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The Effect of Tax Avoidance and Capital Structure on Firm Value With Firm Size as a Moderating Variable

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Abstract

This study aims to examine the effect of tax avoidance and capital structure on firm value with firm size as a moderating variable in mining sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. This research employed a quantitative method with a causal associative approach. The population consisted of 91 mining companies listed on the IDX, while the sample was selected using purposive sampling, resulting in 19 companies with a total of 95 observations. Secondary data were analyzed using panel data regression and Moderated Regression Analysis (MRA) with EViews 13. The results show that tax avoidance has a positive and significant effect on firm value, capital structure has no significant effect on firm value, and firm size moderates the relationship between tax avoidance, capital structure, and firm value.

Keywords: ***Tax Avoidance, Capital Structure, Firm Value, Firm Size, Moderated Regression Analysis (MRA)***

INTRODUCTION

In the era of globalization and information openness, business competition is getting tighter, so companies are required to be able to maintain business continuity and improve their performance. Companies that are able to adapt to business developments will find it easier to achieve long-term goals, namely improving shareholder welfare through increased firm value (Aditya, 2025). Firm value is an important indicator reflecting the level of investor confidence in the company's performance and prospects. According to Aisyah and Sartika (2022), firm value has a close relationship with stock prices, so an increase in stock prices indicates an increase in firm value. In line with this, Eka et al. (2023) state that firm value is a market value reflecting shareholder wealth and can be improved through appropriate management policies. Evelyn (2023) also explains that firm value is the price prospective buyers are willing to pay if the company is sold, so the higher the stock price, the higher the firm value. This research focuses on mining sector companies which are one of the strategic sectors in the Indonesian economy. Based on

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data from the Central Statistics Agency (BPS), the mining sector contributed 10.5% to the national Gross Domestic Product (GDP) or around Rp2,168 trillion in 2023.

However, there is a phenomenon showing a discrepancy between company performance and the policies taken. PT Adaro Energy Indonesia Tbk (ADRO), one of the largest coal mining companies in Indonesia, distributed interim dividends of US$400 million or around Rp6.17 trillion to shareholders for the 2023 financial year. However, in the same period, the company's financial performance declined, indicated by a 15.76% drop in operating revenues to US$4.98 billion (Rp77.14 trillion) and a 35.96% drop in net profit to US$1.21 billion (Rp18.87 trillion) due to weakening global coal prices. This phenomenon shows that the decline in PT Adaro Energy Indonesia Tbk's financial performance is not in line with the company's policy of consistently distributing large dividends, which can cause differences in investor perception of firm value (Bisnis.com, 2024).

One of the factors suspected of affecting firm value is tax avoidance. According to Siagian (2020), tax avoidance is a company's effort to reduce the tax burden by utilizing loopholes in tax regulations without violating applicable laws. The results of previous studies regarding the effect of tax avoidance on firm value still show differences. Safitri and Oktaviani (2024) state that tax avoidance has a negative effect on firm value because it has the potential to damage reputation and lower the company's image in the eyes of the public and investors. Conversely, Arfiansyah (2020) states that tax avoidance has a positive effect on firm value because tax management carried out by management to suppress tax expenses can ultimately improve shareholder welfare.

Besides tax avoidance, capital structure is also suspected of affecting firm value. According to the Modigliani and Miller theory, the optimal use of debt can increase firm value due to the tax benefits from interest expenses. Saparuddin (2023) defines capital structure as the comparison between long-term foreign capital and equity in a company. Research by Sri Ayem and Ina (2023) shows that capital structure has a positive effect on firm value because it reflects good company prospects. Conversely, Saparuddin et al. (2023) state that capital structure has not been able to increase firm value because investors consider management's ability to manage funds effectively and efficiently more than the size of the company's capital structure.

In this study, firm size is used as a moderating variable. According to Sari (2025), firm size can be seen from the amount of investment and company conditions. Companies with a large size generally show better development and growth, which can increase investor confidence and firm value. Jaya (2020) states that firm size illustrates the size of the company which can be seen from total assets, sales levels, or market share. Research by Sri Ayem and Ina (2023) shows that large-sized companies find it easier to obtain funding and attract investor interest. However, Saparuddin (2023) states

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that firm size has not been able to increase firm value because investors consider companies with large total assets tend to retain larger earnings rather than distributing dividends. Therefore, firm size is used as a moderating variable suspected of strengthening or weakening the relationship between tax avoidance and capital structure on firm value.

