Peer-Reviewed Article

Jurnal Keuangan dan Perbankan
Volume 26, Issue 4 October 2022, page. 905-916
ISSN: 1410-8089 (Print), 2443-2687 (Online)
DOI: 10.26905/jkdp.v26i4.8245

The Effect of COVID-19, Commodity Prices, and Exchange Rate on Indonesian Stock Market

Almira Intan Nurrahma[1*], Tettet Fitrijanti[2], Benny Budiawan Tjandrasa[3]
[1,2]*Faculty of Economics and Business, Padjadjaran University, Indonesia*
[3]*Faculty of Economics and Business, Universitas Kristen Maranatha, Indonesia*
*Corresponding Author: almiraintan@gmail.com

Abstract

This research was motivated by the growth of the Indonesian stock market even though the number of COVID-19 cases continued to increase significantly as well as the movement of other factors that might affect the performance of the stock market. The purpose of this study is to examine the impact of the pandemic on stock market performance, focusing on Arbitrage Pricing Theory (APT), Signaling Theory and the behavioral influence of sentiment due to COVID-19. Using a data set of 35 issuers in LQ45 during the period January 1, 2020, to December 31, 2021, the study examines the impact of COVID-19 on stock market performance. The method used in this study is Granger causality and panel data regression with stock market performance as the dependent variable and COVID-19, exchange rates, and commodity prices, as independent variables. The results showed that the COVID-19 case, and the exchange rate had a negative effect on the stock market. On the other hand, commodity prices, gold, and oil, have a positive effect on the stock market. This study also finds Granger causality in both directions between stock market performance, COVID-19 cases, exchange rates, and commodity prices. However, these estimates fail to reflect the significant impact of COVID-19 sentiment on the Indonesian stock market. These results imply that (1) the high number of COVID-19 cases still has a negative and significant impact on the Indonesian stock market, (2) there are behavioral biases, including anchoring and representative that influence investor decisions.

Keywords : COVID-19; Sentiment; Gold; Oil; USD/IDR; Stock return
JEL Classification : E22, G11, G41

1. INTRODUCTION

The COVID-19 disease is one of the most significant global challenges as it disrupts economic activity globally. Several studies have tried to explain what drives the market (Al-Awadhi et al., 2020; Ashraf, 2020; Hung et al., 2021). The results suggested that the number of COVID-19 deaths and cases has a negative influence on the market's performance. Market performance during pandemic might also be explained by behavioral finance. After a sharp decline, the market is recording growth. However, the reason for this period of growth is not because the COVID-19 issue has been resolved. Thousands of cases and deaths of COVID-19 in various countries are still increasing. According to Vasileiou

(2021), during this period stimulus packages were announced around the world and might be the impetus for economic recovery. The rapid growth of this period may also be explained by Behavioral Finance, in particular the conclusion by De Bondt and Thaler (1985)which states that investors tend to overestimate the latest information, namely the stimulus package and underestimate the previous information, namely the COVID-19 pandemic. This means that in this case, there is an assumption that there is a change in sentiment related to COVID-19 in various countries.

Theoretical evidence supported by the growing literature suggests that COVID-19 sentiment also cannot be ignored when predicting stock market performance (Anastasiou et al., 2022; Debata et al., 2021; Paule-Vianez et al., 2021; Subramaniam & Chakraborty, 2021; Vasileiou, 2021). Most of these studies refer sentiment toward COVID-19 as negative, fear, and anxiety. In addition to negative sentiment, the sentiment about COVID-19 can also be positive. The announcements in mid-November 2020 on the development of several vaccines around the world may have partly reversed this negative sentiment of COVID-19. With the several vaccines now being widely distributed, a question that arises is whether sentiment toward COVID-19 now boosted Indonesian investor confidence which in turn increases stock price returns. Several studies also built a positive COVID-19 sentiment index based on Google Trends and Twitter (Anastasiou et al., 2022; Katsafados et al., 2021).

In general, a wide range of interconnected economic factors have an impact on the stock market. Yousaf et al. (2021) said in the first quarter of 2020, international gold prices moved in the opposite direction to the market index. On the other hand, the price of oil experienced a deep decline in April 2020. Crude oil fell to negative values for the first time in history and rattled oil investors (Ambrose, 2020). In addition, the weakening of the market during COVID-19, led to further weakening of the currency. A sharp depreciation occurred in Indonesia when on March 24, 2020, the rupiah exchange rate (USD/IDR) touched 16,504. This sharp depreciation is in line with the sharp decline in the Composite Stock Price Index (JCI) and the LQ45 index.

