

The relationship between oil prices and energy sector stocks in the global recession issue

Christina Mikhaila Suoth

Corresponding author:

christinasuoth47@gmail.com

Sam Ratulangi University
Indonesia

Feibe Cindy T Rumengan

Sam Ratulangi University
Indonesia

Received 14 June 2023

Revised 15 June 2023

Accepted 15 June 2023

Published online 17 June 2023

DOI: 10.58784/cfabr.25

ABSTRACT

Changes in world oil prices as a result of global issues have had a certain impact on the capital market in Indonesia. This study aims to examine the relationship between stock prices in the energy sector and fluctuations in world oil prices. Observations were made from January to April 2023 with a sample of 76 firms in the energy sector. The result of the analysis shows that stock prices in the energy sector have high variability throughout the observation period. In addition, this study finds that energy sector stock prices have a positive relationship with world oil prices.

Keywords: crude oil; returns; energy sector; global issues
JEL Classification: F13; G12

©2023 Christina Mikhaila Suoth, Feibe Cindy T Rumengan



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

1. Introduction

Crude oil and the industrial sector are often associated with issues of global economic change because crude oil is the main driver of the industry (Nizar, 2012; Kusuma, 2014). In general, changes in unfavorable global economic conditions tend to result in a decline in demand for crude oil if there is efficiency in production and consumption activities in various industrial sectors. Conversely, stable global economic conditions tend to increase demand for crude oil from various industrial sectors.

Recently, the Republic of Indonesia is faced with the issue of a global recession that has occurred since 2020 due to the COVID-19 pandemic and will continue into 2023. In particular, the energy sector in Indonesia is an important sector that cannot be separated from the impact of global economic issues. Figure 1 shows

that the energy sector market index tends to decline from January to April 2023.

Empirically, Antonius (2019) finds that increasing oil prices will have a varied impact on the market index for each type of industry. However, Pagora et al. (2023) report that increases in oil prices tend to be followed by increases in the market index. Specifically, Tanod et al. (2022) and Ari et al. (2023) find that an increase in world oil prices tends to be followed by an increase in the market index for the energy sector. Based on this phenomenon, the purpose of this study is to examine the relationship between world oil prices and stock prices of issuers that are included in the industrial sector in Indonesia.



Figure 1. Energy sector index

2. Literature review

Recently, fluctuations in world oil prices have been triggered since the outbreak of the COVID-19 pandemic (Nugraheni & Inayah, 2022). The findings from Aditya et al. (2018) imply that fluctuations in macroeconomic variables tend to have a negative impact on stock indexes, although Sudira and Sulistiyo (2023) emphasize that profitability remains an important factor in determining stock price movements. Moreover, Lutfiyah (2022), and Mahendra et al. (2022) find that oil prices have a positive effect on stock prices.

Specifically, Suryajaya and Kurnia (2019) prove that an increase in oil prices has a significant positive impact on the property sector market index. Firmansyah et al. (2022) find that rising world oil prices had a significant positive impact on stock returns in mining sector companies. Ekadjaja and Rorlen (2023) also find that the increase in crude oil prices had a significant positive effect on the performance of the energy sector index.

Conversely, Noval (2022) proves that the price of crude oil has no significant effect on the Islamic stock market in Indonesia. Consistently, Suradi and Marisa (2020), and Prasada and Pangestuti (2022) also prove that oil prices do not significantly affect the stock market index in Indonesia. In addition, Wulan et al. (2023) show that rising oil prices tend to be followed by a decline in the stock market index in Indonesia. Based on this

review, the hypothesis of this study is noted as follows.

Ha: the oil price and shares in the energy sector has a significant relationship

3. Research method

In accordance with the objectives of this study, the data used are stock prices from the energy sector and the crude oil prices. The sample chosen is 76 listed firms with an observation period from 1 January 2023 to 28 April 2023. In order to test the hypothesis, this study carried out the following steps of analysis. First, the correlation test is conducted to test the relationship between stock prices and the crude oil prices. The formula for correlation test is as follows.

$$r = \frac{\frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{n-1}}{\left(\sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n-1}} \right) \left(\sqrt{\frac{\sum_{i=1}^n (Y_i - \bar{Y})^2}{n-1}} \right)}$$

Second, this study calculates the coefficient of variation (CV) to evaluate the volatility of stock prices from the energy sector. This study expects low CV (or less than 1) for stock prices from the energy sector. The formula of CV is follows.

$$CV = \left(\frac{\sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n-1}}}{\bar{X}} \right) \times 100\%$$

4. Result and discussion

Table 1 presents descriptive statistics of prices for the energy sector and crude oil. The average stock price of the energy sector during the observation period is IDR 2151.70, while crude oil is USD 76.85. The standard deviation (SD) implies that stock prices in the energy sector tend to be more volatile than crude oil prices. In addition, the positive skewness of stock prices in the energy sector implies that the

sector is dominated by relatively low prices during the January to April compared to crude oil. However, prices in the energy sector and crude oil also show a CV greater than 1 which indicates high variability.