Signaling theory is used in this study to explain firm value. According to Pribadi (2020), signaling theory is a management action in conveying information to investors regarding their assessment of company prospects. Companies with good financial performance generally give positive signals through information disclosure to reduce information asymmetry between management and investors (Halim, Meiden, and Tobing, 2025).

Based on this description, this study aims to analyze the effect of tax avoidance and capital structure on firm value with firm size as a moderating variable in mining sector companies listed on the Indonesia Stock Exchange (IDX) for the 2021–2025 period.

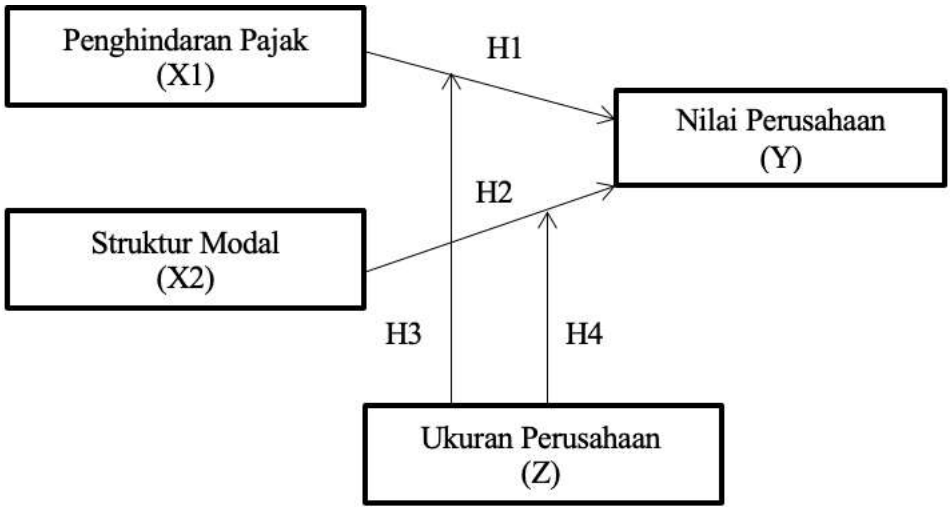


Figure 1. Conceptual Framework

METHOD

This research type is quantitative research with a causal associative nature. The population in this study includes all mining sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period with a total population of 91 companies. In this study, the sampling technique uses the purposive sampling method, which is a sampling determination technique based on certain criteria tailored to the research objectives. The sample selection criteria include mining sector companies that provide complete and consecutive financial reports during 2021-2025, publish financial

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reports using the Dollar (USD) currency, and experienced consecutive profits from 2021 to 2025.

The data collection process was carried out through literature study and documentation methods. The researcher used the documentation method as a data collection technique by examining secondary data in the form of financial reports from each sample company during the 2021–2025 research period. The data were obtained through official documents published by the companies, both through the official website of the Indonesia Stock Exchange (www.idx.co.id) and the respective companies' official websites.

The variables in this study consist of one dependent variable, two independent variables, and one moderating variable. The dependent variable used is firm value measured using Price to Book Value (PBV). The independent variables are tax avoidance measured by the Cash Effective Tax Rate (CETR) and capital structure measured by the Debt to Equity Ratio (DER). Furthermore, firm size is used as a moderating variable measured using the Natural Logarithm (Ln) of total assets.

Table 1. Operationalization of Research Variables

No	Variable Name	Measurement Indicator	Scale
1	Firm Value	PBV = Price Per Share / Book Value Per Share	Ratio
2	Tax Avoidance	CETR = Cash Tax Paid / Profit Before Tax	Ratio
3	Capital Structure	DER = Total Debt / Total Equity	Ratio
4	Firm Size	Firm Size = LN (Total Assets)	Ratio

The data analysis technique used in this study employs the E-Views series 13 application. The data analysis stages include descriptive statistics, panel data regression models (Common Effect Model, Fixed Effect Model, and Random Effect Model), and panel data regression model selection using the Chow Test, Hausman Test, and Lagrange Multiplier Test. The classical assumption tests used include normality, multicollinearity, heteroscedasticity, and autocorrelation tests. Hypothesis testing is carried out through the Coefficient of Determination Test (Adjusted R^2), Simultaneous Statistical Test (F-Test), Partial Statistical Test (t-Test), and Moderated Regression Analysis (MRA).