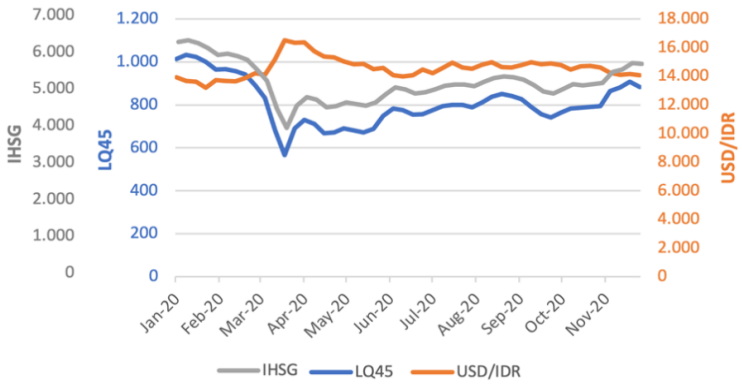

Figure 1. Exchange rates and stock index dynamics during COVID-19

This study used the Arbitrage Pricing Theory (APT) approach proposed by Ross (1976). APT is in line with this study because it provides a theoretical premise to include indicators of systemic or macroeconomic risk in the predictability of stock returns. Therefore, this study also considers several other important factors that can affect stock returns as described above.

The objective of this study is to assess COVID-19 sentiment and further explore how it affects Indonesia's stock market performance together with other factors including exchange rates and commodities prices. The COVID-19 sentiment was captured based on index by Google Trends using topic related to COVID-19. The stock market performance was measured from the returns of stocks listed in the LQ45 index as it categorizes the top active stocks with highly liquid trades and large market capitalizations. Eventually, this research can contribute to the literature by (1) providing knowledge about how stock prices might behave during a pandemic will benefit investors and market participants, (2) providing new insights on the use of COVID-19 sentiment in the stock market for behavioral finance studies, and (3) contributing to the use of Google Trends as an indicator of COVID-19 sentiment in Indonesia.

2. HYPOTHESIS DEVELOPMENT

One of the things that might explain the phenomenon in the stock market during pandemic is sentiment towards COVID-19. Media-based sources (Haroon & Rizvi, 2020; Haryanto & Mawardi, 2021), the internet, and social media, such as Google Trends and Twitter, are often used in financial studies to generate those sentiment. In this study, we wanted to measure COVID sentiment, using an index based on Google Trends as a proxy because the index represents the attention paid to the search (Da et al., 2011). In other words, the use of relevant terms in Google Trends captures the public's attention and sentiment those terms. Several studies have shown that COVID-19 sentiment significantly affects the stock market performance, although those studies used a different approach to measure the sentiment (Anastasiou et al., 2022; Debata et al., 2021; Subramaniam & Chakraborty, 2021; Vasileiou, 2021).

Even though this sentiment is typically negative, it can also be positive. This is confirmed by several studies that have built positive COVID-19 sentiment based on Google Trends and Twitter on the stock market (Anastasiou et al., 2022; Katsafados et al., 2021). Research includes Subramaniam and Chakraborty (2021), Vasileiou (Vasileiou, 2021), Salisu and Akanni (2020), and Lee (2020), showed that COVID sentiment has a negative effect on stock market returns during the outbreak. From the explanation above, it can be concluded as the following hypothesis

H_1 : COVID sentiment has a negative effect on stock market performance.

Other than sentiment, studies on the impact of COVID-19 on the financial markets showed that there is a negative relationship between market performance and the number of COVID-19 cases and/or deaths (Al-Awadhi et al., 2020; Ashraf, 2020). In Indonesia, Retnoningsih and Naufa (2021) stated that the total accumulation of COVID-19 cases had a negative impact on the Indonesian stock market. The Indonesian stock market experienced difficulty as a result of this. The mortality rate is the most significant indicator with this detrimental impact. Meanwhile, Alber (2020) showed that stock market returns are more sensitive to COVID-19 cases than deaths. According to earlier studies, the rise in COVID-19 cases generally has a detrimental effect on the capital market. High volatility is another sign of this, which causes investors' rates of return to progressively decline at the same time (Rahman et al., 2021). Therefore, it can be concluded as the following hypothesis.

H_2 : COVID-19 cases have a negative effect on stock market performance.

During economic instability, the image of gold as a haven cause equity price to fall (Arfaoui & ben Rejeb, 2017). Investors will turn to gold because it has low volatility and is considered a less risky asset (Prabheesh & Kumar, 2021), especially during crisis such as

COVID-19. This statement implies that in times of market instability or crisis, gold's status as a safe haven has a negative association with stock performance.

