Jurnal Bisnis ***STRATEGI*** ● *Vol. 30 No. 1 Juli 2021, halaman 12 – 25*
P-ISSN : 1410-1246, E-ISSN : 2580-1171

OIL, EXCHANGE RATE, AND DOLLAR INDEX AS SAFE HAVEN IN THE PERIOD BEFORE AND DURING COVID-19 PANDEMIC: EXAMINATION IN INDONESIAN CAPITAL MARKET

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ABSTRACT

Safe haven is an asset sought by investors, especially when market turmoil occurs. This study aimed to test the role of oil, exchange rate, and Dollar Index as safe havens for the Indonesian capital market in the period before and during the COVID-19 pandemic. Using QREQ and GARCH analysis technique, this study found that oil and exchange rates can be safe haven in the period before and during the COVID-19 pandemic. While the Dollar Index is only able to be a safe haven during COVID-19 pandemic. The results in this study can be considered by investors to choose safe haven instruments.

Keywords*: safe haven, hedge, oil, dollar index, exchange rate, covid-19*

I. INTRODUCTION

Due to the COVID-19 pandemic, the global financial market has been put in crisis. This situation has deeply affected investors in deciding on where to invest their assets due to the elevated risks. The strategy used by investors to cope with the volatile market is to switch to a lower risk instrument with high liquidity to protect their assets (Robiyanto et al., 2017). This action leads investor to seek safe haven assets which are assets with stable or increasing value even if the market collapsing which include crude oil, exchange rate, and Dollar Index.

Figure 1 to figure 3 below visualized the movement in stock value proxied by LQ45 index and the movement in crude oil value of West Texas Intermediate (WTI), the Indonesian Rupiah exchange rate against US Dollar, and the Dollar Index in the period before and during the COVID-19 pandemic.

Crude oil is one of the most traded commodities in the world as it is the current main source of energy in the world (Kanjilal & Ghosh, 2017). Figure 1 visualised the shift in the crude oil price of WTI and the LQ45 Index. In March 2020, WTI crude oil price significantly dropped due to excess supply whilst the demand dropped as a result of lockdown and social distancing policies enforced by many countries. However, the crude oil price rose in May 2020 as the economy must continue even during the global crisis. Therefore, crude oil can be an effective safe haven. The previous research by Robiyanto et al. (2017) found that crude oil can be a safe haven for the Indonesian, Singaporean, Malaysian, and Thailand capital markets. In addition, Ciner et al. (2013) found that crude oil can be a safe haven for bond in the UK. Research by Elie, Naji, Dutta, & Uddin (2019) also found that crude oil can be a safe haven for gold in the extremely volatile

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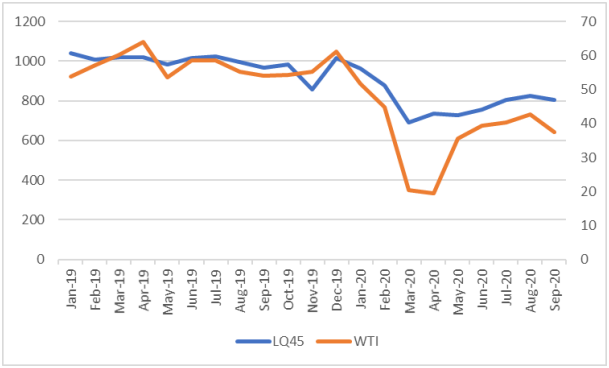
market. Furthermore, Aloui et al. (2013) and Liu et al. (2020) found that crude oil not only serve as safe haven, but it can also be a hedge.

The exchange rate also has the potential to be a safe haven. Figure 2 visualised the shift of USD/IDR and LQ45 index. Before the first COVID-19 case in Indonesia announce, the shift in USD/IDR tends to be stable. However, in March 2020, when the first COVID-19 case in Indonesia is confirmed, there was withdrawal of foreign capital from the Indonesian capital market which resulted in depreciation of Indonesian Rupiah against USD. However, the USD/IDR exchange rate rose in June 2020 due to Indonesian strong fundamental during COVID-19 which attracts foreign investor to invest in Indonesian capital market. Previous research by Ranaldo & Söderlind (2010), Hossfeld & MacDonald (2015), Tachibana (2017), Bock & Filho (2015), and Lee (2017) found that Swiss Franc is capable to be a safe haven for capital market. Ranaldo & Söderlind (2010), Bock & Filho (2015), and Lee (2017) found that Yen is able to become a safe haven for capital market. However, Hossfeld & MacDonald (2015) and Lee (2017) found that currencies including Poundsterling, British Pound, Euro, Canadian Dollar, and Norwegian Krone cannot be a safe haven for capital market. Nonetheless, study by Hoffmann & Suter (2010) found that Swiss Franc can be a safe haven for other currencies.

