The Effect of Sales Growth, Capital Intensity, and Inventory Intensity on Tax Avoidance in Energy Sector Companies

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Abstract: *Tax constitutes one of the primary sources of government revenue and plays a vital role in financing national development. Nevertheless, in business practice, taxes are often perceived as a cost that reduces corporate profitability, thereby motivating firms to implement various tax planning strategies, including legally permissible tax avoidance through the exploitation of regulatory loopholes. The goals of this research are to examine the effects of sales growth, the cost-to-income ratio as a marker of capital intensity, and the tax avoidance. For tax avoidance using the Effective Tax Rate, focusing on companies in the Indonesian Stock Exchange between 2020 and 2024. This research uses a quantitative method, using secondary data from annual financial reports. The data were collected and analyzed by the researcher using many tests, such as classical assumption tests and multiple linear regression analysis. The results show that sales growth, capital utilization rate, and inventory levels is good and significant influence on tax avoidance. This suggests that these factors are associated with a higher tax burden and a lower likellihood of companies in tax avoidance. Collectively, one of the variables significantly influences tax avoidance. The study concludes that operational financial characteristics, particularly capital and inventory intensity, play a crucial role in shaping tax avoidance behavior within the energy sector.*

Key Words: Tax; Sales Growth; Capital Intensity; Inventory Intensity; Tax Avoidance.

Introduction

A major component of state revenue is used for national development. However, in practice, tax avoidance poses a challenge to optimizing tax revenue is called tax. Tax avoidance does not violate the rules and is legal. However, this method brings tax regulations to reduce the company's tax obligations (Rohmah, A., Wahyuni, D. S., & Ermayanti, 2024). The phenomenon of tax avoidance has been widely found in another sectors, one of the sector about the energy sector, because it is the backbone of the economy and has a complex financial structure, such as large fixed assets, inventories, and capital with high values. This opens up broad opportunities for management in managing the tax burden (Suwiknyo, 2019).

From an agency theory perspective, company owners have an interest in maximizing after-tax profits, while company leaders design financial strategies and manage company assets to remain efficient, including efforts to reduce tax liabilities without violating applicable regulations. These differing interests encourage management to implement tax avoidance practices as long as they do not violate legal provisions (Pramiana & Aminin, 2023). Energy sector companies with large fixed assets and high inventory levels provide opportunities for companies to implement profit management and strategies that can reduce the tax burden they have to pay.

Sales growth is an important indicator for measuring company performance, where high sales growth has the potential to increase profits and tax burdens. This condition encourages management to engage in tax avoidance practices (Bawazier, 2022). Capital intensity describes the total of a corporation investment in fixed assets, which causes depreciation

costs. Depreciation costs can reduce taxable profits, so this variable can influence tax avoidance (Nugraha & Mulyani, 2019). Inventory intensity shows the amount of inventory relative to assets owned and can influence tax expenses through inventory expense management (Siregar, 2016).

Several studies show inconsistent results. Some studies state that Increased sales bring positive effects (Amri, 2023), while the study (Kartika, 2021) shows that sales growth does not necessarily encourage businesses to applied tax evasion technique. This inconsistency is the basis for the research gap, making this research important, especially in the energy sector because it has different characteristics from other sectors.

This study focuses on the energy sector and the post-pandemic period of 2020-2024, during which significant financial structural changes occurred, using three main variables in finance that have not been widely studied, namely sales growth, capital intensity, and inventory intensity. Accordingly of description, the hypotheses are: H1: higher sales growth leads to more tax avoidance; H2: having more capital intensity leads to more tax avoidance; and H3: having more inventory leads to more tax avoidance. This research aims to investigate how sales growth, capital intensity, and inventory intensity affect tax avoidance in companies operating in the energy industry.