Investors believe that gold is a secure long-term investment. Raza et al. (2016) showed that the price of gold has a positive impact on the stock market price of emerging BRICS countries. However, it has a negative impact on the stock markets of Mexico, Malaysia, Thailand, Chile and Indonesia. Xu, Li. Singh (2022) proves that changes in gold prices have a significant negative correlation with returns in most stock markets. In line with that, Alali (2020) stated when compared to other commodities during the COVID-19 period, gold prices had a tendency to move counter to stock return performance. From the explanation above, it can be concluded as the following hypothesis

H_3 : Gold price changes have a negative effect on stock market performance.

Investors may use rising oil prices as a signal that the world economy is strengthening as demand for oil rises and vice versa. Nwosa (2020) provided evidence of the connection between oil prices and stock market performance, demonstrating a strong impact of oil prices on stock market performance. As the pandemic spread rapidly the Brent oil price dropped deeply It was caused by many countries using a lockdown policy to prevent the spreading of pandemic broadly (Ambrose, 2020). It has an effect on the global excess supply of crude oil stocks, which is caused by low demand from importing countries, causing brent crude oil prices to fall.

Rahmayani and Oktavilia (2021) showed that global oil prices have a substantial positive impact on the Indonesian stock market. These findings are consistent with the study by Prabheesh and Kumar (2021), which found that uncertainty during COVID-19 dampened the oil and stock markets. Furthermore, Zhang, Narayan, and Devpura (2021) stated that oil prices positively affect stock returns during this pandemic. Therefore, it can be concluded as the following hypothesis.

H_4 : Oil price changes have a positive effect on stock market performance.

Dornbusch and Fischer (1980) concluded that there is a causal relationship between the exchange rate and the stock market. Companies that rely on imported raw materials from other countries will suffer if their currency depreciates. The depreciation resulted in increased costs and lower profits. This may encourage investors to sell those company's stock, resulting in a drop in share prices.

According to Areli et al. (2018) , the correlation between exchange rates and market performance showed that the exchange rate has a negative effect on the stock market index. Furthermore, Rai and Garg (2021) discovered that when domestic stock returns and capital outflows fell, the exchange rate rose.

During times of crisis, such as COVID-19, the global economy is prone to instability, particularly in developing countries. COVID-19 has also had an impact on exchange rates in almost every country, including Indonesia. On March 24, 2020, the USD/IDR almost reached IDR 17,000, closing at 16,504 IDR. In line with that, Syahri and Robiyanto (2020) as well as Rahamayani and Oktavilia (2021) stated that there was a negative relationship between the exchange rate and the JCI. The same thing was stated by Nugroho and Robiyanto (2021) that the volatility of USD/IDR had a negative impact on the volatility of the JCI. Therefore, it can be concluded as the following hypothesis.

H_5 : exchange rate changes have a negative effect on stock market performance.

3. METHODS

This study relied on secondary data from www.finance.yahoo.com, with the first sample date being January 1, 2020, and the last date being December 31, 2021. The data consisted of LQ45 weekly data from Indonesia Stock Exchange, COVID-19 cases form WHO official website (https://covid19.who.int), COVID sentiment extracted from Google Trends (https://trends.google.com/trends/) with the topic 'covid 19' was chosen, and the price of the gold, the price of oil and exchange rate from dollar to rupiah (USD/IDR). We used LQ45 index because it contains active stocks that are constantly changing in volume and share prices. It can also be said that the LQ45 index functions as an indicator of an active or sluggish market condition (Hamzah et al., 2021).

Given the disparity in the use of standard versus non-standard words on the internet, we chose the term "covid 19," which has more searches than the term "COVID-19". Next, this study used weekly stock return of listed company in LQ45 index. The sample was purposefully chosen based on criteria that the company must be listed in the LQ45 index during the 2020-2021 period. In this study, the dependent variable is stock market performance as proxied by LQ45 stock weekly returns, while the independent variables are weekly changes in COVID cases and sentiment, gold and oil prices, and exchange rate.

As an initial exploration, this study employed the Granger Causality Test to determine the causality between variables. Panel data regression was also used to further analyze the model. Panel data regression is better at capturing the time variation relationship between the dependent and independent variables (Ashraf, 2017). Panel data also extracts cross-sectional and time series variations from the underlying panel data and minimizes problems such as multicollinearity, heteroscedasticity and estimation bias (Baltagi, 2008; Hsiao, 2014). Therefore, the model proposed in this study to analyse the influence of COVID, commodity prices, and exchange rate on stock market performance is as follows:

$$R_{it} = \alpha + \beta_1 CS_{it} + \beta_2 CC_{it} + \beta_3 Gold_{it} + \beta_4 Oil_{it} + \beta_5 EX + \varepsilon_{it}$$

where R_{it} is dependent variabel of the model, α is the *constant term*, β is the regression coefficient of each independent variable, CS_{it} is the COVID-19 sentiment, CC_{it} is COVID-19 cases, and ER_{it} is exchange rate and ε_{it} is the *error term*.