RESULTS AND DISCUSSIONS

General Description o the Research Object

The population in this study is all mining sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period, totaling 91 companies. The sampling technique uses the purposive sampling method to select samples based on

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criteria determined according to the research objectives. The sample selection process obtained 26 companies. The outlier test identified 7 companies with extreme values, which were excluded to prevent them from affecting the statistical test results. The final sample used is 19 companies. The number of observations over the five-year period is 95 observations.

Table 2. Criteria for Determining Research Samples

No	Criteria	Violations of Criteria	Total
1	Mining Sector Companies listed on the Indonesia Stock Exchange		91
2	Mining Sector Companies that provide complete and consecutive financial reports during 2021-2025	(36)	55
3	Mining Sector Companies that publish financial reports using the Dollar (USD) currency	(20)	35
4	Mining Sector Companies that experienced consecutive profits in 2021-2025	(9)	26
5	Outlier Data	(7)	19
Total companies selected as samples			**19**
Total samples during the 5-year research period			**95**

Descriptive Statistics Test

The descriptive statistics calculate the research variables: Firm Value (Y), Tax Avoidance (X1), Capital Structure (X2), and Firm Size (Z).

Table 3. Results of Descriptive Statistics Test

	Firm Value (Y)	Tax Avoidance (X1)	Capital Structure (X2)	Firm Size (Z)
Mean	4,482,170	0.276632	2.157053	19.01863
Median	18,075.10	0.210000	1.470000	20.76000
Maximum	20,027,889	0.830000	8.450000	22.60000
Minimum	1,025.000	0.020000	0.100000	12.82000
Std. Dev.	6,809,043	0.215676	2.298812	3.315409
Observations	95	95	95	95

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The Firm Value variable has an average of 4,482,170 with a standard deviation of 6,809,043. The Tax Avoidance variable has an average of 0.276632. The Capital Structure variable has an average of 2.157053. The Firm Size variable has an average of 19.01863.

Panel Data Regression Model Selection

The selection test for the panel data regression model determines the most appropriate estimation model to describe the relationship between variables.

Table 4. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.944161	(18,73)	0.0000
Cross-section Chi-square	110.659791	18	0.0000

The Chow test produces a cross-section F probability of 0.0000 < 0.05. The selected regression model is the Fixed Effect Model.

Table 5. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.379296	3	0.0002

The Hausman test produces a cross-section random probability of 0.0002 < 0.05. The selected regression model is the Fixed Effect Model, and the Lagrange Multiplier test is not necessary.

Classical Assumption Test

The classical assumption test ensures the regression model meets the basic requirements and produces valid data. The Jarque-Bera probability value is 0.145181 > 0.05. The residual is normally distributed.

Table 6. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	8.660096	99.73311	NA
X1	7.856157	11.14303	4.167621
X2	51.77192	5.893760	3.115661
Z	17.20626	73.83674	2.155467

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The Centered VIF values for tax avoidance (4.167621) and capital structure (3.115661) are below 10. The model does not experience multicollinearity.

Table 7. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.949152	2.280970	1.292938	0.2001
X1	-0.109593	0.353927	-0.309649	0.7577
X2	0.035855	0.035889	0.999048	0.3211
Z	-0.141799	0.117238	-1.209505	0.2304

Variable X1 has a probability of 0.7577, variable X2 is 0.3211, and variable Z is 0.2304. All probability values are greater than 0.05, indicating no heteroscedasticity.

Table 8. Autocorrelation Test Results

R-squared	0.295329	**Mean dependent var**	-9.17E-09
Adjusted R-squared	0.255740	**S.D. dependent var**	2825922.
S.E. of regression	2437937.	**Akaike info criterion**	32.31228
Sum squared resid	5.289748	**Schwarz criterion**	32.47358
Log likelihood	-1528.833	**Hannan-Quinn criter.**	32.37745
F-statistic	7.460003	**Durbin-Watson stat**	1.984671
Prob(F-statistic)	0.000007		

The Durbin-Watson (DW) value is 1.984671. The value is between -2 and +2, meaning there is no autocorrelation.

