Macroeconomic and Microeconomic Effects on Tax Avoidance in IDX Energy Companies 2022-2024

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Abstract: *Tax avoidance is a common problem for many organizations, including those in the energy sector. There are a number of economic factors, both big and little, that might affect tax evasion. This study seeks to examine the impact of macroeconomic factors, quantified by inflation and currency rates, on tax avoidance, as well as the influence of microeconomic factors, assessed by leverage and firm size, on tax avoidance. The research methodology employs a quantitative descriptive technique. Multiple linear regression is used to analyze the data. The findings indicate that inflation, leverage, and business size exert a substantial positive influence on tax avoidance, signifying that increased inflation, leverage, and firm size correlate with heightened tax avoidance by the organization. In addition, changes in currency exchange rates do not seem to alter the level of tax avoidance by corporations.*

Key Words*: Inflation, Exchange Rate, Leverage, Firm Size, Tax Avoidance*

Introduction

Taxes are a big part of how states make money, and they help pay for national development and keep the economy stable (Purwanti, et al., 2025). But from a business point of view, taxes are an expense that can lower a company's net profit, which makes businesses more likely to want to avoid paying taxes. Companies try to lower their taxes legally by taking advantage of flaws in tax laws (Kusufiyah & Anggraini, 2022). Tax avoidance has been more common in recent years, notably among corporations in the energy sector. Companies in the energy sector are one of the sources of national tax revenue. They have complicated macroeconomic and microeconomic traits that let them take use of tax loopholes to lower their tax burden.

PT Adaro Energy Tbk. was one of the biggest companies in the energy sector that avoided paying taxes from 2009 to 2017. It is said that it moved its income and profits to its Singaporean subsidiary, Coltrade Services International. Singapore is recognized as a low-tax country since its tax rate is 17% lower than Indonesia's. The goal was to lower the amount of taxes that PT Adaro Energy Tbk. had to pay on its sales profits in Indonesia. PT Adaro Energy Tbk. In Indonesia, it only paid US$ 125 million (Rp1.75 trillion) less in taxes than it should have (Maharani, 2022). This situation shows that tax evasion is still a big problem and has to be dealt with seriously. The government and businesses need to know a lot about what causes people to avoid paying taxes.

According to the agency theory, there is a connection between owners (principals) and managers (agents) who have different goals when it comes to running businesses (Dewi & Oktaviani, 2021). According to agency theory, tax avoidance happens when managers of a firm try to lower their tax bill in order to boost profits and make the company's financial performance look good to the public or investors (Pramiana & Aminin, 2023). On the other hand, business owners care more about keeping their businesses running and following the rules (Satria, 2022).

(Motallebi et al., 2020) asserts that economic instability and external factors can exacerbate corporate tax dodging activity. Inflation is when prices go up in general (Sulastri & Suselo, 2022). Companies will try to be more efficient when inflation is high, which may include finding ways to avoid paying taxes (Sari & Wahyuni, 2023). Also, changing currency rates can modify the costs of doing business, which might lead firm management to come up with ways to avoid paying taxes in order to keep their financial performance up (Djati, 2023). Leverage is another important factor. corporations with high leverage have to pay a lot of interest, which might lower their taxable income. Because of this, corporations with high leverage tend to be more active in avoiding taxes (Hermawan et al., 2021). Firm size indicates the magnitude of the enterprise; larger firms typically possess more resources and intricate management systems for tax planning, resulting in a higher propensity for tax avoidance (Nyman et al., 2022).

Numerous prior investigations have yielded contradictory findings. The research (Pramiana & Aminin, 2023) indicates that inflation adversely impacts tax avoidance, however the study by Sari & Wahyuni (2023) demonstrates a beneficial influence of inflation on tax avoidance. The research (Djati, 2023) asserts that currency rates do not influence tax avoidance. The research (Amelia & Febyansyah, 2023) indicates that leverage significantly influences tax avoidance, although firm size does not exert a substantial impact on tax avoidance. The study (Nyman et al., 2022) indicates that firm size significantly influences tax avoidance, however the study (Dewi & Oktaviani, 2021) asserts that leverage does not significantly affect tax avoidance.

