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## Article

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## Provided in Cooperation with:

International Journal of Energy Economics and Policy (IJEPP)

**Reference:** Endri, Endri/Rinaldi, Muhamad et. al. (2021). Oil price and stock return : evidence of mining companies in Indonesia. In: International Journal of Energy Economics and Policy 11 (2), S. 110 - 114.

<https://www.econjournals.com/index.php/ijeep/article/download/10608/5755>.

doi:10.32479/ijeep.10608.

This Version is available at:

<http://hdl.handle.net/11159/8177>

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# Oil Price and Stock Return: Evidence of Mining Companies in Indonesia

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Received: 15 September 2020

Accepted: 18 December 2020

DOI: <https://doi.org/10.32479/ijeep.10608>

## ABSTRACT

This research aims to analyze the determinants of stock return disclosure of mining sector companies listed on the Indonesia Stock Exchange in 2014-2018. The research adopted the *Eviews* program in data processing and Random effect regression model was chosen to test the relationship between internal and external indicators as independent variables include return on asset (ROA), debt to equity ratio (DER), total asset turnover (TATO), oil price and exchange rate. The result shows that return on assets and debt to equity ratio have no effect on stock return. Total asset turnover and exchange rate have negative and significant effect on stock return, while Oil price have positif and significant effect on stock return.

**Keywords:** Stock Return, Return on Assets, Debt to Equity Ratio, Total Asset Turnover, Oil Price, Exchange Rate

**JEL Classifications:** E22, E44, G11

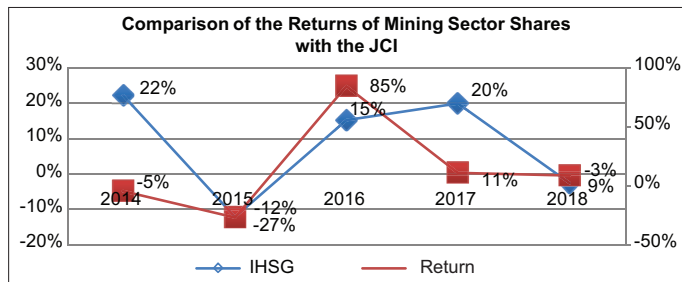
## 1. INTRODUCTION

In 2019 the mining sector index was corrected by 12.83 % and became one of the wedges of the movement of the Jakarta composite index (JCI). The decline in the stock price of the mining sector is inseparable from the drop in coal prices throughout 2019. This was due to the excess supply of coal available in the global market. In addition, when viewed based on the oil reference price which is the majority used in the world, namely west Texas intermediate (WTI) during November 2018, the oil reference price experienced a downward trend of around 22%. The excess supply factor is the main cause, a number of worlds oil-producing countries have massively increased their production, such as the US, Saudi Arabia and Russia, which is not accompanied by demand. The other factor which led to the weakening of stock prices of mining sector is the existence of a trade war between the United States with China that heats up causing a global economic slowdown that disrupts economic growth. In addition, the trade war also carries downside risks, is when the global economy slows down, it will reduce the amount of energy demand. As a result of

the decline in stock prices in the mining sector, the return on mining stocks has also decreased (Endri et al. 2020). Figure 1 shows data related to average stock returns for the market index (IHSG) and mining sector stocks from 2014 to 2018 which experienced almost the same fluctuation, except in 2017.

The results of the research by Endri et al. (2019) found that Return on Assets (ROA) has a significant effect on stock return. These results contradict the research of Bowens and Endri (2018) which stated that return on assets (ROA) has no significant effect on stock return. The results of the research by Endri et al. (2019) and Bustami and Heikal (2019) found that the debt equity ratio (DER) has an effect on stock return. This result contradicts the results of research by Baah et al. (2014) and Allozi and Obeidat (2016) which stated that the debt equity ratio (DER) has no effect on stock return. Murtadlo et al. (2017) found that total asset turn over (TATO) has no effect on stock return. This result contradicts the results of Bustami and Heikal (2019) research which stated that total asset turn over (TATO) affects stock return. This research will calculate and determine the internal and external factors that affect the company's stock return,

**Figure 1:** Jakarta composite index performance and mining sector stock return



Source: Indonesian stock exchange reprocessed

internal factors such as return on asset (ROA), debt to equity ratio (DER), and total asset turnover (TATO). Meanwhile, external factors such as oil prices and the rupiah exchange rate.

## 2. LITERATURE REVIEW

### 2.1. Effect of ROA on Stock Return

ROA shows the company's financial performance in generating a net income from assets used for company operations. Endri (2018) stated that ROA has a positive and significant effect on stock return. With a positive coefficient, it means that the greater the profitability (ROA), the higher the stock return. Meanwhile, Suciati (2018) stated that profitability (ROA) has no stock return effect. This shows that if the company is less effective in using its assets to generate profits, it will reduce investors' interest in buying company stock.

