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Coal prices as a dominant factor in stock return models: an empirical study of coal mining companies on the indonesia stock exchange

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ABSTRACT

This study aims to analyze and address the inconsistencies in previous research results and explain the phenomenon of Market Appreciation that differs from the theory of Efficient Capital Markets. This is what prompted the researcher to do this by using a combination of time series and cross-sectional data. This type of research is quantitative with a multiple regression analysis method of panel data with a sample of 25 coal mining sub-sector companies listed on the Indonesia Stock Exchange (IDX) for seven years. The formula in this study, maximizes the value of Market Appreciation through the Company's Capital Structure as an intervening variable and by using companies on the IDX as the research object. Two research models are integrated into one and each through model selection testing, Chow Test, Hausman Test, and Lagrange Multiplier Test. The results of the first research model; that the interest rate is the dominant variable that is most sensitive to impacting capital structure, while the results of the second research model; that market appreciation is largely determined by the dominant exogenous variable that is most sensitive to coal prices. It is hoped that these results can be a reference for investors on the Indonesia Stock Exchange to maximize stock returns.

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Introduction

Capital markets play a crucial role in a country's economy because they serve as a venue for companies to raise funds from the public by selling securities or securities. Conversely, the public can invest their excess funds by purchasing securities or securities issued by companies. Capital market theory, often referred to as the Efficient Market Hypothesis (EMH), identifies three forms of efficiency: weak-form, semi-strong-form, and strong-form. These three forms of efficiency are crucial

for capital market players, regardless of their investment preferences. Companies' search for funding sources for their ongoing operations is a key component of capital structure decisions, specifically decisions related to the composition of liabilities and equity. These capital structure decisions impact the company's operational activities and the risks it faces. Increasing leverage increases financial risk. Therefore, every company must determine the importance of capital structure decisions for its financial condition. This requires managers to understand the factors to consider when making capital structure decisions.

By understanding the influencing factors, company managers will more easily make funding decisions, whether to raise additional capital for company development from liabilities or issue new shares as an alternative. Corporate financial management is a crucial function for a company in carrying out its operational activities. When making financial or funding decisions, it is important to consider the company's ability to meet its funding needs for operations and business development. This funding can be sourced from equity, short-term liabilities, and long-term liabilities. Short-term and long-term liabilities can be obtained from external parties. Equity capital, on the other hand, comes from the company's owners, specifically share capital, such as common stock and preferred stock. In addition to share capital, reserves and retained earnings are also included in equity.

In managing capital, the company consistently maintains its business continuity and maximizes benefits for shareholders and other stakeholders. The company actively and regularly reviews and manages its capital to ensure an optimal capital structure and returns for shareholders, taking into account the efficiency of capital use based on operating cash flow and capital expenditures, as well as future capital requirements. Likewise, mining companies, especially coal companies, will try to maintain a balance between the level of debt and equity position to ensure optimal capital structure and returns, as this will be attractive to external investors.

Therefore, it is of great interest to examine the factors that most influence capital structure, both for external and internal stakeholders, particularly mining companies listed on the Indonesia Stock Exchange. This research is expected to assist company management in determining how to secure funding to achieve an optimal capital structure.

Indonesia is a country rich in natural resources. It is a major global producer of mineral resources, and the export of these minerals is one of the country's largest sources of foreign exchange. Non-Tax State Revenue (PNBP) from the Mineral and Coal mining sector amounted to IDR 129.1 trillion, contributing nearly 50 percent of the national PNBP in the 2017 Revised State Budget. This figure was derived from the oil and gas (migas) subsector (IDR 85.64 trillion), minerals and coal (minerba) (IDR 40.61 trillion), and other revenues (IDR 2.8 trillion) (Ministry of Energy and Mineral Resources, 2017).

The rapid growth of coal occurred in the 2000s, when coal companies generated significant profits, especially coal exporters. The increase in coal prices was largely due to economic growth in developing countries. However, this favorable situation changed during the global financial crisis in 2008 when commodity prices declined rapidly. Indonesia was affected by these external factors because commodity exports (especially coal and palm oil), which contributed approximately 50% of Indonesia's total exports, decreased, thus limiting the growth of Gross Domestic Product in 2009. From mid-2009 to mid-2011, the benchmark coal price (Indonesian Coal Index, ICI) rebounded sharply, but after that, there was a decline in global economic activity which caused a decline in coal demand, a sharp decline in coal prices from mid-2011 to mid-2016. The global economic slowdown caused a decline in demand for this commodity. This led to a massive oversupply, exacerbated by coal miners' enthusiasm from 2010 to 2013 to produce and sell as much coal as possible. This excessive coal supply led to a decline in coal prices during that period (the law of supply). After several difficult years, with coal prices plummeting due to oversupply, the coal market began to recover in mid-2016 and continued into 2017. Improved global economic conditions, with strong economies increasing demand, drove increased production in developing countries, leading to increased consumption and, consequently, increased energy use, including coal-fired power plants.