Table 1. Descriptive statistics

	Energy sector	Crude oil
N	74	74
Mean	2151.70	76.85
SD	86.10	3.76
Skewness	5.69	-0.82
Kurtosis	41.92	0.33
CV	4.00	4.89

Furthermore, the normality test is conducted for prices of energy sector and crude oil. Figure 1 shows that the prices for energy sector are not at normal distribution while the prices of crude oil are at normal distribution. Based on those results, this study conducts non-parametric correlation test (or Kendall's tau).

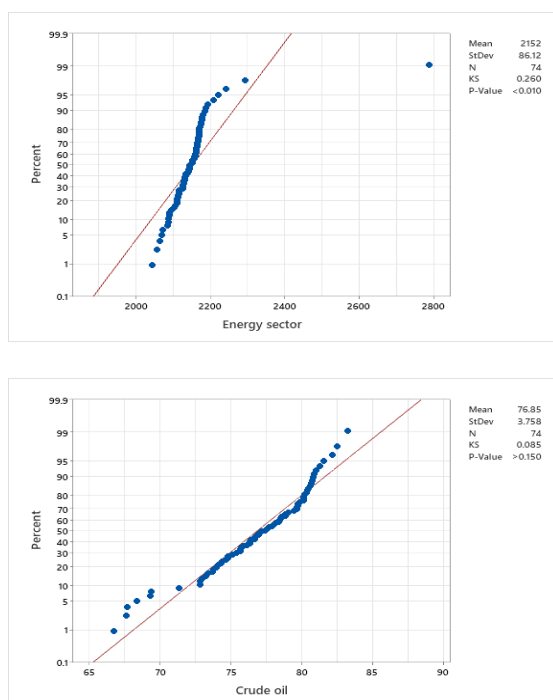


Figure 1. Normality test

Table 2 shows that the stock prices of the energy sector have a significant and

positive weak relationship with crude oil. This finding implies that the increase in share prices from the energy sector tends to be in the same direction as the increase in crude oil prices. The result of this study is consistent with the findings from Suryajaya and Kurnia (2019), Firmansyah et al. (2022), and Ekadjaja and Rorlen (2023). On the contrary, the result of this study is inconsistent with Suradi and Marisa (2020), Noval (2022), Prasada and Pangestuti (2022), and Wulan et al. (2023).

Table 2. Correlation test

	Energy sector	Crude oil
Energy sector	1.000	0.209**
Crude oil	0.209**	1.000

**significant at 0.01

5. Conclusion

Several global issues such as the COVID-19 pandemic, inflation, and world geopolitical changes are economic events that have an impact on world oil prices and the capital market. The energy sector is one of the important sectors in economic growth in Indonesia which is also affected by fluctuations in world oil prices. This study shows that share prices from the energy sector have high variability from January to April 2023. This study also proves that share prices in the energy sector have a positive correlation with world oil prices. This finding implies that there is a unidirectional relationship between the share price of the energy sector and the price of world oil.

References

- Aditya, Sinaga, B. M., & Maulana, TB. A. (2018). Pengaruh indeks bursa luar negeri, indikator makroekonomi dan krisis ekonomi global terhadap indeks harga saham gabungan di Indonesia. *Jurnal Aplikasi Bisnis dan Manajemen*, 4(2), 284-295. DOI: 10.17358/jabm.4.2.284