$H_1$ : ROA affects the stock return

### 2.2. Effect of DER on Stock Return

Debt to equity ratio (DER) is a ratio used to assess debt to equity. A company with a low debt to equity ratio will have a lower risk of loss when economic conditions decline, but when economic conditions improve, the opportunity to earn a profit is low. Endri (2019) stated that DER has a significant negative effect on stock return. This shows that companies are more likely to use the allocation of funds from debt to maximize the company's wealth. Meanwhile, Benyamin and Endri (2019) stated that individual DER has a negative and insignificant effect on stock return.

$H_2$ : DER affects the stock return.

### 2.3. Effect of TATO on Stock Return

Total Assets Turnover is a ratio that shows the efficiency level of the use of the company's total assets in producing a certain sales volume. Midesia et al. (2016) stated that TATO affects the return of Islamic stocks. A high TATO value also indicates that the company is more efficient in using its assets, especially to generate bigger sales and gives a positive effect on stock prices. Meanwhile, Study of Suciati (2018) showed that TATO has no effect on stock return. The average activity tends to decrease and the average stock return fluctuates, meaning that the increase in company assets cannot produce good sales, resulting in a low ratio and this cannot affect the stock return.

$H_3$ : TATO affects the stock return.

### 2.4. Effect of Oil Prices on Stock Return

In research by Diaz and de Gracia (2016) stated that changes in linear specification oil prices have a significant positive impact on the return of real stocks of oil and gas companies in the short term and oil price has a positive impact on short-term stock return. Meanwhile, Masood et al. (2019) stated that the price of oil has an insignificant effect on the real stock market of all G7 countries.

$H_4$ : Oil price affects the stock return.

### 2.5. Effect of Exchange Rates on Stock Return

Changes in real exchange rates reflect changes in competitiveness between Indonesia and its trading partners. Fatmawati et al. (2020) state that the rupiah exchange rate against the USD has a significant positive effect on stock return. Meanwhile, Suriani et al. (2015) showed that there is no relationship between exchange rates and stock prices and the two variables are independent of each other.

$H_5$ : Exchange rate affects the stock return.

## 3. METHODOLOGY AND DATA

This research is quantitative research. The population in this research are mining companies listed on the Indonesia stock exchange (IDX) for the 2014-2018 period. The sampling method was purposive sampling. The sample criteria set were: 1. Mining companies listed on the Indonesian stock exchange and not delisted in the 2014-2018 period. 2. Mining public companies that published complete financial reports from 2014 to 2018 consecutively. 3. Has no outlier data. If the company has outlier data, it will bias the results of the research. Based on these criteria, the number of samples that meet the criteria of this research is 22 companies from 47 mining companies listed in the Indonesian stock exchange.

The purpose of this research was to analyze the effect of ROA, DER, TATO, Oil Price, and Exchange Rate on the mining sector's stock return. The formulation of research hypotheses is based on supporting theories and is proven through a series of statistical tests. The research conclusion was drawn based on the results of statistical testing. The method of processing secondary data that has been collected from various sources is carried out using some software, such as Microsoft Excel 2010 and EViews 10.0. Data processing activities use Microsoft Excel 2010 software related to table creation and analysis. Meanwhile, in panel data regression processing, the author uses the EViews 10.0 software.

The research model used is as follows:

$$SR_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 DER_{it} + \beta_3 TATO_{it} + \beta_4 FOREX_{it} + \beta_5 WTI_{it} + \epsilon_{it}$$

$$i = 1, 2, \dots, N; t = 1, 2, \dots, T$$

Which are:

SR = Stock Return, ROA = Return on assets, DER = Debt to equity ratio, TATO = Total assets turnover, WTI = Oil world texas index, FOREX = Exchange rate USD against the US dollar,  $\epsilon$  = Component error,  $\beta$  = Slope,  $\alpha$  = Intercept,  $i$  = Company,  $t$  = Year,

N = Number of observations, T = Number of times,  $N \times T$  = Number of panel data.

## 4. RESULTS AND DISCUSSION

### 4.1. Data Analysis

Table 1 shows a description of the statistical data of the study variables including the mean, median, maximum, minimum and standard deviation. Standard deviation is a statistic that measures the spread of a data set relative to its average, where the value for each variable is positive but has a significant difference. The largest standard deviation value is experienced by the ROA variable, which is equal to 12.45718, which means that the ROA variables have a higher risk level than the other variables. Meanwhile, the exchange rate variable has the lowest level of risk, which is 0.049167. variables. Meanwhile, the exchange rate variable has the lowest level of risk, which is 0.049167. The dependent variable of Stock Return has an average value of 0.145780 with a standard deviation of 0.778661. During the study period, stock returns with a minimum value of -0.860000 from PT. Surya Essa Perkasa Tbk in 2017. During the research period, stock return with a minimum value of -0.860000 from PT. Surya Essa Perkasa Tbk in 2017 and a maximum value of 4,560000 from PT. Bumi Resources Tbk in 2016.

