

The Effect of Tax Planning, Deferred Tax Assets, and Capital Structure on the Value of Energy Sector Companies Listed on the Indonesia Stock Exchange

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Abstract

This study aims to analyze the effect of tax planning, deferred tax assets, and capital structure on firm value in energy sector companies listed on the Indonesia Stock Exchange (IDX). The research employs a quantitative approach using secondary data obtained from audited financial statements of energy companies during the observation period. Data were collected through documentation techniques by accessing the official IDX website and related sources. The analytical method used is multiple linear regression, supported by classical assumption tests consisting of normality, linearity, multicollinearity, autocorrelation, and heteroscedasticity tests to ensure the validity of the regression model. The results show that the regression model fulfills all classical assumptions. The multiple linear regression analysis indicates that tax planning, deferred tax assets, and capital structure have positive regression coefficients toward firm value. The correlation coefficient (R) of 0.716 indicates a strong relationship between the independent variables and firm value, while the coefficient of determination (R²) of 0.513 shows that 51.3% of the variation in firm value can be explained by the three independent variables, with the remaining 48.7% influenced by other factors. The simultaneous test (F-test) demonstrates that tax planning, deferred tax assets, and capital structure jointly have a significant effect on firm value. However, the partial test (t-test) reveals that each independent variable does not have a significant individual effect on firm value. These findings suggest that while the variables collectively influence firm value, their individual impacts are not statistically significant.

Keywords: Firm Value, Tax Planning, Deferred Tax Assets, Capital Structure, Energy Sector

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Introduction

The capital market can formally be defined as a market for various long-term, tradable financial instruments (or securities), whether in the form of debt or equity, issued by the government, public authorities, or private companies (Mihajlović, 2016; Okoyan & Eze, 2021). Therefore, the capital market is a narrower concept than the financial market. In the financial market, all forms of debt and equity are traded, both short-term and long-term funds, whether negotiable or non-negotiable.

The Indonesia Stock Exchange (IDX) is the official institution that organizes and provides a system and means to bring together sellers and buyers of securities (stocks, bonds, etc.) in the Indonesian capital market. The IDX is a place where securities trading occurs in an orderly, fair, and efficient manner (Katifa et al., 2025; Martin, 2025).

On the Indonesia Stock Exchange (IDX), listed companies are grouped into several sectors and subsectors to facilitate classification and analysis (Renaldi et al., 2020; Mirfazli, 2008; Zhafran

& Saepudin, 2024). This classification follows the IDX Industrial Classification (IDX-IC) system introduced in 2021, replacing the previous classification, which consisted of only nine sectors: Energy, Basic Materials, Industrials, Consumer Non-Cyclicals, Consumer Cyclicals, Healthcare, Financials, Properties & Real Estate, Technology, Infrastructure, Transportation & Logistics, and Utilities.

Purwani, T., & Santoso (2023) said that, the energy sector on the Indonesia Stock Exchange (IDX) is an industrial sector that groups companies engaged in the production, distribution, and supply of energy, such as oil, gas, coal, and renewable energy. One of the driving forces behind economic development in Indonesia is the mining sector, as it supplies energy resources essential for a country's economic development (Nazir et al., 2020; Zou et al., 2025; Ngarayana et al., 2021; Kurniawan & Managi, 2018). Indonesia's abundant natural resources create new opportunities for companies to explore mining in the country.

Tax planning is a strategy carried out by individuals or companies to manage their finances in order to minimize the tax obligations that must be paid legally and in accordance with applicable tax regulations and involves organizing financial structures, using tax incentives, and avoiding unnecessary tax risks.

Capital structure is the proportion in determining the fulfillment of company spending needs where the funds obtained use a combination or blend of sources originating from long-term funds consisting of two main sources, namely those originating from within and outside the company.

Methods

This type of research is quantitative. According to Sugiyono (2018): "Quantitative data is a research method based on positivism (concrete data). Research data consists of numbers that will be measured using statistics as a calculation test tool, related to the problem being studied to produce a conclusion. The positivistic philosophy is applied to a specific population or sample." The data collection technique used documentation with secondary data. According to Sugiyono (2020), "Secondary data are data sources that do not provide data directly to the data collector but are obtained through other people or specific documents." Documents are any form of record of various past events or circumstances that have value or significance and can serve as supporting data in research. Secondary data sources can include data from archives, papers, scientific magazines, the internet, and books related to the research problem.