Figure 1 shows the movement of the coal stock index and global coal prices, which have trended in the same direction. The figure also shows the decline in coal prices from 2011 to 2015, followed by a fall in stock prices in the Indonesian mining sector.

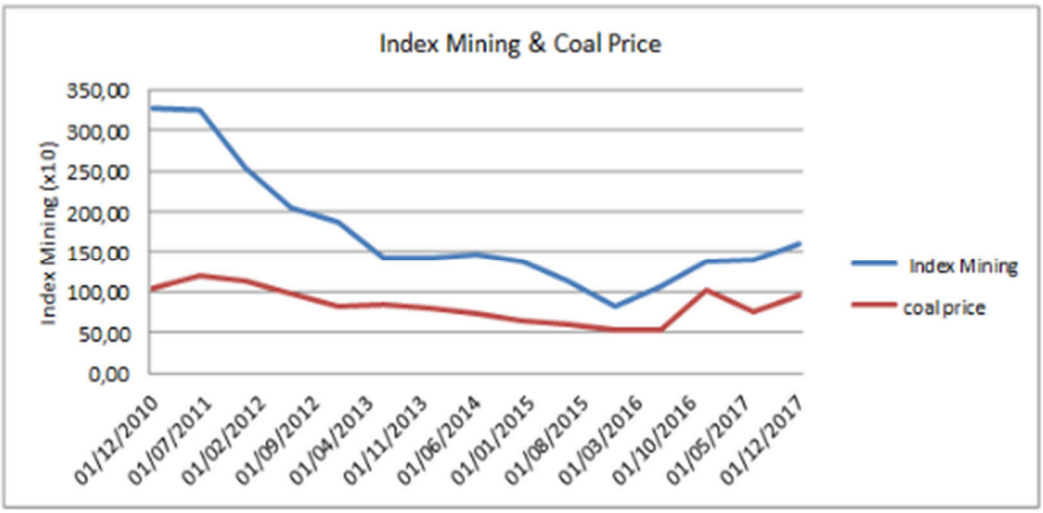

Figure 1 Movement of Reference Coal Prices and Movement of the Coal Stock Index in Indonesia. Source: https://tradingeconomics.com/commodity/coal

Such conditions could be due to the relatively bleak global economic activity, and the short- to medium-term direction of coal prices, which remains highly dependent on China's coal policy. Previous research by Zamani (2016) has stated that coal is affected by supply and demand shocks in the oil market, suggesting a high degree of substitution between the coal and crude oil markets. Meanwhile, research by Sumani et al. (2012) found that coal prices do not have a significant positive impact on stock returns in coal mining companies. However, simultaneously, coal commodity prices and the Jakarta Composite Index (JCI) significantly influence stock returns in coal mining companies.

The soaring coal price has provided a breath of fresh air to the mining industry. The increase in coal prices was triggered by rising crude oil prices, which increased domestic coal demand in Indonesia along with the construction of new coal-fired power plants. Optimism is that coal is a mineral resource whose demand will continue to increase in the future, and this high demand will drive growth in the coal mining sector. The Ministry of Energy and Mineral Resources (ESDM) stated that Indonesia's coal production will continue to increase in the future, not only to meet domestic demand but also to meet international demand (exports). Given Indonesia's abundant coal resources, while the price of fuel oil remains high, this has encouraged industries that have previously relied on oil to switch to coal as a substitute, as it offers a relatively cheaper and more stable price. The increase in domestic coal demand is also driven by the government's decision to ensure equal access to electricity for all Indonesians. This policy was adopted through a joint agreement with Commission VII of the House of Representatives (DPR) in July 2017.