Panel data regression model to estimate the determinants of the mining company stock return based on three models, namely: common effect, fixed effects and random effects. The panel data regression model that was applied in the research for further analysis used a paired test for each model.

Based on the paired test results using the Chow test, the LM Breusch-Pagan (BP) test, and the Hausman test shown in Table 2, the panel data regression method was chosen to estimate and analyze the determinants of the stock returns of mining companies listed on the Indonesia Stock Exchange during the period. 2014-2018 is a random effects model.

### 4.2. Panel Data Regression

The panel data regression analysis model in this research uses a random effect model. The choice of the random effect method as a data analysis method is based on the results of testing in pairs using the Chow test, the LM Breusch-Pagan (BP) test, and the Hausman test for the three random effect models chosen to estimate and analyze the determinants of stock return of mining companies listed on the Indonesia Stock Exchange for the period 2014-2018. Table 3 shows the results of panel data testing with the random effect model.

The estimation results of the random effects model can be written in the following panel data regression equation:

$$SR = 0.385696168333 + 0.00471415778191*ROA - 0.0389758200139*DER - 0.0900663815347*TATO + 0.645067641976*WTI - 3.09120114398*FOREX + [CX=R]$$

The coefficient of determination ( $R^2$ ) is a measure that shows how much the contribution of the independent variable to the dependent variable. Below shows the results of the coefficient of determination in this research:

Based on Table 4 and the model equation, it can be seen that the effect of ROA, DER, TATO, world oil prices (WTI), and the exchange rate (FOREX) on stock return (SR) is 0.175821 (Adjusted R-squared = 0.175821). This means that the effect of the independent variable on the dependent variable is 17.58% and the rest is influenced by other variables not included in this research.

### 4.3. Hypothesis Testing

To determine the effect of the independent variable on the dependent variable, we tested each of the random effect model regression coefficients for the determinants of the mining company's stock return using the t-test. The t-test was conducted to determine whether each of the independent variables used in this research partially affects the disclosure of stock return of mining companies as the dependent variable significantly with a confidence level of 95% or alpha equal to five percent ( $\alpha = 0, 05$ ), or it is possible with a confidence level of 90% or alpha equal to ten percent ( $\alpha = 0.10$ ). The partial statistical test results for each of the factors that affect the mining company stock returns are shown in Table 5. For the influence of variable total asset turnover (TATO), world oil prices (WTI), the exchange rate partially to stock return which is significant will be interpreted respectively and compared with the research hypothesis.

From the results of the hypothesis testing above, it shows that the oil price and exchange rate are variables that have a lower  $\alpha$  value than the significant level of 0.05 and TATO has an  $\alpha$  value that is lower than the significant level 0.10. The empirical findings of this research as in line with the research hypothesis which stated that the variable TATO, oil prices, and the exchange rate effect on the stock return of mining companies listed on the Indonesia Stock Exchange for the period 2014-2018. Meanwhile, the ROA and DER variables have a higher  $\alpha$  value than the significant level of 0.05. The empirical finding of this research is not in line with the research hypothesis which stated that the ROA and DER effect on the stock return of mining companies listed on the Indonesia Stock Exchange for the period 2014-2018.

**Table 1: Statistical Data description of research variables**

Measurement	SR	ROA	DER	TATO	WTI	FOREX
Mean	0.145780	6.246055	1.041927	0.695321	-0.086514	0.035688
Median	-0.020000	4.000000	0.670000	0.610000	-0.250000	0.020000
Maximum	4.560000	45.60000	11.91000	1.880000	0.450000	0.110000
Minimum	-0.860000	-64.40000	-7.170000	0.000317	-0.460000	-0.030000
Std. Dev.	0.778661	12.45718	1.860489	0.489515	0.331993	0.049167

Source: Processed data



**Table 2: Conclusion of panel data regression model testing**

Method	Testing	Result
Chow-test	Common effect versus fixed effect	Common Effect
Lagrange multiplier-BP	Common effect versus random effect	Random Effect
Hausman test	Fixed effect versus random effect	Random Effect

**Table 3: Random effect testing results**

Variable	Coefficient
C	0.385696
ROA	0.004714
DER	-0.038976
TATO	-0.090066
WTI	0.645068
FOREX	-3.091201

**Table 4: The coefficient of determination**

Weighted statistics			
R-squared	0.213978	Mean dependent var	0.145780
Adjusted R-squared	0.175821	S.D. dependent var	0.778661
S.E. of regression	0.706902	Sum squared resid	51.47020
F-statistic	5.607911	Durbin-Watson stat	2.925306
Prob(F-statistic)	0.000130		