In addition to crude oil and exchange rate, Dollar Index has the potential to be a safe haven. Figure 3 visualised the value movement of Dollar Index and LQ45 Index. In March 2020, at the point where the Indonesian capital market is hitting rock bottom, the Dollar Index reached its highest value in the period of January 2019 to September 2020. The Dollar Index was formed with the aim of estimating the US dollar value (Jalbert, 2014b). As USD can be used as the benchmark for currencies worldwide, Dollar Index can help investors in the process of hedging against the risks related to USD. At the moment, Dollar Index is traded in the future market, mutual fund, and stock exchange which allows the public to invest in the Dollar Index (Jalbert, 2014a).

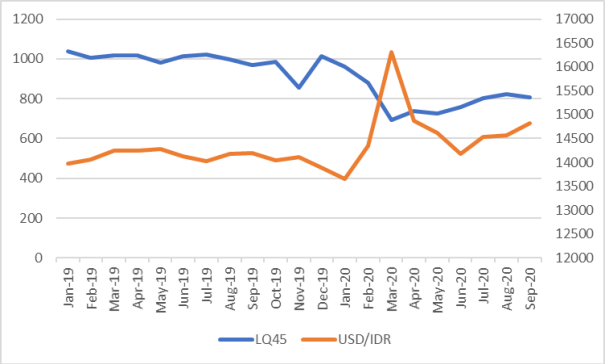
The minimum research on crude oil and the Dollar Index as the potential safe haven and the inconsistent result of the research on the exchange rate as the potential safe haven are the main reasons for this research. In addition, there has been no research that examines crude oil, exchange rate, and Dollar Index as the potential safe haven for the Indonesian capital market in the period before and during COVID-19. This condition encourages the need for research to test whether oil, exchange rate, and Dollar Index can be a safe haven in the period prior to and during COVID-19 for the Indonesian capital market. The benefit of this research is to help investors in their decision-making process during the volatile capital market. In the academic sector, this research could also be the foundation for similar research in the future.

Figure 1, LQ45 Index and WTI Movement



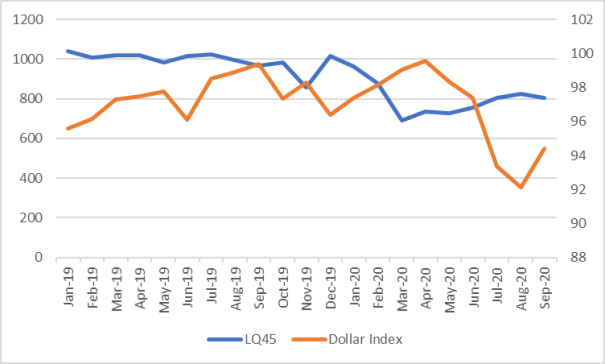
Information:
LHS: WTI
RHS: LQ45

Figure 2 LQ45 Index and USD/IDR Movement



Information:
LHS: USD/IDR
RHS: LQ45

Figure 3 LQ45 Index and Dollar Index Movement



Information:
LHS: Dollar Index
RHS: LQ45

II. LITERATURE REVIEW

Safe Haven

During market turmoil, safe haven serves to lower the risk in order to increase the return on investment and maintain the value of investment. According to Flavin et al. (2014), safe havens are low risk and high liquidity assets when the market is unstable. Meanwhile Baur & Lucey (2010) defined safe haven quantitatively as an asset that has no correlation or negative correlation to other asset that in the portofolio at a time when the economy is stable. This makes safe haven as an asset that ensures the security of the portofolio during the economic crisis (Kapahang & Robiyanto, 2019).

Hedge

Hedge is asset that have no correlation or negative correlation to other assets in the portofolio on average (Kopyl & Lee, 2016). There are two categories of hedge. First, asset that have a negative correlation to other assets are categorized as strong hedge. Second, asset that have no correlation to other assets are categorized as weak hedge (Nguyen et al., 2020). Hedges are used by investors to protect their asset over a long period of time, while Robiyanto et al. (2017) argues that hedge is used to minimize risk to the portofolio. So that investors need to balance of their portofolio either in normal market condition or in a crisis.