Method

The research employs a quantitative method, commonly referred as a traditional method, because it has been widely and consistently used in empirical studies over a long period (Sugiyono, 2020), This study adopts a descriptive research with multiple linear regression analysis, using secondary data as the basis data source. The data were obtained by the one annual statements from Indonesians in 2020–2024 period, which present information on the firms' financial conditions and are accessible through from officially website of IDX (Kasmir, 2019). Study in population comprises all 79 energy sector companies from IDX. Purposive sampling was used to choose by this research for study sample. Technique based on predetermined, including energy sector companies on the IDX period 2020–2024 and companies with complete data. Based on these criteria, 25 corporations were selected as study sample more than a five-year observation, resulting in 125 observations used in the analysis.

Table 1. Operational variables

Variable	Indicator	Reference source
Tax Avoidance	$ETR = \frac{Current\ tax\ burden}{Profit\ before\ tax}$	(Maulana, 2021)
Sales Growth	$Sales\ Growth = \frac{This\ period\ sales - previous\ period\ sales}{Previous\ period\ sales}$	(Amri, 2023)
Capital Intensity	$Capital\ Intensity = \frac{Fixed\ Assets}{Total\ Assets}$	(Sylvia et al., 2025)
Inventory Intensity	$Inventory\ Intensity = \frac{Total\ Inventory}{Total\ Assets}$	(Sari & Indrawan, 2022)

This study employs various data processing, including the analysis and testing such as descriptive statistical analysis, classical assumption, multiple linear regression, hypothesis, and coefficient using SPSS version 23.

Result and Discussion

Descriptive statistical Test

Table 2. Descriptive Statistics Test Result

	N	Minimum	Maximum	Mean	Std. Deviation
X1 SG	125	-.50	1.35	.2552	.45402
X2 CIR	125	.00	.84	.2910	.21647
X3 INV	125	.00	.52	.1096	.15756
Y ETR	125	.01	.46	.2151	.09675
Valid N (listwise)	125				

This test is used to describe and explain the basic characteristics of a data set systematically without drawing conclusions that are applicable to the general population (Ghozali, 2018). Based on 125 research data using descriptive statistical tests in Table 2, it shows that each variable has different characteristics. Average sales growth has a positive value but fluctuates greatly, with some companies experiencing a decline in sales of nearly 50% and others experiencing very high growth. The capital intensity ratio is at a moderate level, reflecting varying cost efficiencies between companies. Inventory has a relatively small proportion of the total company size, but shows quite a wide range of inventory strategies. Meanwhile, tax avoidance shows that companies pay an average effective tax rate of around 21.5% with not too extreme variations in tax burdens. Overall, the above data illustrates that there are real differences in the performance and financial conditions of each company.

Normality Test

Tabel 3. Normality test Result

One-Sample Kolmogorov-Smirnov

		Unstandardiized Residual
N		125
Normal Parameters [a, b]	Mean	.0000000
	Std Deviation	.07707620
Most Extreme Differences	Absolute	.069
	Positive	.040
	Negative	-.069
Test Statistic		.069
Asymp. Sig. (2-tailed)		.200[c, d]

a. Normal test.

b. Calculated from data.

c. Lilliiefors Significance Correction.

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

This test performed to assess the residuals of the regression model (Ghozali, 2018). Based on the results of the Kolmogorov–Smirnov test conducted on the unstandardized residuals, the Asymp. Sig. (2-tailed) value exceeds the predetermined significance level. These results suggest that a normal distribution, thereby satisfying the normality assumption of the regression model.