This study concentrates on enterprises within the energy sector, utilizing the post-pandemic timeframe of 2022-2024, characterized by alterations in economic and fiscal policies. This study integrates macroeconomic variables, quantified through inflation and currency rates, with microeconomic variables, assessed by leverage and business size, into a singular model to elucidate tax avoidance. The assumptions of this study are as follows: H1 posits that inflation positively influences tax avoidance; H2 asserts that exchange rates positively affect tax avoidance; H3 indicates that leverage has a positive impact on tax avoidance; and H4 suggests that firm size positively correlates with tax avoidance. This study seeks to examine the impact of macroeconomic and microeconomic factors on tax avoidance within energy sector enterprises.

Method

This research employs a quantitative descriptive methodology, utilizing numerical data to address research inquiries (Sugiyono, 2019). This study utilizes secondary data comprising the yearly financial reports of energy sector businesses listed on the Indonesia Stock Exchange (IDX) for the period of 2022-2024, which are accessible via the official IDX website (www.idx.co.id). The purpose of annual financial reports is to indicate how a firm is doing right now (Kasmir, 2019). The research population comprises all energy sector companies listed on the IDX from 2022 to 2024, amounting to 73 entities. The research sample was selected through purposive sampling based on the following criteria: (1) Energy sector companies listed on the IDX for the period 2022-2024; (2) Energy sector companies that failed to consistently publish annual financial reports during the research period 2022-2024; (3) Energy sector companies that did not include international transactions (exports-imports) in their annual financial reports during the 2022-2024 research period. Using these criteria, a sample of 47 companies was chosen for the three-year study period.

Table 1. Operational Variables

Variable	Indicator	Reference Source
Tax Avoidance	$\text{ETR} = \frac{\text{Tax Expense}}{\text{Earnings before Tax}}$	(Sari et al., 2021)
Inflation	You can get Indonesia's yearly inflation rate for the years 2022 to 2024 on the official website of the Central Statistics Agency, www.bps.go.id	(Pramiana & Aminin, 2023)
Exchange Rate	You may find the exchange rate for the years 2022 to 2024 on the official website of Bank Indonesia at www.bi.go.id.	(Sitanggang & Yasin, 2024)
Leverage	$\text{DER} = \frac{\text{Total Liabilities}}{\text{Total Equity}}$	(Hermawan et al., 2021)
Firm Size	$\text{Firm Size} = \text{Ln}(\text{Total Asset})$	(Amelia, 2023)

This study employs many data analysis methodologies, including classical assumption testing, multiple linear regression analysis, hypothesis testing, and coefficient of determination (R^2) assessment with IBM SPSS Statistics version 24 software.

Results and Discussion

Test of Classical Assumption

Test for Normality

The goal of the normality test is to see if the regression model's residual variables have a normal distribution. If the distribution of the residual data is normal, the line that describes the actual data will follow the diagonal line (Ghozali, 2018). The P-Plot pattern follows the diagonal line on the scatterplot graph, which means that the residual data is normally distributed.

Test for Multicollinearity

Table 2. Results of the Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-0.313	0.199		-1.569	0.118		
	(X1) Inflasi	0.016	0.007	0.115	2.313	0.022	0.703	1.422
	(X2) Nilai Tukar	1.895E-5	0.000	0.066	1.325	0.187	0.701	1.427
	(X3) Leverage	0.559	0.056	0.605	9.923	0.000	0.467	2.142
	(X4) Firm Size	0.015	0.006	0.149	2.415	0.017	0.457	2.186

a. Tax Avoidance (Y) is the dependent variable.