Oil as Safe Haven

According to Safitri & Robiyanto (2020), currently the investment world has expanded into the commodity market. As commodities have sustainable demand (Robiyanto et al., 2017), choosing commodities as investment will be profitable for investors. Oil is the most influential commodity in the global economy. For country, the presence of oil is very important to improve the national economy. Because of that the world oil price will not be easily corrected despite the global market crisis. Based on the explanation directs oil to be a safe haven. Previous research that found the role of oil as a safe haven for the capital markets of Indonesia, Singapore, Thailand, and Malaysia conducted by Robiyanto, Wahyudi, & Pangestuti (2017). So that the hypothesis can be formulated:

H1a: Oil can serve as a safe haven for the Indonesian capital market before the COVID-19 pandemic

H1b: Oil can serve as a safe haven for the Indonesian capital market during the COVID-19 pandemic

Exchange Rate as Safe Haven

According to Hau & Rey (2006), dynamic portofolio formation will affect the exchange rate. For exampel in case of the formation of stock portofolio. The performance of foreign stocks that surpass the performance of domestic stocks will increase the risk of exchange rate. This can happen because good stock performance will always attract investors to buy it, so the domestic currency will depreciate as demand for foreign currencies increases. To reduce exchange rate risk, domestic investors will resell foreign stock in order to appreciate the domestic exchange rate. This activity is referred as portofolio rebalancing and this action creates a negative correlation between stock returns and exchange rate returns. Previous research conducted by Ranaldo & Söderlind (2010), Hossfeld & MacDonald (2015), Tachibana (2017), Bock & Filho (2015) and Lee (2017) found that exchange rates can serve as safe havens for the capital market. Based on the explanation can be formulated hypotesis:

H2a: Exchange rates can serve as a safe haven for the Indonesian capital market before the COVID-19 pandemic

H2b: Exchange rates can serve as a safe haven for the Indonesian capital market during the COVID-19 pandemic

Dollar Index as Safe Haven

Dollar Index is a combination of 6 currencies included in weighting and calculation to determine the value of the US Dollar. The six currencies are Euro (57,6%), Yen (13,6%), Poundsterling (11,9%), Canadian Dollar (9,1%), Swedish Krona (4,2%), and Swiss Franc (3,6%) (Jalbert, 2014a). The high index value indicates the appreciation of the US Dollar. Conversely, the low index value indicates the depreciation of the US Dollar.

US Dollar is the currency of United Stated that are considered superior currency and used globally. This makes the USD as a benchmark for depreciating or appreciating a country's currency exchange rate (Pamungkas & Darmawan, 2018). According to Liu et al. (2016) when the market is in crisis, demand for USD will increase because USD is a liquid investment instrument. This condition leads to Dollar Index's ability as a safe haven. Based on the explanation, the hypothesis formulation is as follows:

H3a: Dollar Index can serve as a safe haven for the Indonesian capital market before the COVID-19 pandemic

H3b: Dollar Index can serve as a safe haven for the Indonesian capital market during the COVID-19 pandemic

III. METHOD

Data

The data used in this study were daily closing price of LQ45 Index (LQ45), West Texas Intermediate (WTI), exchange rate (USD/IDR), and Dollar Index (DXY) collected from www.investing.com. The period divided into two timeframes. The period before COVID-19 pandemic is from January to December 2019 and the period during COVID-19 pandemic is from January to December 2020.

The reason for using LQ45 in this study is because LQ45 consists of 45 companies with

the highest market capitalization with good fundamentals as well (Bursa Efek Indonesia, 2020). Meanwhile, WTI used in this study because it is regarded as one of the crude oil benchmarks in the world while being the most traded commodity in the international market (Choi & Hammoudeh, 2010).

Variables

This study used returns on LQ45 Index, WTI, USD/IDR, and Dollar Index. The return on LQ45 Index is calculated by the following formula:

$$R_{LQ45,t} = \frac{LQ45_t - LQ45_{t-1}}{LQ45_{t-1}}$$

Where, $LQ45_t$ = LQ45 closing price for the Indonesian capital market on day t; $LQ45_{t-1}$ = LQ45 closing price for the Indonesian capital market on day t-1.