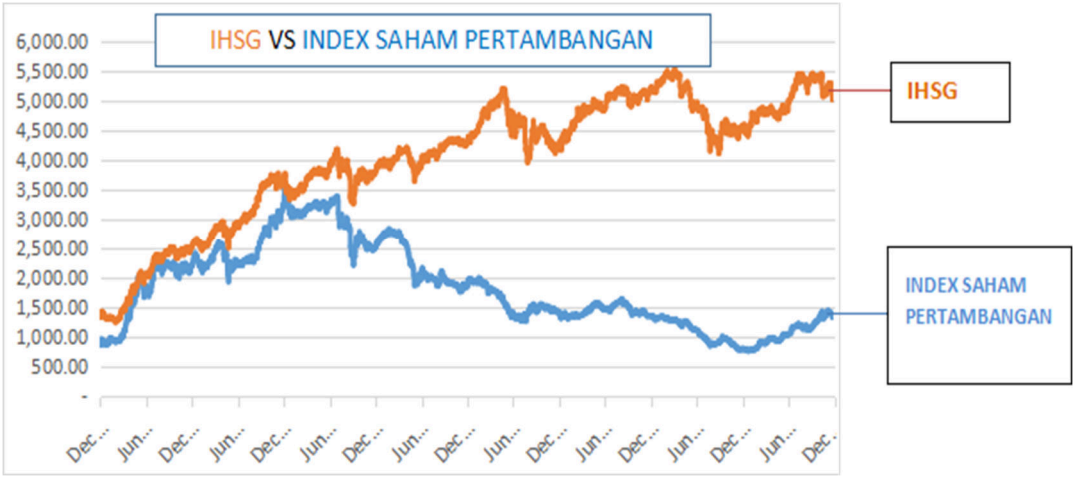

Figure 2 Performance of the Composite Stock Price Index (IHSG) and the Mining Stock Index. Source: Daily Data www.duniainvestasi.com; www.idx.co.id

Literature Review and Hypothesis

H. S. Mohammad et al., (2019), A. Bugshan et al. (2023), I. Bawuah, (2024), Hermawan K.N, (2024), on how the influence of oil prices, leverage, and profitability are related. Naufal, Muhammad (2025), the results of his research show that the increase in oil prices has a significant negative effect on market leverage.

H_1: Crude Oil price has a partial effect on Capital Structure.

Research by Hasan, Ratty (2014) found that coal prices negatively impact capital structure. Conversely, research by Fathurahman M.M. (2023) found that coal prices have a positive effect on capital structure.

H_2: Coal world price have a partial effect on Capital Structure.

In the research results by Julimar R.D. and Priyadi M.P., (2021), Hayuningtyas R.D., et al., (2020), the rupiah exchange rate against the US dollar has an insignificant effect on capital structure. Different results are found in the research results of Eky J.J.P. (2020), which states that the rupiah exchange rate against the US dollar has a significant negative impact on capital structure.

H_3: The Rupiah exchange rate against the US Dollar has a partial effect on the Capital Structure.

Research conducted by Eky J.J.P. (2020) found that interest rates significantly correlate negatively with capital structure. However, research by Julimar R.D. and Priyadi M.P. (2021) and Hayuningtyas R.D. et al. (2020) found that interest rates did not significantly impact capital structure.

H_4: Interest Rate Level has a partial effect on Capital Structure.

Research by Fuadiantoni R. and Mulyanto I. H. (2019) found that profitability (ROA) has a positive and significant impact on capital structure. However, this differs from the research by Komalasari K. et al. (2020), which found no significant impact.

H_5: Profitability (ROA) has a partial effect on Capital Structure

In the research results of Komalasari K., et.al., (2020), it was found that there was no significant impact on profitability (EPS) on capital structure.

H_6: Profitability (EPS) has a partial effect on Capital Structure

Ceolbeom Park (2007), Berd Hayo; Ali M. Kutan (2004), Adrianto E. S., (2024), the results of their research revealed that the increase in oil prices will have an impact on decreasing stock prices by 0.77% for every 1% increase. Imron, Muhamad (2017), the results of the t-statistic test show that the Oil Price variable has a significant positive influence on Stock Return, while in Liogu; Saerang (2015), that oil prices have a significant effect with a positive correlation on stock returns. Different results in the research of Bhutaina and Al Assaf (2017), that the level of oil prices has no influence on stock returns.

H_7: Crude oil price has a partial effect on stock returns

In the research results of Hasan, Ratty (2014), Ardianto, H.N. (2013), coal prices have a positive impact on stock returns. However, different results were obtained by Sumani; Wiputra; Wistinindah (2012), Fathurahman M.M., (2023), who stated that coal price levels do not have an impact on stock returns.

H_8: Coal world price has a partial effect on Stock Return.