The results of the multicollinearity test in Table 2 reveal that none of the independent variables have multicollinearity issues. Variable X1 (Inflation) has a Tolerance of 0.703 and a VIF of 1.422. Variable X2 (Exchange Rate) has a VIF of 1.427 and a Tolerance of 0.701. Also, variable X3 (Leverage) has a VIF of 2.142 and a Tolerance of 0.467. Variable X4 (Firm Size) has a Tolerance of 0.457 and a VIF of 2.186. The regression model is free of multicollinearity and can be used for more analysis because all Tolerance values are greater than 0.10 and VIF is less than 10.

Test for Heteroscedasticity

Table 3. Heteroscedasticity Test Results

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	0.171	0.114		1.503	0.135
	(X1) Inflasi	-0.001	0.004	-0.020	-0.239	0.812
	(X2) Nilai Tukar	-4.350E-7	0.000	-0.004	-0.053	0.958
	(X3) Leverage	-0.055	0.032	-0.173	-1.713	0.088
	(X4) Firm Size	-0.004	0.003	-0.124	-1.218	0.225

a. Dependent Variable: ABS_RES

The Glejser test was utilized in this work to check for heteroscedasticity. It did this by regressing the absolute residual values against the independent variable (Ghozali, 2018). The Glejser test results indicated the absence of heteroscedasticity in the regression model. The significance values for all independent variables are greater than 0.05. This means that the regression model fits the assumption of homoscedasticity. As a result, the regression analysis results can be interpreted as valid without bias from unequal error variance.

Test for Autocorrelation

Table 4. Results of the Autocorrelation Test

Summary of the Model[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.815[a]	0.665	0.658	0.08288	1.810

a. Predictors: (Constant), (X4) Firm Size, (X1) Inflasi, (X2) Nilai Tukar, (X3) Leverage

b. Dependent Variable: (Y) Tax Avoidance

The Durbin-Watson value in the regression model is 1.810, which is close to 2. This means that there is no autocorrelation problem, either positive or negative, in the model residuals. This number is close to the ideal limit of 2, which means that the residuals are random and don't display a pattern of relationship with the prior residuals. So, it can be said that the regression model has met the requirement of not having autocorrelation, which means that the estimates of the regression coefficients are dependable and the model can be used for more hypothesis testing.

Test for Multiple Linear Regression

Table 5. Results of the Multiple Linear Regression Test

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-0.313	0.199		-1.569	0.118		
	(X1) Inflasi	0.016	0.007	0.115	2.313	0.022	0.703	1.422
	(X2) Nilai Tukar	1.895E-5	0.000	0.066	1.325	0.187	0.701	1.427
	(X3) Leverage	0.559	0.056	0.605	9.923	0.000	0.467	2.142
	(X4) Firm Size	0.015	0.006	0.149	2.415	0.017	0.457	2.186

a. Dependent Variable: (Y) Tax Avoidance

The multiple linear regression test results in Table 5 yield the following equation:

$$Y = -0.313 + 0.016X_1 + 0.00001895X_2 + 0.559X_3 + 0.015X_4 + e$$

1. The constant of -0.313 means that tax avoidance is -0.313 when inflation, the currency rate, leverage, and business size are all zero. This is the base number before other factors come into play.

2. The inflation coefficient of 0.016 suggests that every 1 unit rise in inflation will raise tax avoidance by 0.016. This shows that inflation has a positive effect on tax evasion.
3. The exchange rate coefficient is 1.895E-5, which means that for every 1 unit rise in the exchange rate, tax avoidance will rise by 0.00001895. This shows that the exchange rate has a positive effect on tax avoidance.
4. The Leverage coefficient is 0.559, which implies that for every 1 unit rise in leverage, tax avoidance will go up by 0.559. This shows that leverage is good for tax avoidance.
5. The Firm Size coefficient is 0.015, which means that every 1-unit increase in firm size will enhance tax avoidance by 0.015. This shows that firm size has a positive effect on tax evasion.