The return on WTI is calculated by the following formula:

$$R_{WTI,t} = \frac{WTI_t - WTI_{t-1}}{WTI_{t-1}}$$

Where, WTI_t = The closing price of WTI on day t; WTI_{t-1} = The closing price of WTI on day t-1

The changes of exchange rate from dollar to rupiah (USD/IDR) is calculated by the following formula:

$$R_{USDIDR,t} = \frac{USDIDR_t - USDIDR_{t-1}}{USDIDR_{t-1}}$$

Where, $USDIDR_t$ = The changes of USD/IDR on day t; $USDIDR_{t-1}$ = The changes of USD/IDR on day t-1.

The return on Dollar Index is calculated by the following formula:

$$R_{DXY,t} = \frac{DXY_t - DXY_{t-1}}{DXY_{t-1}}$$

Where, DXY_t = The closing price of DXY on day t; DXY_{t-1} = The closing price of DXY on day t-1.

Technique of Analysis

This study used Quantile Regression (QREQ) analysis technique to test the potency of investment intruments as safe haven. According to Robiyanto (2018), QREQ technique provide sensitivity and robustness of the instrument to adverse market condition. In addition, an asset can be classified as a safe haven if the coefficient value of the QREQ quation is negative. The QREQ equation used is as follows:

$$R_{instrumen,t} = \alpha + \beta_1 R_{LQ45(Q50\%,40\%,30\%,20\%,10\%)} + \varepsilon_t$$

Where, ε_t = residual term; $R_{instrumen,t}$ = return on WTI, USD/IDR, and DXY;

$R_{LQ45(Q50\%,40\%,30\%,20\%,10\%)}$ = return on LQ45 for Q50%, 40%, 30%, 20%, and 10%.

This study also used GARCH analysis technique to test the potency of investment instruments as a hedge. An asset can be classified as a hedge if the coefficient value of GARCH quotation is negative. The GARCH equation used is as follows:

$$R_{instrumen,t} = \alpha + \beta_1 R_{LQ45} + \varepsilon_t$$

Where, ε_t = Residual terms, $R_{instrument,t}$ = Return on WTI, USD/IDR, and DXY; R_{LQ45} = Return on LQ45.

IV. RESULT AND DISCUSSION

Descriptive statistics

Descriptive statistic is used to discover the minimum, maximum, mean, and deviation standard of a data as seen in Table 1. Table 1 shows descriptive statistic result in 2019 (Panel A). WTI has an average return -0.0009 and a standard deviation 0.0218. USD/IDR has an average return 0.0002 and a standard deviation 0.0029. Meanwhile, DXY has an average return 0.0000 and a standard deviation 0.0028. Standard deviation indicates the level of volatility of an instrument, so WTI has the highest volatility. It means the level of investment risk in WTI is higher when compared to USD/IDR and Dollar Index.

Table 1 also shows descriptive statistic result in 2020 (Panel B). WTI has an average return -0.0281 and a standard deviation 0.3415. USD/IDR has an average return -0.0000 and a standard deviation 0.0071. While DXY has an average return 0.0004 and has a standard deviation 0.0049. In 2020, WTI has the highest standard deviation, so the volatility of WTI is higher compared to USD/IDR and Dollar Index. It means that WTI risk level is still higher than USD/IDR and Dollar Index in 2020.

The Result of Stationary Data Test

The result of the stationary test using Augmented Dickey-Fuller (ADF) can be seen on Table 2. Table 2 reveals that all data used in this study were stationer, both in 2019 and 2020. According to Robiyanto et al. (2017), stationary data does not require special analysis and can be directly analyzed using GARCH.

The Result of GARCH Test

The result of GARCH test using Gaussian, Student's t, and GED model can be seen in Table 3. The best model for GARCH test is will be selected by the lowest Akaike Information Criterion (AIC) values. So, in 2019 (Panel A) GED model was chosen to be the best model for WTI and Gaussian was chosen to be the best model for USD/IDR and DXY. In 2020 (Panel B), GED has the smallest AIC values for WTI, USD/IDR, and DXY, so GED is chosen as the best model for existing instruments.