4. RESULTS

Descriptive Statistic

Table 1. Descriptive statistics of the variables under this study

Variable	Obs.	Mean	Standard Deviation	Maximum	Minimum
LQ45	3675	0.001160	0.067863	0.388158	-0.999999
COVID-19 Sentiment	3675	0.086600	0.591679	5.000000	-0.562500
COVID-19 cases	3675	0.175726	1.007561	9.700000	-0.415216
Gold	3675	0.001828	0.025268	0.093775	-0.092841
Oil	3675	0.004586	0.079334	0.368231	-0.252264
Exchange Rate	3675	0.000371	0.015079	0.076372	-0.056672

Table 1. shows the descriptive statistics of the variables under study for the data sample. In this study, 3675 samples are used. Considering the LQ45 stocks returns, it was shown that the mean return was 0.00116, a minimum return of -0.9999 and a maximum return of 0,388158. Analysing COVID sentiment changes, the mean is 0,0866 and a minimum change is -0,5625. For COVID cases changes, the mean is 0,175726, a minimum change is -04152 and a maximum change is 9,7. Focusing on economics variables, the average gold price return/changes is 0,001828 with a minimum return of -0,09284 and a maximum of 0,0937. The average oil price changes is higher than gold which is 0,004586 with a minimum return of -0,25226 and a maximum of 0,36823. In the case of the exchange rate, the mean variation was 0,00371, with the minimum and maximum being found in the exchange rate (USD/IDR), with a depreciation of -0,056672 and an appreciation of 0,07637.

Granger Causality Test Result

Table 2. Granger causality test

Causality	F-Statistic	Prob.
CS does not Granger Cause LQ45	2.82551	0.0594
LQ45 does not Granger Cause CS	167.080	4.E-70
CC does not Granger Cause LQ45	245.608	1E-100
LQ45 does not Granger Cause CC	39.9261	7.E-18
Gold does not Granger Cause Y	30.5605	7.E-14
Y does not Granger Cause Gold	12.3289	5.E-06
Oil does not Granger Cause Y	16.3543	9.E-08
Y does not Granger Cause Oil	80.6588	5.E-35
EX does not Granger Cause Y	14.7044	4.E-07
Y does not Granger Cause EX	34.9132	1.E-15
CC does not Granger Cause CS	3092.55	0.0000
CS does not Granger Cause CC	849.042	9E-303
Gold does not Granger Cause CS	430.566	2E-168
CS does not Granger Cause Gold	102.948	3.E-44
Oil does not Granger Cause CS	199.962	4.E-83
CS does not Granger Cause Oil	336.249	1E-134
EX does not Granger Cause CS	87.9383	5.E-38
CS does not Granger Cause EX	305.764	2E-123
Gold does not Granger Cause CC	171.880	5.E-72
CC does not Granger Cause Gold	552.231	7E-210
Oil does not Granger Cause CC	63.9554	5.E-28
CC does not Granger Cause Oil	157.090	4.E-66
EX does not Granger Cause CC	126.905	6.E-54
CC does not Granger Cause EX	702.676	2E-258
Oil does not Granger Cause Gold	38.5341	3.E-17
Gold does not Granger Cause Oil	186.297	1.E-77
EX does not Granger Cause Gold	157.612	2.E-66
Gold does not Granger Cause EX	72.1800	2.E-31
EX does not Granger Cause Oil	17.6814	2.E-08
Oil does not Granger Cause EX	64.0501	5.E-28

The Granger Causality test shows that there is unidirectional causality from LQ45 to CS, which indicates that the CS is not a significant driver of the LQ45 stocks return. The causality relationship between other variables, on the other hand, revealed that there is causality in both directions because their Prob value is less than 0.05 (Table 2). Those findings indicates that other variables, LQ45, COVID cases, gold and oil prices, and exchange rate, are significant driver of each other's return or changes.

Regression Analysis Result

Finally, in order to econometrically present our suggestion, we employ panel data regression. For this, the Chow, Hausman, and Breusch-Pagan test was applied, which made it possible to determine if the panel data analysis was more consistent based on the common effect model, fixed effects model, or on the random effects model. The estimation results are summarized in the following Table 3. The final Breusch-Pagan test showed the random effects model was more consistent with this study.