According to Sugiyono (2018), "Documentation is a method used to collect data and information to support research. This includes official documents, articles, journals, archives, and other relevant materials." The data used were audited financial reports of energy companies registered with the Indonesia Stock Exchange. Data collection was carried out by downloading directly from the official Indonesia Stock Exchange website www.idx.co.id and other sources.

Classical Assumption Test

The classical assumption test in regression aims to ensure that the regression model meets statistical requirements so that the analysis results are valid and reliable. The normality test is conducted to determine whether the dependent, independent, or residual variables are normally distributed, usually using the Kolmogorov-Smirnov test with a significance criterion > 0.05 indicating normal data. The linearity test evaluates whether the model specification is appropriate, whether the relationship between variables is linear, quadratic, or cubic, and is carried out using the Lagrange Multiplier test, where the calculated $\chi^2 < \chi^2$ table indicates a

linear model. The multicollinearity test aims to detect correlations between independent variables; the ideal model is orthogonal independent variables, with a tolerance > 0.10 and VIF < 10 indicating no multicollinearity. The autocorrelation test assesses whether the residuals in period t are correlated with the previous period, which often occurs in time series data; the Run Test is used, where Sig. > 0.05 indicates no autocorrelation. Finally, a heteroscedasticity test assesses the equality of residual variances between observations, for example using the Glejser test, where a significance level > 0.05 indicates homoscedasticity. All of these tests together ensure that the linear regression model meets the classical assumptions, making the analysis results more valid and reliable.

Statistical Test

The statistical tests in this study include several analyses used to measure the relationship and influence of independent variables on the dependent variable. Multiple linear regression analysis is used to predict the value of the dependent variable, in this case Company Value, based on independent variables such as Tax Planning, Deferred Tax Assets, and Capital Structure, with the equation $Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$. The correlation coefficient (R) analysis aims to determine the strength and direction of the relationship between the independent and dependent variables, with r values ranging from -1 to 1 , where the closer to ± 1 , the stronger the relationship. The coefficient of determination (R^2) is used to determine the contribution of independent variables to the variation of the dependent variable, with values close to 1 indicating high explanatory ability. The simultaneous influence test (F Test) assesses whether all independent variables have a joint effect on the dependent variable, with decisions based on a significance value ≤ 0.05 indicating a significant effect. Meanwhile, the partial effect test (t-test) is used to evaluate the influence of each independent variable individually on the dependent variable, with a significance value ≤ 0.05 indicating a significant effect. This overall test ensures that the relationship between variables can be interpreted accurately and reliably.

Results and Discussion

Tax Planning

Tax planning is one method taxpayers can utilize to manage their business or income taxes. However, it is important to note that tax planning in question must be carried out without violating the constitution or applicable tax laws. Tax planning is measured using the Tax Retention Rate, which is a tool for analyzing the effectiveness of tax management in a company's current year financial statements.

The formula for calculating Tax Planning is as follows:

$$ETR = \frac{\text{Tax Paid}}{\text{Profit Before Tax}}$$

Capital Structure

Capital structure is the mix of debt and equity resulting from operating decisions, financing, dividend, or equity policies. A company's capital structure, essentially the mix of equity and debt financing, is a critical factor in business valuation. It refers to the amount of debt or equity a company uses to fund its operations and finance its assets. Capital structure theory states whether changes in capital structure affect a company's value, assuming investment decisions and dividend policy remain unchanged. If there is an effect, it indicates the best capital structure; if there is no effect, it indicates no best capital structure.

The formula for calculating capital structure is as follows:

$$DER = \frac{\text{Total Debt}}{\text{Equity}}$$

Deferred Tax Assets

A deferred tax asset is an asset that arises when timing differences result in a positive adjustment, resulting in a lower tax expense under commercial accounting than under tax law. In short, a deferred tax asset represents a company's right to reduce future tax payments, arising from differences in the timing of revenue or expense recognition between accounting rules and tax regulations.