Table 1. Descriptive Statistic

Variable	N	Mean	Minimum	Maximum	Std. Dev.
Panel A: 2019					
WTI	244	-0.0009	-0.1280	0.0993	0.0218
USD/IDR	244	0.0002	-0.0119	0.0128	0.0029
DXY	244	0.0000	-0.0077	0.0102	0.0028
Panel B: 2020					
WTI	220	-0.0281	-4.7592	0.3261	0.3415
USD/IDR	220	-0.0000	-0.0437	0.0282	0.0071
DXY	220	0.0004	-0.0178	0.0271	0.0049

Table 2. Augmented Dickey-Fuller (ADF) Test Result

Variable	Augmented Dickey-Fuller (ADF) Statistic	Probability	Conclusion
Panel A: 2019			
LQ45	-14.9339	0.0000	Stationary
WTI	-16.6444	0.0000	Stationary
USD/IDR	-13.5901	0.0000	Stationary
DXY	-15.6653	0.0000	Stationary
Panel B: 2020			
LQ45	-6.9118	0.0000	Stationary
WTI	-10.5902	0.0000	Stationary
USD/IDR	-7.1403	0.0000	Stationary
DXY	-12.5894	0.0000	Stationary

Table 3. GARCH Test to Find the Best Model

X	Y	GARCH		
		Gaussian	**Student's t**	**GED**
Panel A: 2019				
WTI	LQ45	0.9928	2.8022***	2.8310***
		(0.3208)	(0.0051)	(0.0046)
USD/IDR	LQ45	-0.5379	-0.5064	-0.4341
		(0.5906)	(0.6126)	(0.6642)
DXY	LG45	3.1382***	2.9563***	2.9943***
		(0.0017)	(0.0031)	(0.0028)
Panel B: 2020				
WTI	LQ45	7.3820***	5.7856***	4.8520***
		(0.0000)	(0.0000)	(0.0000)
USD/IDR	LQ45	5.0353***	4.3241***	4.1824***
		(0.0000)	(0.0000)	(0.0000)
DXY	LQ45	6.6093***	5.1100***	4.7857***
		(0.0000)	(0.0000)	(0.0000)

Note: - Number in parentheses are probability
- *, **, *** indicate the levels of significance at 10%, 5%, and 1%
- Numbers within grey color has the lowest AIC

The Role of Oil, Exchange Rate, and Dollar Index as Safe Haven, Hedge, and Diversifier

Table 4 presented the results of the analysis using GARCH and QREQ for data before and during the COVID-19 pandemic. Table 4 indicate that WTI can act as a safe haven for the Indonesian capital market in the period before and during pandemic COVID-19. It can be seen from the result of QREQ analysis in Panel A that WTI shows an insignificant negative mark. While in Panel B, WTI shows negative significant coefficient value with a significance level of 1%. This finding is consistent with research found by Robiyanto et al. (2017) that crude oil tended to act as a safe haven for almost of the ASEAN stock markets (except Philippines stock market). WTI is known as high quality oil and easy to distill, so it will be widely used for various activities that can boost a country's economy. In addition, based on the results of GARCH analysis, WTI is only able to be a diversifier because it has a significant positive sign, both in 2019 and 2020.

USD/IDR is able to become a safe haven for Indonesian capital market in the period before and during pandemic COVID-19. This is indicated by the QREQ's USD/IDR regression coefficient in Panel A and Panel B which always shows a significant negative sign at 50% quantile to 10% quantile with a significance level of 1%. This findings are consistent with research conducted by Ranaldo & Söderlind (2010), Tachibana (2017), Hossfeld & MacDonald (2015), Grisse & Nitschka (2015), Lee (2017), and Bock & Filho (2015) which found exchange rates can be a safe haven for the capital market. A lot of foreign capital flows to Indonesia because of Indonesia's stability fundamentals are well maintenanced and it has impact on the appreciation of the value of the Rupiah to Dollar. In addition, the impact of global

pandemic COVID-19 has also decreased performance in the world's capital markets. In the face of market uncertainty, domestic investors will conduct a rebalancing portofolio that can appreciate the value of Rupiah to Dollar. Moreover, based on the GARCH result, USD/IDR can act as a hedging instrument for Indonesian capital market in the period before pandemic COVID-19, but USD/IDR is only able to be a diversifier in the period during pandemic COVID-19. It can be seen from the value of the GARCH coefficient. In Panel A, GARCH value has an insignificant negative sign. While the sign in Panel B is positive significant.