Panel Data Regression Analysis and Hypothesis Testing

The panel data linear regression analysis determines the linear relationship between the independent variables and the dependent variable.

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Table 9. t-Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8,848,376	17,510,158	-0.505328	0.6149
X1	9,752,714	2,716,966	3.589561	0.0006
X2	524,847.3	275,507.8	1.905018	0.0607
Z	499,537.2	899,989.1	0.555048	0.5806

The Adjusted R-squared value is 0.931059. The independent variables explain 93.11% of the variation in the dependent variable firm value. The F-statistic value is 61.45165 with a probability of 0.000000 < 0.05. The independent variables simultaneously have a significant effect on the dependent variable.

Tax Avoidance (X1) has a t-statistic of 3.589561 with a probability of 0.0006 < 0.05. Tax Avoidance partially has a positive and significant effect on Firm Value. Capital Structure (X2) has a t-statistic of 1.905018 with a probability of 0.0607 > 0.05. Capital Structure partially has no effect on Firm Value.

Moderated Regression Analysis (MRA)

The moderating variable functions to strengthen or weaken the relationship between the independent variable and the dependent variable.

Table 10. Results of Moderated Regression Analysis (MRA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29,810,421	4,564,426	6.531034	0.0000
X1	66,064,821	16,072,852	4.110336	0.0001
X2	-6,240,813	1,346,731	-4.634046	0.0000
Z	-1,433,211	240,415.5	-5.961391	0.0000
X1_Z	-2,789,333	833,858.9	-3.345091	0.0012
X2_Z	285,609.1	74,516.04	3.832854	0.0002

The probability value of the interaction variable between tax avoidance and firm size (X1_Z) is 0.0012 < 0.05. Firm size strengthens the relationship between tax avoidance and firm value. The probability value of the interaction variable between capital structure and firm size (X2_Z) is 0.0002 < 0.05. Firm size strengthens the relationship of capital structure to firm value. Firm size (Z) is categorized as a Quasi Moderator because the moderating variable and the interaction variable are both statistically significant.

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DISCUSSIONS

The Effect of Tax Avoidance on Firm Value

Tax avoidance partially has a positive and significant effect on firm value. A higher level of tax avoidance increases firm value. Tax avoidance lightens the company's tax burden and increases profit after tax. This provides a positive signal to investors.

The Effect of Capital Structure on Firm Value

Capital structure partially has no effect on firm value. Funding decisions through debt have not become the main factor considered by investors. Investors pay more attention to financial performance and company growth prospects.

Firm Size Moderates the Relationship of Tax Avoidance to Firm Value

Firm size can strengthen the relationship between tax avoidance and firm value. Large companies have better capabilities in managing tax activities to increase firm value. The amount of assets increases investor confidence in the company's prospects.

Firm Size Moderates the Relationship of Capital Structure to Firm Value

Firm size strengthens the relationship of capital structure to firm value. Large companies find it easier to obtain funding through debt. They are considered to have better capabilities in managing funds and controlling capital structure.

CONCLUSION

Based on the data analysis and discussion regarding the effect of tax avoidance and capital structure on firm value with firm size as a moderating variable in mining sector companies listed on the Indonesia Stock Exchange (IDX) for the 2021–2025 period, several conclusions can be drawn. Tax avoidance has a positive and significant effect on firm value. This indicates that the higher the tax avoidance carried out by the company through mechanisms that still comply with tax regulations, the firm value tends to increase. Tax burden savings can increase company profits, thus providing a positive signal to investors and impacting the increase in firm value. Capital structure has no effect on firm value. The research results show that the size of the capital structure proxied by the Debt to Equity Ratio (DER) has not been able to affect changes in firm value. Investors do not only consider the company's debt level, but also pay attention to the company's ability to manage funds effectively, generate profits, and maintain its business sustainability.

Firm size is able to strengthen the relationship of tax avoidance to firm value. This result shows that companies with a larger size have better capabilities in managing tax activities effectively so that their impact on increasing firm value becomes stronger. The

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large total assets also increase investor confidence in the company's prospects; this is included in Quasi Moderation. Firm size is also able to strengthen the relationship of capital structure to firm value. This indicates that companies with a larger size tend to be more capable of managing capital structure optimally, so the use of funding sources can increase investor confidence and strengthen the effect of capital structure on firm value; this is also included in Quasi Moderation.

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