**Table 5: Hypothesis test results (t-test)**

Variable	Std. Error	t-statistic	Prob.	Conclusion
ROA	0.144638	0.963347	0.3376	Not Significant
DER	0.004894	-0.641735	0.5225	Not Significant
TATO	0.060735	-1.780183	0.0780	Significant
WTI	0.050594	3.941359	0.0001	Significant
FOREX	0.163666	-5.751254	0.0000	Significant

#### 4.4. Discussion

Based on empirical findings, the ROA variable affects the mining company stock return positively but not significantly. This supports the signal theory which is information in the company regarding the rate of return on assets, is the calculation of profitability or how much profit can be obtained from the assets issued, therefore if the profitability is large, it will send good signals to stakeholders. The results of this research support the research conducted by Nalurita (2015), Sucianti (2018), Jasman and Kasran (2017), and Sari and Endri (2019).

The results of this research stated that the debt to equity ratio (DER) variable has a negative and insignificant effect on the stock return of mining companies in Indonesia. This shows that the higher the DER level, the lower the stock price. The high debt composition compared to equity threatens the instability of the company's financial condition. According to the pecking order theory, companies with minimal risk are those with small debts. A company with a low DER will have a lower risk of loss when economic conditions decline, but when economic conditions improve, the opportunity to earn a profit is low. On the other hand, companies with high leverage ratios are at risk of bearing large losses when economic conditions decline but have the opportunity to earn large profits when the economy improves. These results

support the research of Benyamin and Endri (2019), Lee (2018), and Sugianto et al. (2020).

Based on empirical findings, it revealed that the total assets turnover (TATO) variable has a negative and significant effect on the stock return of mining companies in Indonesia. These results are in line with the research hypotheses made previously. The hypothesis stated that total asset turnover (TATO) affects stock returns. This is in line with the theory that the greater the Total Asset Turnover (TATO), the more appropriate the use of these assets. Total asset turnover (TATO) is one measure used to assess management efficiency in running its business. A high total asset turnover (TATO) indicates that the company's management can use all its assets to get profit for the company. These results support research conducted by Huda et al. (2015), Bustami and Heikal (2019), and Piralanasih and Mustafa (2018).

Based on the research result, it stated that the variable of world oil price (WTI) has a positive and significant effect on stock returns of mining companies in Indonesia. This is because the increase in the price of oil will certainly increase the opportunities for oil-producing companies to obtain higher income. In addition to oil-producing mining companies, the increase in oil prices causes the market to seek alternative energy to replace oil, for example, alternative energy such as coal also has the opportunity to earn higher profits. This is what makes the world oil price variable has a significant effect on mining companies in Indonesia. This result is supported by research by Ma et al (2019), Diaz and de Gracia (2016), Huang and Mollick (2020), and Wahyono et al. (2019).

Based on the results of the research, it stated that the rupiah exchange rate variable has a negative and significant effect on the mining company's stock returns. These results indicate that the weakening of the rupiah exchange rate has a positive impact on the stock returns of mining companies because most of the production results produced by mining companies are exported and the sales transactions use foreign currency as a means of payment. Usually, an increase in the exchange rate of the rupiah is also followed by an increase in share prices, due to an increase in income or profit. This research is in accordance with the arbitrage pricing theory (APT) theory that states securities returns are not only influenced by market portfolios but are influenced by other sources of risk, namely macroeconomic variables in this case the rupiah exchange rate. The results of this research are relevant to the research of Fatmawati et al. (2020), Khan (2019), Kumar (2013), Assagaf et al. (2019), and Wahyono et al. (2019).

## 5. CONCLUSIONS

The results showed that the variables return on assets (ROA) and debt to equity ratio (DER) has no effects on return shares of mining companies listed on the Indonesia stock exchange for the period 2014-2018, the variable total asset turnover (TATO) and exchange rate Rupiah has a negative and significant effect on stock returns of mining companies listed on the Indonesia stock exchange for the period 2014-2018. Meanwhile, the WTI oil price variable has a positive and significant effect on stock returns of mining companies listed on the Indonesia Stock Exchange for the period 2014-2018

Managerial suggestions or implications of the research results are associated with variables that have a significant effect. Investors and potential investors should pay attention to the variables that can affect the level of stock returns. Because the stock return is used as a measure of company performance by investors to invest in companies in the stock market. Recommendations of this research can be developed by involving many internal factors, among others: the size of the company, firm age, public ownership, and external factors, among others: interest rates, money supply and inflation. To obtain better research results for the further researchers are advised to be able to extend the period used in the research. And this research can be developed by involving many other industrial sectors, it can also include sectors from other countries such as Middle Eastern countries which produce the largest oil mining in the world.

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