The results of research by Hendra Adhitya Wicak-sono (2013), that the rupiah exchange rate has an insignificant effect on stock returns, but different from the results of Joseph Tagne Talla (2013), with the result that the rupiah exchange rate has a negative and significant effect on stock prices. Umi Mardiyat; Ayi Rosalina (2013), in the results of their research explained that the exchange rate partially has a significant effect on stock prices and is negatively correlated. Adrianto E. S., (2024), the increase in the exchange rate has a negative impact, with every 1% increase reducing stock prices by 3.67%. Putu E. Pujawati, IG Bagus Wiksuna, Luh G. S. Artini (2015), Muhamad Faisal Amrillah (2016), Imron, Muhamad (2017), the results of the t-statistic test show that the Rupiah Exchange Rate variable against the US Dollar has a significant negative effect on Stock Return. Different results in Lina Tu; Lili D.B.A (2015), the rupiah exchange rate has a significant impact with a positive correlation on stock returns.

H_9: The Rupiah exchange rate against the US Dollar has a partial effect on Stock Returns

In Joseph Tagne Talla (2013), Hendra Adhitya Wicak-sono (2013), the results of their research show that interest rates have a negative but insignificant influence on stock prices. The same results are also found in Umi Mardiyat; Ayi Rosalina (2013), where the results of their research explain that interest rates and inflation partially have an insignificant effect on stock prices. But different results in Lina Tu; Lili D.B.A (2015), Adrianto E. S., (2024), an increase in interest rates has a negative impact, with every 1% increase reducing stock prices by 0.76%.

H_{10}: Interest Rate Levels Have a Partial Influence on Stock Returns

Research produced by Dadrasmoghadam; Akbari (2015), Feni Pebriana (2013), Dorothea Ratih; Apriatni E.P; Saryadi (2013), Dina Fitriana Kusuma Astuti; Ni Nyoman Alit Triani (2013), Kamar (2017), Dwiatma Patriawan (2011), Hendra Adhitya Wicaksono (2013), is that the level of profitability has a significant effect with a positive correlation to stock returns. The same results were also obtained by Adrianto E. S., (2024), in his research results that increasing profitability will have an impact on increasing stock prices by 2.08%, while an increase of 1%. However, different results were produced by Haryanto, Mulyanto; Savitri, Dyah Ayu (2012), Jeni Wardi (2015), namely that profitability does not have a significant impact on stock returns.

H_{11}: Profitability (ROA) has a partial effect on Stock Return

In the research results of Jeni Wardi (2015), Dwiatma Patriawan (2011), Feni Pebriana (2013), Dorothea Ratih; Apriatni E.P; Saryadi (2013), Fathurahman M.M., (2023), that profitability (EPS) has a positive and significant effect on stock returns. But different results in Haryanto, Mulyanto; Savitri, Dyah Ayu (2012), Dina Fitriana Kusuma Astuti; Ni Nyoman Alit Triani (2013), Elizar Sinambela (2013), Meythi, Tan Kwang En and Linda Rusli (2011), Islam Khan; Choudhu-ry Adnan (2014), is that profitability (EPS) has no impact on stock rerun.

H_{12}: Profitability (EPS) has a partial effect on Stock Return

In the research results of Jeni Wardi (2015), Kamar (2017), Dwiatma Patriawan (2011), Hendra Adhitya Wicak-sono (2013), that capital structure has an insignificant effect on stock returns. Different results were produced by Dorothea Ratih; Apriatni E.P; Saryadi (2013), capital structure has a significant effect and is negatively correlated with stock returns, also by Adrianto E. S., (2024), other research results that every 1% increase in leverage will have an impact on a decrease in stock prices by 0.33%. Imron, Muhamad (2017), the results of the t-statistic test show that the leverage variable has a significant negative effect on Stock Return, but by Dadrasmoghadam; Akbari (2015), Feni Pebriana (2013), that capital structure has a significant impact on stock returns with a positive correlation.