The formula for calculating a deferred tax asset is as follows:

$$APT_{it} = \frac{\Delta \text{Deferred Tax Assets}}{\text{Deferred Tax Assets}_{it}}$$

Company Value

Company value is related to investment opportunities when derived from stock market indicators. This relationship will positively impact the company's future growth, thereby increasing its value. The purpose of company value is to explain the company's current condition to external parties (shareholders, the general public, and potential investors) through stock price indicators. High and low stock prices will influence potential investors' perceptions of the company. These share prices will help potential investors determine whether the company is worth investing in. Higher returns to investors indicate a high share price, enabling the company's goal of maximizing shareholder wealth to be achieved through high company value.

The formula for calculating company value is as follows:

$$PBV = \frac{\text{Stock price}}{\text{Book value per share}}$$

$$\text{Book value per share} = \frac{\text{Total Equity}}{\text{Number of Shares Outstanding}}$$

Classical Assumption Test

Normality Test

The normality test is used to determine whether the data population is normally distributed. The normality test used in this study is the One-Sample Kolmogorov-Smirnov test. A good regression model requires data with a normal distribution. Basis for decision-making: (1) A significant value or probability > 0.05 indicates a normal distribution; (2) A significant value or probability < 0.05 indicates a non-normal distribution.

The following table shows the results of the Normality Test:

Table 1. One Sample Kolmogorov-Smirnov Normality Test

One-Sample Kolmogorov-Smirnov Test	
	Unstandardized Residual
N	43

Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.23538684
Most Extreme Differences	Absolute	.085
	Positive	.076
	Negative	-.085
Test Statistic		.085
Asymp. Sig. (2-tailed)		.156
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		
d. This is a lower bound of the true significance.		

Source: SPSS Processed Data, 2025

The results in Table 1 show that the Asymp. Sig. (2-tailed) is 0.156. Since the significance value tested is greater than the standard significance value of 0.05, it can be concluded that the data studied are normally distributed.

Linearity Test

To see the results of the Linearity Test for the Tax Planning (X1) and Firm Value (Y) variables in this study, see Table 4.2 below:

Table 2. Results of the Linearity Test for Tax Planning (X1) and Firm Value (Y)

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X1	Between Groups	(Combined)	2.212	10	.221	3.576	.003
		Linearity	1.855	1	1.855	29.980	.000
		Deviation from Linearity	.357	9	.040	.642	.753
	Within Groups		1.980	32	.062		
	Total		4.192	42			

Source: Processed Research Data, 2025

Table 2 above concludes that there is a significant linear relationship between the Tax Planning variable (X1) and Firm Value (Y) as the Deviation From Linearity value is 0.753 > 0.05. The results of the linearity test for the Deferred Tax Assets (X2) and Firm Value (Y) variables are shown in Table 3 as follows:

Table 3. Linearity Test Results for Deferred Tax Assets (X2) and Firm Value (Y)

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X2	Between Groups	(Combined)	3.060	20	.153	2.974	.007
		Linearity	.659	1	.659	12.807	.002
		Deviation from Linearity	2.401	19	.126	2.457	.293

	Within Groups	1.132	22	.051		
	Total	4.192	42			

Source: Processed Research Data, 2025

From Table 3 above, it can be concluded that there is a significant linear relationship between the Deferred Tax Assets (X2) and Firm Value (Y) variables, as the Deviation From Linearity value is $0.293 > 0.05$. The results of the linearity test for the Capital Structure (X3) and Firm Value (Y) variables can be seen in Table 4.4 as follows:

Table 4. Results of the Linearity Test for Capital Structure (X3) and Firm Value (Y)

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Y * X3	Between Groups	(Combined)	3.149	14	.225	6.479	.000
		Linearity	1.958	1	1.958	56.409	.000
		Deviation from Linearity	1.191	13	.092	2.639	.129
	Within Groups		.798	23	.035		
	Total		3.947	37			

Source: Processed Research Data, 2025

Table 4 above concludes that there is a significant linear relationship between the Capital Structure (X3) and Firm Value (Y) variables, as the Deviation From Linearity sig. value is $0.129 > 0.05$.