Table 3. Result of Chow, Hausman, and Breusch-Pagan test

Test	P-value	Best Estimation Model
Chow	0.9987	Common Effect
Hausman	1.000	Random Effect
Breusch-Pagan	0.0132	Random Effect

Table 4. Regression result of the COVID cases and sentiment, commodity prices, exchange rate changes on LQ45 stocks return

Variable	Coefficient	Standard Error	t-Statistic	Prob.
Cons.	0.001868	0.001030	1.812463	0.0700
COVID Sentiment	0.000565	0.002143	0.263672	0.7920
COVID Cases	-0.009040	0.001216	-7.431872	0.0000
Gold	0.213362	0.042635	5.004386	0.0000
Oil	0.183428	0.014160	12.95390	0.0000
Exchange rate	-1.075465	0.081011	-13.27555	0.0000
R^2	0.216731	F-statistic		203.0424
R^2-Adj	0.215663	Prop (F-statistic)		0.000000
S.E. of regression	0.060101	S.D. dependent var		0.067863

Data processed with Eviews 12, 2022

Table 4 how COVID sentiment had a positive but non-significant effect on stock market performance, indicating that the hypothesis was rejected. COVID cases, on the other hand, had a negative and significant effect on stock market performance, thus the hypothesis was accepted.

Without considering any additional regressor variables, a one-point increase in case is associated with a decrease in the weekly return of stocks of 0,00904%. Changes or return in gold price had a positive and significant effect on stock market performance, thus hypothesis was rejected. The gold price increase of 1% will affect LQ45 stocks return of 0,214%. Changes in oil price also had a positive effect on stock market performance, thus hypothesis was accepted. The gold price increase of 1% will affect LQ45 stocks return of 0,183%. Lastly, changes in exchange rate had a negative and significant effect on stock market performance, thus hypothesis is accepted. A one-point increase in exchange rate is associated with a decrease in the weekly return of stocks of 1,075%.

However, the Prob (F-statistic) value is 0.000, which indicates all independent variables, namely COVID-19 sentiment, COVID-19 cases, gold prices, oil prices, and exchange rates simultaneously have a significant effect on stock market performance variables. From Table 4. the adjusted R-squared value is 0.2156 or 21.56%, indicating that 21.56% of stock market performance can be explained by COVID-19 sentiment, COVID-19 cases, gold and oil commodity prices, and exchange rates. While the remaining 78.44% of

stock market performance variables are explained by other independent variables that are not included in the regression model of this study. Furthermore, the standard error value of the regression model is 0.060101, which is smaller than the value of standard deviation of the response variable of 0.067863. This can be interpreted that the research regression model is reliable as a predictor model.

5. DISCUSSION

The purpose of this study was to examine the impact of the COVID-19 pandemic and other economic variables on the performance of the Indonesian stock market. According to the findings of this study, COVID sentiment as measured by Google Trends in Indonesia does not have a negative effect and it is not significant on Indonesian stock market performance. Although the effect on stock market performance is insignificant, COVID sentiment has a causality in both directions with COVID-19 cases.

The results of this study are not in accordance with the initial hypothesis and are different from the research conducted by Debata et al.(2021), Subramaniam and Chakraborty (2021), and Vasileiou (2021),recalled that all these studies projected sentiment as both fear and uncertainty about COVID-19. The results of this study imply that there is higher optimism in Google searches related to COVID-19 in Indonesia. Investors may pay more attention to the positives related to COVID-19. It can be concluded that higher positive things can be associated with an increase in stock returns. On the other hand, the negative is inversely proportional to stock returns.

The effect of COVID-19 cases on stock market performance is in line with research by Rahmayani and Oktavilia (2021) that COVID-19 cases have a long-term negative effect on the stock market. This research is also consistent with early studies showing a negative relationship between the number of COVID-19 cases and financial market performance (Al-Awadhi et al., 2020; Alber, 2020; Ashraf, 2020). This study confirms that the negative relationship persists when the test is conducted over a longer period of time.

In relation to Behavioral Finance, it is evident that investors are affected by bias during COVID-19, especially anchoring and representative because they rely too much on information such as the COVID-19 case and think that the information represents stock prospects. Investors tend to focus on reports of previously confirmed COVID-19 cases, by the Ministry of Health and WHO. As a result, the higher the number of cases the more the stock market falls.

Next, the results of this study differ from those of Nugroho and Robiyanto (2021) and Xu et al (2022) which states that there is a negative relationship between the stock market and gold prices. Considering that the research period is 2 years, the test results prove that the long-term relationship between changes in gold prices and stock market performance during the pandemic is positive. This result is supported by Choudhry et al. (2015) which states that Gold's loss as a safe haven during the global economic crisis renders it unsuitable for mitigating portfolio risk during times of crisis. According to the findings of this study, the effects of the crisis during the COVID-19 pandemic cause investors to be concerned about their investments. This suggests that stock investors on the Indonesia Stock Exchange are wary of changes not only in stocks prices but also in gold prices, making them hesitant to invest in gold.