H_{13}: Capital structure has a partial effect on stock returns

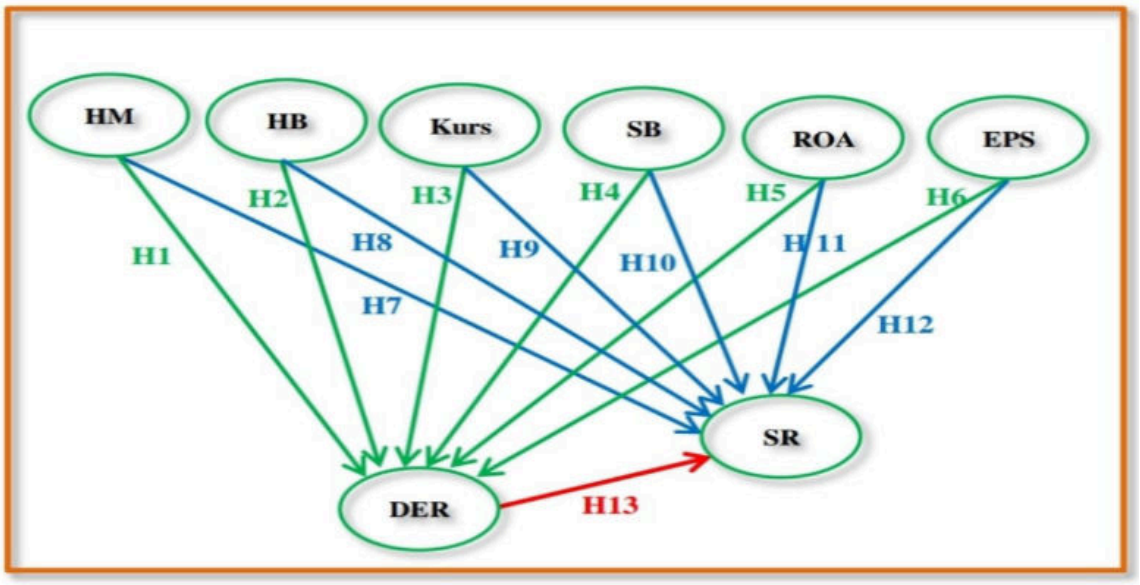

Figure 3 Research Drawing Framework Mode

Method

The approach used in this study is quantitative, using multiple regression analysis with panel data, combining time series data for seven years (2011 2017) and cross-sectional data. The subjects used in this study were 25 coal mining sub-sector companies listed on the Indonesia Stock Exchange.

From this population, the researcher then employed a purposive sampling technique, using the following criteria: non-delisted companies, companies listed on the stock exchange during the 2011 2017 period, and companies that submitted consecutive financial reports during that period. The resulting sample size was 18 companies. Operational Variables :

Table 1. Operational Variables

Variables	Notation	Formula
Crude Oil price	HM it	Price per barrel (us.dollar)
Coal world price	HB_{it}	Price per ton (us. dollar)
Rupiah Exchange Rate against US Dollar	Kurs it	$\frac{\text{Selling exchange rate} - \text{buying exchange rate}}{2}$
Bank Indonesia Interest Rate	SB	BI Rate
ROA Profitability	ROA it	$\frac{\text{Earnings After Tax}}{\text{Total Assets}}$
EPS Profitability	EPS it	$\frac{\text{Earnings After Tax}}{\text{Number of shares outstanding}}$
Capital Structure	DER it	$\frac{\text{Debt}_{it}}{\text{Equity}_{it}}$
Stock return	SR it	$\frac{\text{Closing Price}_{it} - \text{Closing Price}_{i(t-1)}}{\text{Closing Price}_{i(t-1)}}$

Panel Data Multiple Regression Estimation

The approach that can be taken in estimating panel data multiple regression which is a combination of time series data and cross section data is to use analysis: Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM).

Model Selection Test

By using the three basic analyzes above, you can then carry out three model suitability testing procedures to be used in selecting the best panel data multiple regression model as follows:

Chow Test

This test uses F-statistics to determine the choice between the Common Effect model or the Fixed Effect model. Rejection or acceptance of the hypothesis is based on the level = 5% in the null hypothesis H_0 and alternative hypothesis H_a. Between these two models technically compares the calculation of F-statistics with F-table. If from the results of F count > from F table rejection can be made of the null hypothesis H_0 and conversely acceptance can be made of the alternative hypothesis H_a so the appropriate model to use is the Fixed Effect Model, if the results are different then vice versa.

Hausman Test

Hausman testing will determine the choice between the Fixed Effect Model or Random Effect Model. This Hausman test uses the Chi-Square statistical distribution with k degrees of freedom as the number of exogenous variables.

Hypothesis testing against the Hausman test which accepts the null hypothesis H_0 and rejects the alternative hypothesis H_a, will be fit using the Random Effect Model, but on the contrary will use the Fixed Effect Model if the statistical hypothesis rejects the null hypothesis H_0 and accepts the alternative hypothesis H_a.

Lagrange Multiplier (LM) Test

Testing the Lagrange Multiplier (LM) is intended to determine the fit model between the Common Effect Model or Random Effect Model. The basis used in this LM test is the Chi-Squares distribution with a degree of freedom equal to the number of exogenous variables.