Multicollinearity Test

Table 4. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.147	.013		11.233	.000		
	X1 SG	.092	.016	.430	5.894	.000	.987	1.013
	X2 CIR	.073	.032	.163	2.248	.026	.994	1.006
	X3 INV	.214	.045	.348	4.785	.000	.992	1.008

a. Dependent Variable: Y *tax avoidance*

This test to distributed the existence of correlations among the independent variables in the regression model (Ghozali, 2018). The results indicate that none of the independent variables exhibit multicollinearity issues. Variable X1 demonstrates a high tolerance value and a low VIF, suggesting the absence of a strong linear relationship with other variables. Similarly, variable X2 shows tolerance and VIF values that indicate no excessive correlation with the remaining independent variables. Variable X3 also presents values that confirm the absence of multicollinearity. As all VIF values are close to one and remain well below the accepted threshold, while tolerance values exceed the minimum requirement, for details that the regression model is appropriate and free from multicoliinearity problems.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.055	.008		6.609	.000
	X1 SG	.003	.010	.030	.332	.740
	X2 CIR	.022	.021	.095	1.047	.297
	X3 INV	-.025	.028	-.079	-.877	.382

a. Dependent Variable: ABS_RES

This test is conducted to examine whether the residuals in the regression model exhibit unequal variance across observations. One commonly used approach to detect heteroscedasticity is the Glejser test, which involves regressing the absolute residual values on the independent variables (Ghozali, 2018). The findings of the Glejser test indicate that the regression model does not suffer from heteroscedasticity. All independent variables show significance values exceeding the predetermined threshold, this suggests that the assumption of equal variances holds true, allowing for the trustworthy interpretation of regression findings, free from prejudice attributed to disparities in variance.

Autocorrelation Test

Tabel 6. Uji Autokorelasi

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.604[a]	.365	.350	.07803	2.084

a. Predictors: (Constant), X3 INV, X2 CIR, X1 SG

b. Dependent Variable: Y *tax avoidance*

This test was applied to identify a relationship between the residuals at time t and the residuals in previous period in the linear regression model (Ghozali, 2018). The Durbin-Watson test was used to determine the presence or absence of autocorrelation, and in this study, the Durbin-Watson value of 2.084, which is close to 2, indicates the absence of autocorrelation, both positive and negative. The residuals are random, so the model meets

the assumption of autocorrelation freedom. Thus, the regression coefficient estimates are reliable, and the model is suitable for testing hypotheses.

Multiple Linear Regression Analysis

Table 7. Multiple Linear Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.147	.013		11.233	.000		
	X1 SG	.092	.016	.430	5.894	.000	.987	1.013
	X2 CIR	.073	.032	.163	2.248	.026	.994	1.006
	X3 INV	.214	.045	.348	4.785	.000	.992	1.008

a. Dependent Variable: Y *tax avoidance*

This analysis is used to obtain information about how much influence does the independent variable (X) have on the dependent variable (Y), either together or individually (Ghozali, 2018). Referring to the results displayed in the coefficient table the resulting regression equation can be formulated as follows:

$$Y= 0{,}147 + 0{,}092X_1+ 0{,}073X_2+ 0{,}214X_3+ e$$

Explanation:

Y = tax avoidance
X_1 = Sales Growth
X_2 = Capital Intensity
X_3 = Inventory Intensity
e = Error

The following is an explanation of the above result:

1. Constant = 0.147, indicating that when growth in sales, capital intensity ratio, and inventory asset intensity are zero, tax avoidance practices is at 0.147 as the base value before being influenced by other variables.
2. Sales Growth Coefficient = 0.092, indicating that every one-unit increase in Growth in sales increases tax avoidance practices by 0.092, so that growth in sales has a positive results effect on tax avoidance.
3. Capital Intensity Coefficient = 0.073, indicating that every one-unit increase in capital intensity ratio increases tax avoidance practices by 0.073 and shows the positive effect of capital intensity ratio on tax avoidance.
4. The inventory intensity coefficient = 0.214, indicating that every one-unit increase in inventory asset intensity increases tax avoidance practices by 0.214, making it the variable with the greatest influence in the model.