- Antonius, S. (2019). Pengaruh inflasi, suku bunga AS, harga emas, harga minyak bumi, inflasi AS dan kurs Rupiah terhadap indeks sektoral di Indonesia. *Jurnal Manajemen Bisnis dan Kewirausahaan*, 3(3), 46-53. DOI: 10.24912/jmbk.v3i3.4976
- Ari, A. P., Siwu, J., Sambur, M. S., & Kawulur, S. K. (2023). The return response on gold and crude oil during global geopolitical issues. *The Contrarian: Finance, Accounting, and Business Research*, 2(1), 12–17. DOI: 10.58784/cfabr.20
- Ekadjaja, M., & Rorlen. (2023). Determinan indeks harga saham sektor pertambangan. *Jurnal Humanipreneur*, 2(1), 16-24. <https://openjournal.ikdki.org/index.php/humanipreneur/article/view/29>
- Firmansyah, A., Suyono, Renaldo, N., Sevendy, T., Stevany. (2022). Analisis pengaruh nilai kurs Rupiah, harga emas dunia, harga minyak dunia, current ratio (CR), return on assets (ROA), dan debt to equity ratio (DER) terhadap return saham perusahaan sektor pertambangan yang terdaftar di Bursa Efek Indonesia. *Procuratio: Jurnal Ilmiah Manajemen*, 10(4), 400-413. DOI: 10.35145/procuratio.v10i4.2751
- Kusuma, N. T. (2014). Pengaruh harga minyak mentah dunia dan tenaga kerja terhadap PDB sektor industri pengolahan di Indonesia. *Economics Development Analysis Journal*, 3(1), 92-99. <https://journal.unnes.ac.id/sju/index.php/edaj/article/view/3517>
- Lutfiyah, N. (2022). Pengaruh Covid-19, tingkat inflasi dan harga minyak mentah terhadap keputusan investasi di Bursa Efek Indonesia. *Jurnal Ilmu Sosial, Manajemen, Akuntansi dan Bisnis*, 3(2), 83-91. DOI: 10.47747/jismab.v3i2.664
- Mahendra, A., Amalia, M. M., & Leon, H. (2022). Analisis pengaruh suku bunga, harga minyak dunia, harga emas dunia terhadap indeks harga saham gabungan dengan inflasi sebagai variabel moderating di Indonesia. *Owner: Riset dan Jurnal Akuntansi*, 6(1), 1069-1082. DOI: 10.33395/owner.v6i1.725
- Nizar, M. A. (2012). Dampak fluktuasi harga minyak dunia terhadap perekonomian indonesia. *Buletin Ilmiah Litbang Perdagangan*, 6(2), 189-210. <https://jurnal.kemendag.go.id/bilp/article/view/131>
- Noval. (2022). Mediasi nilai tukar (IDR/USD) dalam pengaruh harga minyak mentah dan emas dunia terhadap pasar saham syariah di Indonesia. *Jurnal Ilmu Ekonomi dan Bisnis Islam*, 4(1), 42-56. DOI: 10.24239/jiebi.v4i1.89.42-56
- Nugraheni, R. D., & Inayah, I. (2022). Dampak pandemi COVID-19 terhadap harga minyak dan pangan dunia: Analisis VECM. *Jurnal Ekonomi dan Pembangunan*, 30(1), 15-29. DOI: 10.14203/JEP.30.1.2022.15-29
- Pagora, D. A., Supu, I. S., Memah, P. Y., & Manangkabo, R. (2023). The effect of NIKKEI and crude oil on market indices during COVID-19 in Indonesia. *The Contrarian: Finance, Accounting, and Business Research*, 2(1), 1–5. DOI: 10.58784/cfabr.18
- Prasada, M. D., & Pangestuti, I. R. D. (2022). Analisis pengaruh harga minyak mentah dunia, harga batubara, harga emas, inflasi, dan nilai tukar terhadap IHSG. *Diponegoro Journal of Management*, 11(6), 1-15. <https://ejournal3.undip.ac.id/index.php/djom/article/view/36625>
- Sudira, W., & Sulistiyo, H. (2023). Pengaruh ROE dan DER terhadap harga saham pada perusahaan sektor pertambangan minyak & gas yang terdaftar di BEI periode 2016-2020.

- Transformasi Manageria: Journal of Islamic Education Management*, 3(1), 164-171. DOI: 10.47467/manageria.v3i1.2374
- Suradi, J. P., & Marisa, S. E. (2020). Analisis dampak harga minyak mentah dunia, tingkat suku bunga dan kurs valuta asing terhadap indeks harga saham pertambangan periode 2014-2016. *Jurnal Bina Manajemen*, 8(2), 1-17. DOI: 10.52859/jbm.v8i2.84
- Suryajaya, S., & Kurnia, K. (2019). Pengaruh nilai tukar, harga minyak, inflasi terhadap delta properti di pasar saham Indonesia. *Jurnal Akuntansi*, 11(1), 146-165. DOI: 10.28932/jam.v11i1.1547
- Tanod, E. G., Pontoh, F. A. S., Tuyu, G., & Marianne, H. (2022). The influence of the crude oil and the gold on energy sector returns. *The Contrarian: Finance, Accounting, and Business Research*, 1(2), 35-40. DOI: 10.58784/cfabr.9
- Wulan, R., Nurpadilah, N., & Pebrian, R. (2023). Pengaruh inflasi, harga minyak dunia, dan suku bunga (BI Rate) terhadap Indeks Harga Saham Gabungan (IHSG): Data per bulan periode 2011-2020. *Jurnal Pijar*, 1(2), 130-143. <https://e-journal.naureendigiton.com/index.php/pmb/article/view/191>