If the LM statistical value is greater than the critical value of the Chi-Squares statistic, it will reject the null hypothesis H_0 and accept the alternative hypothesis H_a, this result means that the fit estimate is using the Random Effect Model. On the other hand, if the LM statistic value is smaller than the critical value of the Chi-Squares statistic, it will accept the null hypothesis H_0 and reject the alternative hypothesis H_a, this means that the use of the Common Effect Model is more appropriate. Carrying out the conformity test as explained above can be simplified by looking at Figure 4, below.

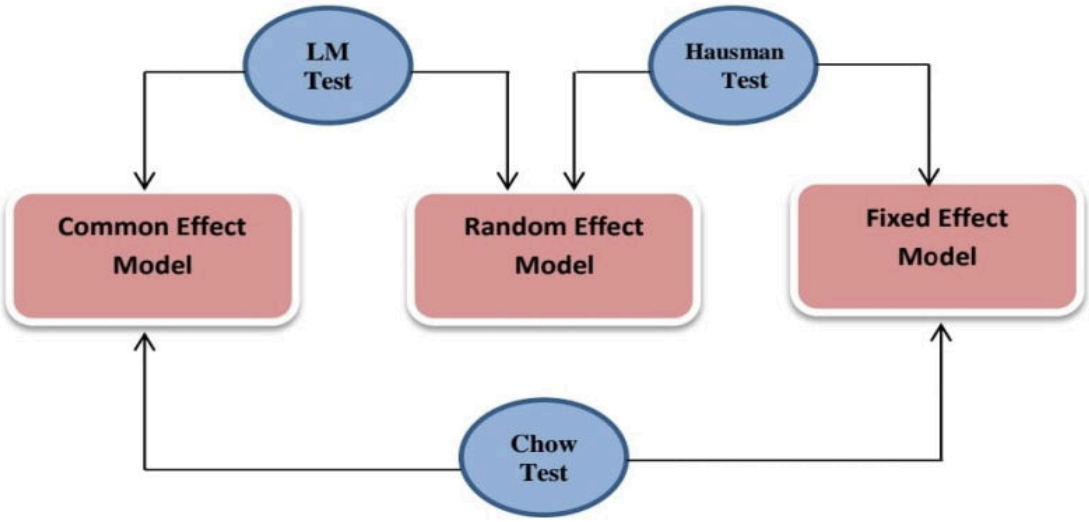

Figure 4 Model Fit Test

Panel Data Regression Model

Structural Equation of Research Model I,

$$DER_{it} = \alpha + \beta_1 HM_{it} + \beta_2 HB_{it} + \beta_3 Kurs_{it} + \beta_4 SB_{it} + \beta_5 ROA_{it} + \beta_6 EPS_{it} + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

$$i = 1,2,\ldots\ldots\ldots, N ; \quad t = 1,2,\ldots\ldots T$$

Structural Equation of Research Model II,

$$RS_{it} = \alpha + \beta_1 HM_{it} + \beta_2 HB_{it} + \beta_3 Kurs_{it} + \beta_4 SB_{it} + \beta_5 ROA_{it} + \beta_6 EPS_{it} + \beta_7 DER_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots(2)$$

$$i = 1,2,\ldots\ldots\ldots, N ; \quad t = 1,2,\ldots\ldots\ldots\ldots T$$

Note: HB = Coal World Price; Kurs = Rupiah Exchange Rate; SB = Interest Rate; ROA = Return on Assets; EPS = Earnings Per Share; DER = Debt to Equity Ratio; RS = Stock Return; β = Slope; α = Intercept; ε = Error Component; N = Number of Observations; T = Lots of Time; N × T = Number of Panel Data.

Results and Discussions

Descriptive Statistics

Table 2. Descriptive Statistics

	HM	HB	Kurs	SB	ROA	EPS	DER	RS
Mean	-0.008571	0.012857	0.064286	0.062413	0.032143	0.420794	1.095159	0.198611
Median	0.040000	-0.090000	0.020000	0.060000	0.030000	-0.165000	0.595000	-0.104500
Maximum	0.440000	0.690000	0.260000	0.078000	0.380000	51.67000	14.80000	8.085000
Minimum	-0.430000	-0.260000	-0.030000	0.042000	-0.640000	-7.350000	-12.52000	-0.925000
Std. Dev.	0.291895	0.300801	0.090734	0.013003	0.141690	5.516454	2.914833	1.319018
Skewness	-0.202733	1.484542	1.228501	-0.181893	-1.212625	6.928670	1.069236	3.399994
Kurtosis	1.942019	3.868615	3.366211	1.514800	8.046335	62.03739	12.20011	16.37723
Jarque-Bera	6.739559	50.24222	32.39758	12.27534	164.5735	19306.56	468.3789	1182.248
Probability	0.034397	0.000000	0.000000	0.002160	0.000000	0.000000	0.000000	0.000000
Sum	-1.080000	1.620000	8.100000	7.864000	4.050000	53.02000	137.9900	25.02500
Sum Sq. Dev.	10.65034	11.31017	1.029086	0.021135	2.509521	3803.908	1062.032	217.4762
Observations	126	126	126	126	126	126	126	126