The relationship between changes in oil prices and stock market performance is proven to be positive and significant. These results are consistent with research by Rahmayani and Oktavilia (2021) and Prabheesh and Kumar (2021) that COVID-19 uncertainty dampens the oil and stock markets. The Indonesian stock market benefits

significantly from rising global oil prices. According to the findings of this study, rising (falling) oil prices will lead to expectations of better (worse) companies' performance, causing share prices of these companies to rise (fall) and provide higher (lower) returns.

Finally, the results of this study prove that there is a negative relationship between exchange rates and market performance (Areli Bermudez Delgado et al., 2018; Rahmayani & Oktavilia, 2021). The results of this study also support the argument of Ali et al. (2020) that the stock market considers exchange rate fluctuations as a negative indicator and reacts negatively to them. This negative relationship occurred because the Indonesian economy was in bad condition during the COVID-19 pandemic, and the Rupiah depreciated against the USD value. Many Indonesian companies are having difficulty paying for imported supplies and foreign debt, resulting in a drop in profits. This occurrence will reduce investor interest in funding the company. As a result, the company's stock price will fall, affecting the movement of shares. If this trend continues, many foreign investors will withdraw their funds, resulting in a decrease in stock market inflows.

6. CONCLUSION

The goal of this research is to determine the relationship between COVID-19, gold and oil prices, and exchange rate changes on Indonesia stock market performance, specifically the LQ45 index. The analysis employed granger causality and the panel data method during pandemic period (January 2020-December 2021).

It is concluded from the results that COVID sentiment has no significant effect on LQ45 stock return. Gold and oil price changes have a positive and significant effect on LQ45 stock return, while COVID cases and exchange rate (USD/IDR) have a negative and significant effect on stock return during the COVID-19 pandemic in Indonesia. These findings implies that changes in the number of COVID-19 cases still have a negative and significant impact on the Indonesian stock market. This finding also supports the Arbitrage Pricing Theory (APT) that multiple factors can influence an asset's price.

The government should not underestimate other COVID-19 risks during the long-term period when the pandemic is under control, especially if another wave of COVID-19 emerges in the future. As Mensi et al. (2020) have said investment is strongly influenced by sentiment, therefore positive issues and information by public authorities will encourage investors to engage in trading activities in the Indonesian stock market. Because COVID-19 isn't over yet in Indonesia, the government must implement policies to prevent an economic downturn and deep recession if other waves reoccur. Governments must find ways to collaborate while also providing good value to foreign investors. It is also critical to improve the ease of doing business in order to send a positive signal to domestic and foreign investors.

Regarding investors, the results of the study indicate it is possible to consider investing in stocks when COVID-19 cases increase and the stock price index falls, in order to benefit from higher returns when the pandemic is under control, economic conditions improve, and stock prices rise. Finally, we realize that the limitations of this study are that COVID-19 was still occurring when this research was completed and the impact of the COVID-19 pandemic on the Indonesian stock market was not covered for all times periods. Because Indonesia is a developing country, additional research can be conducted to analyse and compare it to other stock markets in developed countries. Furthermore, the next researcher can add more detailed keywords to capture positive and negative sentiments from a pandemic, either using Google Trends or other media, in order to understand how it affects the Indonesian stock market.

REFERENCES

AlAli, M. S. (2020). Safe Haven Assets: Are They Still Safe During COVID-19 Pandemic Period? *European Journal of Economic and Financial Research*, *0*(0). https://doi.org/10.46827/EJEFR.V0I0.795

Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammadi, S. (2020). Death and Contagious Infectious Diseases: Impact of the COVID-19 Virus on Stock Market Returns. *Journal of Behavioral and Experimental Finance*, *27*, 100326. https://doi.org/10.1016/J.JBEF.2020.100326

Alber, N. (2020). The Effect of Coronavirus Spread on Stock Markets: The Case of the Worst 6 Countries. *SSRN Electronic Journal*. https://doi.org/10.2139/SSRN.3578080

Ali, R., Mangla, I. U., Rehman, R. U., Xue, W., Naseem, M. A., & Ahmad, M. I. (2020). Exchange Rate, Gold Price, and Stock Market Nexus: A Quantile Regression Approach. *Risks 2020, Vol. 8, Page 86*, *8*(3), 86. https://doi.org/10.3390/RISKS8030086

Ambrose, J. (2020). *Oil prices dip below zero as producers forced to pay to dispose of excess | Oil | The Guardian*. The Guardian. https://www.theguardian.com/world/2020/apr/20/oil-prices-sink-to-20-year-low-as-un-sounds-alarm-on-to-covid-19-relief-fund

Anastasiou, D., Ballis, A., & Drakos, K. (2022). Constructing a positive sentiment index for COVID-19: Evidence from G20 stock markets. *International Review of Financial Analysis*, *81*, 102111. https://doi.org/10.1016/J.IRFA.2022.102111