Testing Hypotheses

Partial Test (t-Test)

The results from the multiple linear regression test in Table 5 reveal that:

1. The t_{value} of the inflation variable is 2.313, which is less than 0.05, which means that inflation has a significant positive influence on tax evasion. This means that **H1 is accepted**.
2. The t_{value} for the exchange rate variable is 1.324, and the significance level is 0.187, which is higher than 0.05. This means that the exchange rate does not have a substantial effect on tax evasion, hence **H2 is rejected**.
3. The t_{value} for the leverage variable is 9.923, which is less than 0.05, which means that leverage has a considerable positive influence on tax evasion. This means that **H3 is accepted**.
4. The t_{value} (calculated) for the firm size variable is 2.415, and the significance level is 0.017 < 0.05. This means that firm size has a strong positive effect on tax avoidance, hence**H4 is accepted**.

Test for the Determination Coefficient (R^2)

Table 6. Results of the Determination Coefficient Test (R^2)

Summary of the Model[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.815[a]	0.665	0.658	0.08288	1.810

a. There are four predictors: (X4) Firm Size, (X1) Inflation, (X2) Exchange Rate, and (X3) Leverage.
b. Dependent Variable: (Y) Tax Evasion

The coefficient of determination (R^2) test results in Table 6 show a R Square value of 0.665. This means that inflation, exchange rate, leverage, and firm size can explain 66.5% of the differences in tax avoidance. The other 33.5% is caused by things that are not part of the research model.

The Impact of Inflation on Tax Evasion

Inflation has a big effect on tax evasion that is good. Inflation raises the expenses of inputs and running a business, which immediately leads to lower real firm earnings. In these kinds of situations, management tries to keep the company's finances in good shape by making it more efficient, one of which is through aggressive but lawful tax management (tax avoidance). So, it's clear that inflation, as a macroeconomic element, might make corporations more likely to evade paying taxes. This is in line with research (Sari & Wahyuni, 2023) which indicate that an elevated inflation rate correlates with an increased incidence of tax avoidance.

The Impact of Exchange Rates on Tax Evasion

The exchange rate does not significantly impact tax avoidance, as fluctuations in the exchange rate do not immediately affect enterprises' choices to evade taxes, particularly in the energy industry, which lacks international transactions (exports-imports). So, the exchange rate isn't a big part of tax evasion plans. This corresponds with the study (Djati, 2023), which indicates that fluctuations in the exchange rate do not influence corporate decisions about tax avoidance.

The Impact of Leverage on Tax Evasion

Companies that have a lot of debt also have to pay more interest on that debt, which makes tax avoidance much easier. These interest costs can be written off on taxes, which makes corporate leaders more likely to keep using debt arrangements as a way to avoid paying taxes. In this way, leverage is a microeconomic issue that can affect how people avoid paying taxes. The results of this study are in line with the (Hermawan et al., 2021), which assert that increased firm liabilities correlate with a higher propensity for tax avoidance tactics.

The Impact of Company Size on Tax Evasion

The size of a company has a big effect on how much tax they may avoid. This is because bigger organizations usually have more resources, more complicated management systems, and more operational activities, which means they have more chances to take advantage of tax loopholes for better tax planning. The findings of this study (Sari et al., 2021), indicate that when the entire value of a company's assets increases, so does the size of the company, leading to an escalation in tax avoidance correlated with company size.

Conclusion

The study's findings indicate that both macroeconomic and microeconomic factors influence tax avoidance tactics among energy sector companies listed on the Indonesia Stock Exchange. It has been proven that inflation makes businesses more likely to evade paying taxes as a way to stay profitable as costs go up. Leverage is also essential since the way debt is structured lets firms exploit interest payments as tax breaks. Also, the size of a firm determines how much tax they may avoid. Bigger organizations have more resources and more complicated management, which makes it easier for them to arrange their taxes. On the other hand, exchange rates don't have much of an influence on tax avoidance, especially for enterprises in the energy sector that don't do business with other countries. This study demonstrates that internal corporate attributes and certain economic conditions might affect legitimate tax evasion behavior.

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