Table 3. Multicollinearity

Variance Inflation Factors Included observations: 126			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.253595	100.0119	NA
HM	0.969342	4.542463	4.536781
HB	0.540888	3.880602	3.873469
Kurs	3.508489	3.442860	2.286100
SB	361.5813	117.2075	4.838628
ROA	0.747659	1.249630	1.188004
EPS	0.000449	1.088548	1.082201
DER	0.001520	1.167230	1.021829

Source: Data processed

Research Results Model 1 and 2

Leverage and Stock Return as Endogenous Variables in Testing the Suitability of Research Models.

Structural Equation 1 and 2 Research Model

Table 4. Chow Test

Research Model 1 Chow Test: Common Effect Vs Fixed Effect Endogenous Variable: Capital Structure				Research Model 2 Chow Test: Common Effect Vs Fixed Effect Endogenous Variable: Stock Retur			
Effects Test	Statistic	d.f.	Prob.	Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.086538	(17,101)	0.0000	Cross-section F	61.332190	(17,100)	0.0000

The results of testing the Chow-test in Research Model 1 and Research Model 2 show that the F test statistics with the chi-square test produce statistical hypotheses: rejecting the null hypothesis (H_0) and accepting the alternative hypothesis (H_a) at the level of α = 5%. This can be interpreted as saying that the Fixed Effect Model will be better used than the Common Effect Model (Table-4).

Table 5. Haussman Tests

Research Model 1 Hausman Test: Fixed Effect Vs Random Effect Endogenous Variable: Capital Structure				Research Model 2 Hausman Test: Fixed Effect Vs Random Effect Endogenous Variable: Stock Return			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	40.857938	6	0.0000	Cross-section random	31.016825	7	0.0000

Table 6. Endogenous Variable: Capital Structure (DER) Total Pool (Balanced) Observations: 126

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.646424	0.521911	5.070639	0.0000
HM	-1.105479	0.212260	-5.208146	0.0000
HB	0.178177	0.372268	0.893170	0.3920
Kurs	1.712589	0.382169	4.481239	0.0000
SB	-26.80399	8.089769	-3.313320	0.0013
ROA	0.323465	0.330256	2.979437	0.3297
EPS	-0.017460	0.012028	-1.451697	0.1497
Adjusted R-squared	0.644316			
F-statistic	5.310804			
Prob (F-statistic)	0.000000			

The same results in testing the Hausman-test in Research Model 1 and Research Model 2 are the F test statistics with chi-square test with statistical hypothesis results: rejecting the null hypothesis (H_0) and accepting the alternative hypothesis (H_a) at the level of α = 5%. This means that the same test results can also be said that the use of the Fixed Effect Model in the results of this test is better than the Random Effect Model (Table-5).

Oil prices (HM) have a significant and negative effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. Coal world price (HB) have an insignificant effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. The rupiah exchange rate against the US dollar (exchange rate) has a significant and positive effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. Interest rates (SB) have a significant and negative effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. Profitability (ROA) has an insignificant effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. Profitability (EPS) has an insignificant effect on Capital Structure (DER) in mining sub-sector companies, as shown in Table 6. Oil prices (HM) have an insignificant effect on Stock Return (SR) in mining sub-sector companies, as shown in Table 7. Coal world price (HB) have a significant positive impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7. The rupiah exchange rate against the US dollar (exchange rate) has a significant negative impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7. Interest rates (SB) have an insignificant impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7. Profitability (ROA) has a significant positive impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7. Profitability (EPS) has an insignificant impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7. Capital structure (DER) has a significant negative impact on stock returns (SR) in mining sub-sector companies, as shown in Table 7.