Areli Bermudez Delgado, N., Bermudez Delgado, E., & Saucedo, E. (2018). The relationship between oil prices, the stock market and the exchange rate: Evidence from Mexico. *The North American Journal of Economics and Finance*, *45*, 266–275. https://doi.org/10.1016/J.NAJEF.2018.03.006

Arfaoui, M., & ben Rejeb, A. (2017). Oil, gold, US dollar and stock market interdependencies: a global analytical insight. *European Journal of Management and Business Economics*, *26*(3), 278–293. https://doi.org/10.1108/EJMBE-10-2017-016/FULL/PDF

Ashraf, B. N. (2017). Political Institutions and Bank Risk-Taking Behavior. *Journal of Financial Stability*, *29*, 13–35. https://doi.org/10.1016/J.JFS.2017.01.004

Ashraf, B. N. (2020). Stock Markets' Reaction to COVID-19: Cases or Fatalities? *Research in International Business and Finance*, *54*, 101249. https://doi.org/10.1016/J.RIBAF.2020.101249

Baltagi, B. H. (2008). *Econometric Analysis of Panel Data*. https://doi.org/10.1007/978-3-030-53953-5

Choudhry, T., Hassan, S. S., & Shabi, S. (2015). Relationship between gold and stock markets during the global financial crisis: Evidence from nonlinear causality tests. *International Review of Financial Analysis*, *41*, 247–256. https://doi.org/10.1016/J.IRFA.2015.03.011

Da, Z., Engelberg, J., Gao, P., Hirshleifer, D., Hou, K., Hwang, B.-H., Israelsen, R., Jagannathan, R., Jennings, R., Lepori, G., Lou, D., Loughran, T., Schaumburg, E., & Schultz, P. (2011). In Search of Attention. *The Journal of Finance*, *66*(5), 1461–1499. https://doi.org/10.1111/J.1540-6261.2011.01679.X

de Bodnt, W. F., & Thaler, R. (1985). Does the Stock Market Overreact? *The Journal of Finance*, *40*(3), 793–805. https://doi.org/10.1111/J.1540-6261.1985.TB05004.X

Debata, B., Ghate, K., & Renganathan, J. (2021). COVID-19 pandemic sentiment and stock market behavior: evidence from an emerging market. *Review of Behavioral Finance*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/RBF-05-2021-0083/FULL/XML

Dornbusch, R., & Fischer, S. (1980). Exchange Rates and the Current Account. *The American Economic Review*, *70*(5), 960–971. https://www.mit.edu/~14.54/handouts/dornbusch80.pdf

Hamzah, H., Valeriani, D., & Yusfany, A. (2021). Pengaruh Variabel Makro Ekonomi Terhadap Indeks Harga Saham LQ-45 Di Bursa Efek Indonesia. *SOROT*, *16*(2), 85. https://doi.org/10.31258/sorot.16.2.85-98

Haroon, O., & Rizvi, S. A. R. (2020). COVID-19: Media Coverage and Financial Markets Behavior—A Sectoral Inquiry. *Journal of Behavioral and Experimental Finance*, *27*. https://doi.org/10.1016/J.JBEF.2020.100343

Haryanto, A. M., & Mawardi, W. (2021). Impact of COVID-19 News on Performance of Indonesia Stock Market. *Universal Journal of Accounting and Finance*, *9*(2), 226–231. https://doi.org/10.13189/UJAF.2021.090212

Hsiao, C. H. (2014). *Analysis of Panel Data* (3rd ed.). Cambridge University Press.

Hung, D. van, Hue, N. T. M., & Duong, V. T. (2021). The Impact of COVID-19 on Stock Market Returns in Vietnam. *Journal of Risk and Financial Management*, *14*(9), 441. https://doi.org/10.3390/jrfm14090441

Katsafados, A. G., Nikoloutsopoulos, S., & Leledakis, G. N. (2021). Twitter Sentiments and Stock Market Indexes: A COVID-19 Analysis. *SSRN Electronic Journal*. https://doi.org/10.2139/SSRN.3997996

Lee, H. S. (2020). Exploring the Initial Impact of COVID-19 Sentiment on US Stock Market Using Big Data. *Sustainability 2020, Vol. 12, Page 6648*, *12*(16), 6648. https://doi.org/10.3390/SU12166648

Mensi, W., Sensoy, A., Vo, X. V., & Kang, S. H. (2020). Impact of COVID-19 outbreak on asymmetric multifractality of gold and oil prices. *Resources Policy*, *69*, 101829. https://doi.org/10.1016/J.RESOURPOL.2020.101829

