with a negative regression coefficient of -0.376. This shows that capital intensity has a significant effect on CETR, so H1 is accepted. The negative coefficient value

indicates that the higher the company's investment in fixed assets, the lower the CETR value, which reflects a higher level of tax avoidance. This is because companies can take advantage of the depreciation cost of fixed assets as a legal deduction of taxable profit. These results are in line with the research of Rosa et al., (2022) and Siboro & Santoso, (2021) which stated that fixed asset intensity provides opportunities for companies to be efficient in cash tax burdens.

In the perspective of Agency Theory, managers (*agents*) use capital intensity as a legal instrument to reduce cash outflows to the government. According to Jensen & Meckling (1976), agents tend to make decisions that highlight the efficiency of their performance. By creating a *tax shield* through asset depreciation, managers can maintain the company's internal liquidity, which is judged as managerial success by the owner (Tarigan & Ubaidillah, 2023).

The Effect of ROA on CETR

Based on the test results, the ROA variable has a significance value of $0.001 < 0.05$ with a negative regression coefficient of -0.531. Thus, H2 is accepted, which means that ROA has a significant and negative effect on CETR. This negative coefficient shows that companies with a high level of profitability tend to have a lower CETR value, which means that their tax avoidance practices are getting higher. Companies that are able to generate large profits have a stronger incentive to do tax planning so that profits reported to shareholders remain optimal after tax deductions. These findings reinforce the research of Tami & Muthaher, (2025), Siboro & Santoso, (2021) and the results of research conducted by Helen & Haninun, (2024) which revealed that high profits encourage companies to be tax efficient.

Viewed from Agency Theory, this relationship reflects the opportunistic behavior of agents. Managers whose performance is measured based on net profit will seek to reduce the tax burden when pre-tax profits increase in order to obtain bonuses or positive appraisals from *principals*. Agents take advantage of the flexibility of accounting and taxation policies to report results that benefit their position in agency contracts (Wahyuningtias et al., 2025).

The Effect of Liquidity on CETR

Based on the results of the t-test, the liquidity variable has a significance value of $0.685 > 0.05$. This shows that liquidity has no significant effect on CETR, so H3 is rejected. The condition of the company's liquidity proxied through *the current ratio* is not the main determinant in management's decision to avoid cash-based taxes in the energy sector. This is likely due to the fact that energy companies are more focused on long-term working capital management rather than simply manipulating taxes to maintain the current ratio. This result is in line with the results of research by Helen & Haninun, (2024) who stated that the availability of a company's current assets does not always have an impact on the amount of cash tax paid.

In Agency Theory, the absence of this influence indicates that liquidity is not a trigger for a strong conflict of interest between agents and owners. Managers view liquidity as a routine operational need, not a tool for tax manipulation. Urrahmah & Mukti, (2021) stated that if cash is sufficient from normal operations, agents do not feel the need to take risky actions such as tax evasion just to secure cash positions.

The Effect of Company Size on CETR

Based on the results of the test of the company size variable, it showed a significance value of $0.303 > 0.05$, which means that this variable had no significant effect on CETR, so H4 was rejected. These findings indicate that the size or size of the total assets of energy companies does not automatically affect the level of their cash tax aggressiveness. Large scale companies in the energy sector may focus more on operational complexity and strict regulatory compliance than on the use of tax loopholes to lower CETR. These results support the research of Oktaviani et al., (2021) who concluded that company size is not a determining factor for tax avoidance.

Based on Agency Theory, this shows that the size of the company does not always widen the gap in interests. Agents in large companies tend to avoid reputational risks that can damage the relationship with *the principal*. According to Pratama (2023), the high level of public oversight (*political visibility*) makes managers more careful in making glaring tax avoidance to avoid strict audits that can threaten their position in the position.

The Effect of Capital Intensity, ROA, Liquidity, and Company Size on CETR

The results of the F test or simultaneous testing show that the variables Capital Intensity, ROA, Liquidity, and Company Size together have a significant influence on CETR. This proves that the combination of the company's internal factors, both in terms of asset structure and financial performance, is a collective consideration for management in determining the company's tax strategy. Based on the *Adjusted R-Square value*, this model is able to explain the variation in CETR by 25%.

In the view of Agency Theory, this simultaneous influence emphasizes that tax policy is the result of various interrelated managerial decisions to achieve company efficiency. Managers act integratively in managing resources (fixed assets, profits, and cash) to balance *the interests of principals* in terms of profitability and business sustainability. Although some variables are partially influential, organizationally, agents still consider all fundamental aspects of the company to minimize the burden of out-of-pocket costs (taxes) in order to maximize the overall value of the company (Jensen & Meckling, 1976).

5. CONCLUSION

This study aims to analyze the influence of capital intensity, ROA, liquidity, and company size on tax avoidance proxied by *Cash Effective Tax Rate* (CETR) in energy sector companies listed on the Indonesia Stock Exchange for the period 2020 – 2024. These findings show that energy sector companies tend to use investment policies on fixed assets and profit level optimization as the main instruments in determining the company's cash tax expense strategy.

In the perspective of Agency Theory, these results indicate that managers act as agents who have a tendency to make decisions that highlight the efficiency of their performance in the presence of the *principal* (*principal*). Through the utilization of the depreciation burden of capital intensity as well as the management of tax expenses when profitability increases, the agent seeks to minimize cash outflows for taxes. This is done in order to maintain internal liquidity and report optimal financial results, which is often the basis for assessing managers' performance in agency contracts.

The value of the Adjusted R Square *determination coefficient* of 25% shows that this model is able to explain the variation in tax avoidance behavior in the energy sector in a limited way. This implies that there are still 75% of other factors outside the model such as *corporate governance* mechanisms, compensation for fiscal losses, or other external factors that have the potential to have a greater influence on corporate tax avoidance policies in the energy sector listed on the IDX.

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