Autocorrelation Test

The autocorrelation test aims to test whether there is a correlation between the confounding error in period t and the confounding error in the previous period in the linear regression model. A good regression model should not exhibit correlation. The basis for making a decision regarding the presence or absence of autocorrelation is as follows: (1) If the sig. value is > 0.05 , there is no autocorrelation; (2) If the sig. value is < 0.05 , there is autocorrelation.

The following table shows the results of the Autocorrelation Test:

Tabel 5. Uji Autokorelasi

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.716 ^a	.513	.485	.23445
a. Predictors: (Constant), X3,X2, X1				
b. Dependent Variable: Y				

Source: Processed Research Data, 2025

From the results in Table 5 above, the sig. value is 0.23445. Therefore, it can be concluded that there is no autocorrelation because the sig. value is greater than 0.05.

Heteroscedasticity Test

The heteroscedasticity test aims to determine whether the regression model exhibits unequal variances from one observation's residuals to another. A good regression model is one with homoscedasticity, meaning no heteroscedasticity occurs. To test for the presence or absence of

heteroscedasticity, the Glejser Test is used, which regresses the absolute value of the residuals against the independent variable. Heteroscedasticity is absent if the significance value is >0.05. Heteroscedasticity occurs if the significance value is <0.05.

The following table shows the results of the Heteroscedasticity Test:

Table 6. Heteroscedasticity Test

Model		Unstandardized	Coefficients	Unstandardized	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.757	1.602		.473	.638
	X1	.077	.032	.099	2.402	.218
	X2	.911	.043	.881	2.368	.182
	X3	.214	.471	.537	1.695	.237

Source: Processed Research Data, 2025

Table 6 above shows the results of the heteroscedasticity test. The table shows that: (1) The heteroscedasticity test between X1 and Y shows a probability value (sig) of 0.218 > 0.05, indicating no heteroscedasticity; (2) The heteroscedasticity test between X2 and Y shows a probability value (sig) of 0.182 > 0.05, indicating no heteroscedasticity; (3) The heteroscedasticity test between X1 and Y shows a probability value (sig) of 0.237 > 0.05, indicating no heteroscedasticity.

Statistical Tests

Multiple Linear Regression Analysis

The results of the Multiple Linear Regression Analysis can be seen in Table 7 as follows:

Table 7. Results of Multiple Linear Regression Analysis

Model		Unstandardized	Coefficients	Unstandardized	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.757	1.602		.473	.638
	X1	.077	.032	.099	2.402	.218
	X2	.911	.043	.881	2.368	.182
	X3	.214	.471	.537	1.695	.237

Source: Processed Research Data, 2025

Based on the results of the multiple linear regression analysis in Table 7 above, the multiple linear regression equation can be written as follows:

$$Y = 0.757 + 0.077X1 + 0.911X2 + 0.214X3$$

The value of a = 0.757 means that if Tax Planning (X1), Deferred Tax Assets (X2), and Capital Structure (X3) are 0, then the Firm Value (Y) is 0.757. Meanwhile, the multiple linear regression coefficient for the Tax Planning variable (X1) is 0.077, meaning that if the Tax Planning variable (X1) increases by 1 (unit), the Firm Value (Y) will increase by 0.077 units. The multiple linear regression coefficient for the Deferred Tax Assets (X2) variable is 0.911, meaning that if the Deferred Tax Assets (X2) variable increases by 1 unit, the Firm Value (Y) will increase by 0.911 units. The multiple linear regression coefficient for the Capital Structure

(X3) variable is 0.214, meaning that if the Capital Structure (X3) variable increases by 1 unit, the Firm Value (Y) will increase by 0.214 units.

Correlation Coefficient Analysis

Correlation analysis is conducted to test the associative hypothesis, namely by examining the relationship within the sample. The calculation results are shown in the following table:

Table 8. Correlation Coefficient Analysis

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.716 ^a	.513	.485	.23445
a. Predictors: (Constant), X3,X2, X1				
b. Dependent Variable: Y				

Source: Processed Research Data, 2025

Table 8 shows the R-value (correlation) obtained is 0.716, indicating a strong relationship between Tax Planning, Deferred Tax Assets, and Capital Structure and Firm Value.