Nugroho, A. D., & Robiyanto, R. (2021). Determinant of Indonesian Stock Market's Volatility During the Covid-19 Pandemic. *Jurnal Keuangan Dan Perbankan*, *25*(1), 1–20. https://doi.org/10.26905/JKDP.V25I1.4980

Nwosa, P. I. (2020). Oil price, exchange rate and stock market performance during the COVID-19 pandemic: implications for TNCs and FDI inflow in Nigeria. *Https://Doi.Org/10.1080/19186444.2020.1855957*, *13*(1), 125–137. https://doi.org/10.1080/19186444.2020.1855957

Paule-Vianez, J., Orden-Cruz, C., & Escamilla-Solano, S. (2021). Influence of COVID-induced fear on sovereign bond yield. *Economic Research-Ekonomska Istrazivanja* . https://doi.org/10.1080/1331677X.2021.1934509

Prabheesh, K. P., & Kumar, S. (2021). The Dynamics of Oil Prices, Exchange Rates, and the Stock Market Under COVID-19 Uncertainty: Evidence From India. *Energy RESEARCH LETTERS*, *2*(3), 27015. https://doi.org/10.46557/001C.27015

Rahman, M. L., Amin, A., & al Mamun, M. A. (2021). The COVID-19 Outbreak and Stock Market reactions: Evidence from Australia. *Finance Research Letters*, *38*, 101832. https://doi.org/10.1016/J.FRL.2020.101832

Rahmayani, D., & Oktavilia, S. (2021). Does the Covid-19 Pandemic Affect the Stock Market in Indonesia? *Jurnal Ilmu Sosial Dan Ilmu Politik*, *24*(1), 33–47. https://doi.org/10.22146/JSP.56432

Rai, K., & Garg, B. (2021). Dynamic correlations and volatility spillovers between stock price and exchange rate in BRIICS economies: evidence from the COVID-19 outbreak period. *Applied Economics Letters*, *29*(8), 738–745. https://doi.org/10.1080/13504851.2021.1884835

Raza, N., Jawad Hussain Shahzad, S., Tiwari, A. K., & Shahbaz, M. (2016). Asymmetric impact of gold, oil prices and their volatilities on stock prices of emerging markets. *Resources Policy*, *49*, 290–301. https://doi.org/10.1016/J.RESOURPOL.2016.06.011

Retnoningsih, S., & Naufa, A. M. (2021). The Covid-19, Policy And Capital Market: Empirical Evidence From Indonesia. *Jurnal Reviu Akuntansi Dan Keuangan*, *11*(2), 412–429. https://doi.org/10.22219/JRAK.V11I2.16855

Robiyanto, R., & Syahri, A. (2020). The correlation of gold, exchange rate, and stock market on Covid-19 pandemic period. *Jurnal Keuangan Dan Perbankan*, *24*(3), 350–362. https://doi.org/10.26905/jkdp.v24i3.4621

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, *13*(3), 341–360. https://doi.org/10.1016/0022-0531(76)90046-6

Salisu, A. A., & Akanni, L. O. (2020). Constructing a Global Fear Index for the COVID-19 Pandemic. *Emerging Markets Finance and Trade*, *56*(10), 2310–2331. https://doi.org/10.1080/1540496X.2020.1785424

Subramaniam, S., & Chakraborty, M. (2021). COVID-19 Fear Index: Does It Matter for Stock Market Returns? *Review of Behavioral Finance*, *13*(1), 40–50. https://doi.org/10.1108/RBF-08-2020-0215

Vasileiou, E. (2021). Explaining Stock Markets' Performance During The COVID-19 Crisis: Could Google Searches be a Significant Behavioral Indicator? *Intelligent Systems in Accounting, Finance and Management*, *28*(3), 173–181. https://doi.org/10.1002/ISAF.1499

Vasileiou, E., Samitas, A., Karagiannaki, M., & Dandu, J. (2021). Health Risk and The Efficient Market Hypothesis in The Time of COVID-19. *International Review of Applied Economics*, *35*(2), 210–223. https://doi.org/10.1080/02692171.2020.1864299

Xu, D., Li, B., & Singh, T. (2022). Does gold–platinum price ratio predict stock returns? International evidence. *International Journal of Managerial Finance*. https://doi.org/10.1108/IJMF-06-2020-0328

Yousaf, I., Bouri, E., Ali, S., & Azoury, N. (2021). Gold against Asian Stock Markets during the COVID-19 Outbreak. *Journal of Risk and Financial Management 2021, Vol. 14, Page 186*, *14*(4), 186. https://doi.org/10.3390/JRFM14040186

Zhang, F., Narayan, P. K., & Devpura, N. (2021). Has COVID-19 changed the stock return-oil price predictability pattern? *Financial Innovation*, *7*(1). https://doi.org/10.1186/S40854-021-00277-7