Hypothesis Testing

Partial Test (t-test)

Table 8. Partial Test (t-test)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.147	.013		11.233	.000		
	X1 SG	.092	.016	.430	5.894	.000	.987	1.013
	X2 CIR	.073	.032	.163	2.248	.026	.994	1.006
	X3 INV	.214	.045	.348	4.785	.000	.992	1.008

a. Dependent Variable: Y *tax avoidance*

This calculation is used to see how much influence each independent variable has on the dependent variable (Ghozali, 2018). The results above indicate that sales growth has a t-value of 5.894 and a significance of 0.000 < 0.05, showing that sales growth has a significant positive effect on tax avoidance practice. Thus, H1 is approved. Furthermore, the t-value of the capital intensity variable is 2.248 > t-table 1.980 and significance 0.026 < 0.05, proving that capital intensity mas a significant positive effect on tax avoidance, so H2 is approved. Finally, the t-value of the inventory asset intensity variable is 4.785 > t-table 1.980 and the significance is 0.000 < 0.05, Indicating that inventory intensity has a positive and significant effect and is the most dominant variable on tax avoidance, so H3 is approved.

Coefficient of Determination

Table 9. Coefficient of Determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.604[a]	.365	.350	.07803	2.084

a. Predictors: (Constant), X3 INV, X2 CIR, X1 SG

b. Dependent Variable: Y *tax avoidance*

In the regression model used, the coefficient of determination is utilized to obtain information on the level of influence of the independent variable on the variations that occur in the dependent variable (Ghozali, 2018). The Adjusted R Square value obtained of 0.350 shows that the regression model is able to explain around 35% of the variation in the dependent variable Y based on three independent variables, namely X1, X2, and X3. In other words, the combined contribution of these three variables explains 35% while the other 65% is influenced by other variables not included in the research model.

The Effect of Sales Growth on Tax Avoidance

Growth in sales have a positive and significant impact on tax avoidance practices in energy sector organization. This is because sales increase profits and effective tax burdens, thereby encouraging companies to engage in tox avoidance. This is in line with research conducted by (Bawazier, 2022), which states that as growth in sales increases, so does the tax burden. However, companies with low sales growth have low tax burdens. This means that companies do not need to engage in tax avoidance practices because their tax burdens are already low, which is in line with the research (Kartika, 2021), which states that sales growth does not alwayss affect tax avoidance because of differences in assets, regulations, and cost burdens.

The Effect of Capital Intensity on Tax Avoidance

Capital intensity ratio has a positive impact on tax avoidance practices because the greater the investment in fixed assets, the greater the depreciation costs that can be utilized by companies to reduce taxable income. This is in line with the study (Lukito & Sandra, 2021), which states that fixed assets in a company incur depreciation expenses that can be used as profit deductions (both accounting and fiscal) and low profits will reduce the company's tax burden.

The Effect of Inventory Intensity on Tax Avoidance

Inventory asset intensity has the strongest influence among the other variables because, in the results, it is stated that a 1-unit increase in inventory intensity increases tax avoidance by 0.214, making it the strongest factor in influencing tax avoidance. This is because the greater the company's flexibility in managing inventory costs, the easier it is for management to reduce taxable income. Therefore, inventory intensity is the variable with the greatest influence in increasing tax avoidance. This is in line with the study (Sari & Indrawan,

2022), which states that high inventory intensity can incur additional costs, such as maintenance and storage costs. High additional costs will cause a decline in company profits. However, this is not in line with the study (Luh & Saraswati, 2023), which states that inventory intensity has a negative effect on tax avoidance.

Conclusion

The results of this study indicate that increased sales, capital intensity, and inventory intensity are significantly positively related to tax avoidance practices in energy sector companies listed on the Indonesia Stock Exchange. These results indicate that increased operational activity, substantial investment in fixed assets, and high inventory management provide management with room to manage tax burdens through tax avoidance strategies that are still within applicable regulations. Simultaneously, these three variables are proven to play a role in shaping tax avoidance behavior in energy sector companies. These findings confirm that a company's operational financial characteristics are a crucial factor in tax decisions and require attention from both management and regulators.

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