Coefficient of Determination Analysis

The coefficient of determination indicates the extent to which the independent variables in the regression model can explain the variation in the dependent variable. The coefficient of determination is indicated by the R-Square value from the model summary table. The calculation results can be seen in the following table:

Table 9. Coefficient of Determination Analysis

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.716 ^a	.513	.485	.23445
a. Predictors: (Constant), X3,X2, X1				
b. Dependent Variable: Y				

Source: Processed Research Data, 2025

Table 9 shows an R-Square value of 0.513, or 51.3%. This means that the influence of firm value can be explained by the variables Tax Planning, Deferred Tax Assets, Capital Structure, and Firm Value. The remaining 48.7% is influenced by other variables.

Simultaneous Effect Test (F Test)

The F test aims to determine whether the independent variables jointly influence the dependent variable. The results of the simultaneous effect (f test) are shown in the following table:

Table 10. Simultaneous Effect Test (F Test)

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.023	2	1.012	18.404	.001 ^b
	Residual	1.924	35	.055		
	Total	3.947	37			
a. Dependent Variable: Y						
b. Predictors: (Constant), X3,X2, X1						

Source: Processed Research Data, 2025

Table 10 shows the results of the f-test with a significant value of $0.001 < 0.05$. This demonstrates the basis for the F-test decision, where H_0 is rejected and H_a is accepted. It can be concluded that Tax Planning, Deferred Tax Assets, and Capital Structure simultaneously have a significant effect on Firm Value.

Partial Test (t-Test)

The partial test, or t-test, aims to determine whether the independent variable (X) partially (individually) influences the dependent variable (Y). The following table shows the t-test results:

Tabel 11. Uji Simultan (Uji t)

Model		Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7.144	.487		14.677	.000		
	X1	-.662	.145	-.707	.553	.174	.576	1.736
	X2	.040	.098	.064	.411	.683	.576	1.736
	X3	.036	.252	.071	.394	.794	.576	1.736

a. Dependent Variable: Y

Source: Processed Research Data, 2025

Based on Table 11 above, the following conclusions can be drawn: (1) The sig. value of the Tax Planning variable is $0.174 > 0.05$, thus concluding that there is no simultaneous influence on company value; (2) The sig. value of the Deferred Tax Assets variable is $0.683 > 0.05$, thus concluding that there is no simultaneous influence on company value. The sig. value of the Capital Structure variable is $0.794 > 0.05$, thus concluding that there is no simultaneous influence on company value.

Conclusion

Based on the research results, it can be concluded that the regression constant of 0.757 indicates that if Tax Planning (X1), Deferred Tax Assets (X2), and Capital Structure (X3) are zero, then the Company Value (Y) is 0.757. The regression coefficient of each variable shows that every one unit increase in Tax Planning, Deferred Tax Assets, and Capital Structure will increase the Company Value by 0.077, 0.911, and 0.214 units, respectively. The correlation coefficient (R) of 0.716 indicates a strong relationship between the three independent variables on Company Value, while the determination coefficient (R²) of 0.513 or 51.3% indicates that the independent variables are able to explain most of the variation in Company Value, while 48.7% is influenced by other factors. The F test shows a significance value of $0.001 < 0.05$, which indicates that Tax Planning, Deferred Tax Assets, and Capital Structure simultaneously have a significant effect on Company Value. However, the t-test of each variable shows the significance value of Tax Planning (0.174), Deferred Tax Assets (0.683), and Capital Structure (0.794) > 0.05 , so that partially the three variables do not have a significant effect on Company Value.

Suggestion

Based on the research results, it is recommended that companies use these findings as a reference in formulating policies and as information to assist management in decision-making regarding the implementation of corporate values. For investors, this research can provide deeper insights, enabling them to make more careful selections when selecting companies for investment. Furthermore, future researchers are advised to expand the research object to other sectors to enable cross-sector comparisons and a more comprehensive presentation of the factors influencing corporate value.

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