Table 7. Endogenous Variable: Stock Return (SR). Total Pool (Balanced) Observations: 126

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.646371	0.142112	4.548316	0.0000
HM	-0.061857	0.148396	-0.416841	0.6777
HB	1.104825	0.136942	8.067836	0.0000
Kurs	-0.736588	0.238556	-3.087698	0.0026
SB	-0.280623	1.175640	-0.832050	0.5376
ROA	0.362906	0.233322	2.555386	0.0122
EPS	-0.005351	0.006360	-0.674210	0.1255
DER	-0.087530	0.010362	-2.844703	0.0403
Adjusted R-squared	0.765490			
F-statistic	3.976101			
Prob (F-statistic)	0.000001			

Discussion

The exogenous oil price (HM) variable used in this study can explain its negative effect on the endogenous variable of corporate capital structure, but not on profitability, ROA, or EPS. This relates to the results of hypothesis 13, which states that capital structure appears to respond to market demands to reduce or reduce the portion of corporate debt, hoping to lower corporate risk levels, thus encouraging a favorable market response. These results support the findings of research by H. S. Mohammad et al. (2019), A. Bugshan et al. (2023), I. Bawuah (2024), Hermawan K.N. (2024), Naufal, Muhammad (2025), Dorothea Ratih; Apriatni E.P.; Saryadi (2013), Adrianto E.S. (2024), and Imron, Muhammad (2017).

Coal prices alone cannot explain their impact on capital structure, but they do receive a positive response through market appreciation. This suggests that the profitability of rising coal prices is not solely used to reduce debt composition or ratios but is instead used for reinvestment to grow assets, a trend evident in the appreciation and response from investors and the market. This finding differs from the research by Hasan, Ratty (2014) and Fathurahman M.M. (2023), as well as Sumani, Wiputra, and Wistinindah (2012), but aligns with research by Hasan, Ratty (2014) and Ardianto, H.N. (2013).

This research also demonstrates that interest rates can negatively impact capital structure, meaning there's an opportunity to increase debt when interest rates decline. Conversely, when interest rates rise, corporations will attempt to reduce debt. However, this finding does not impact market conditions; the market or investors in the coal mining sector do not respond to fluctuations in interest rates, as evidenced by research by Julimar R.D. and Priyadi M.P., (2021), Hayuningtyas R.D., et al., (2020), Joseph Tagne Talla (2013), Hendra Adhitya Wicaksono (2013).

The appreciation of the rupiah against the US dollar will attract more interest from domestic investors than from foreign investors because, for them, the costs will be considered more expensive, or the price of securities will be considered more expensive compared to a depreciation of the rupiah against the US dollar. However, what occurs in the capital structure is an appreciation of the rupiah against the US dollar, which provides an opportunity to increase the portion of debt in foreign currencies to finance their businesses. These results contradict the research findings by Julimar R.D. and Priyadi M.P., (2021), Hayuningtyas R.D., et al., (2020), and Eky J.J.P. (2020), Lina Tu; Lili D.B.A. (2015). However, these results align with those obtained in research by Joseph Tagne Talla (2013), Umi Mardiyat; Ayi Rosalina (2013), Adrianto E. S. (2024), Putu E. Pujawati, IG Bagus Wiksuna, Luh G. S. Artini (2015), Muhamad Faisal Amrillah (2016), and Imron, Muhamad (2017).

These results demonstrate that profitability, ROA, and EPS levels do not impact capital structure, which can be explained by the distribution of financial performance between operating and investment financing, thus not leading to reductions or expansions in capital structure. However, these results demonstrate that market response can only be explained by ROA profitability, which can encourage investment expansion, while leverage can mediate market appreciation. These results align with research by Fuadiantoni R. and Mulyanto I. H. (2019), Dadrasmoghadam; Akbari (2015), Feni Pebriana (2013), Dorothea Ratih; Apriatni E.P; Saryadi (2013), Dina Fitriana Kusuma Astuti; Ni Nyoman Alit Triani (2013), Kamar (2017), Dwiatma Patriawan (2011), Hendra Adhitya Wicaksono (2013), Adrianto E. S., (2024), Haryanto, Mulyanto; Savitri, Dyah Ayu (2012), Dina Fitriana Kusuma Astuti; Ni Nyoman Alit Triani (2013), Elizar Sinambela (2013), Meythi, Tan Kwang En and Linda Rusli (2011), Islam Khan; Choudhury Adnan (2014).

Conclusions

Regarding the research object of the coal mining sub-sector, this study found that market responses to coal prices, the rupiah exchange rate against the US dollar, and ROA profitability were mediated by capital structure, with an explanatory power of 76.54%. The dominant and most sensitive variables in the first and second research models were interest rates and world coal prices.

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