Table 4. Quantile Regression Test Result

	GARCH	Quantile				
		0,5	**0,4**	**0,3**	**0,2**	**0,1**
Panel A: 2019						
WTI	0.6949***	-0.0348	-0.0460	-0.0645	-0.0776	-0.0660
	(2.8310)	(-0.9057)	(-1.1496)	(-1.5795)	(-1.4402)	(-1.4094)
USD /IDR	-0.1874	-1.2272***	-1.3557***	-1.5102***	-1.7856***	-1.4659***
	(-0.5379)	(-6.3753)	(-6.4578)	(-5.8945)	(-6.7090)	(-3.0830)
DXY	0.7029***	-0.1067	0.2063	0.2647	0.2210	-0.1509
	(3.1382)	(-0.4266)	0.8416	1.1244	0.8215	(-0.3460)
Panel B: 2020						
WTI	0.5592***	-0.0049***	-0.0055***	-0.0064***	-0.0080***	-0.0098***
	(4.8520)	(-2.7589)	(-3.2364)	(-4.2255)	(-6.0177)	(-9.2705)
USD /IDR	0.4945***	-1.6319***	-1.5526***	-1.3701***	-1.3372***	-1.6981***
	(4.1824)	(-9.5711)	(-6.3691)	(-3.9404)	(-4.7091)	(-4.8887)
DXY	0.5439***	-0.7270	-0.8564	-0.9658*	-1.4260**	-1.9631***
	(4.7857)	(-1.2452)	(-1.4943)	(-1.6958)	(-2.2844)	(-2.8250)

Note: - Number in parentheses are t-statistics
- *, **, *** indicate the levels of significance at 10%, 5%, and 1%

QREQ analysis on the Dollar Index showed inconsistent results. In panel A shows that when the 50% and 10% quantile, DXY has an insignificant negative regression coefficient. However, in the 40% to 20% quantile the coefficient was insignificant positive. Overall, it can be said that DXY is failed to serve as a safe haven in the period before pandemic COVID-19. In contrast to period before pandemic, DXY can serve as a safe haven for Indonesian capital market in period during pandemic COVID-19. It can be seen from regression coefficient in Panel B that quantiles 50% to 10%, all have negative sign. In the quantile 50% and 40%, DXY has insignificant negative sign. In the quantile 30%, DXY has significant negative sign with a 10% significance level. In the quantile 20%, DXY has significant negative sign with a 5% significance level. In the quantile 10%, DXY has significant negative sign with a 1% significance level. During financial turmoil, investors tend to switch to assets that have high liquidity, such as cash. The US Dollar has a high level of liquidity, so investors who hold the USD will get a lot of profit. Moreover,

GARCH analysis results on DXY shows that the positive significant sign, meaning that DXY could serve as diversifier for Indonesian market in period before and during pandemic COVID-19.

Diagnostic Test Results

The normality test was conducted by using Jarque-Bera model with GARCH method. As stated in Table 5, all data in this study were normally distributed.

Table 5. Data Normality Test Result

Variable	Probability	Conclusion
Panel A: 2019		
WTI	0.9873	Normally Distributed
USD/IDR	0.9866	Normally Distributed
DXY	0.9649	Normally Distributed
Panel B: 2020		
WTI	0.1164	Normally Distributed
USD/IDR	0.2701	Normally Distributed
DXY	0.1458	Normally Distributed

Figure 4. CUSUM Test Result for WTI in 2019

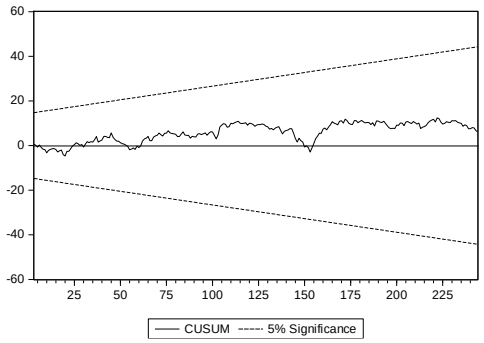


Figure 5. CUSUM Test Result for USD/IDR in 2019

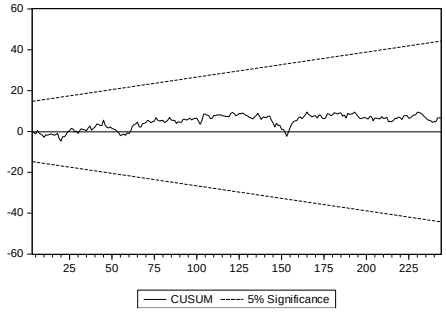


Figure 6. CUSUM Test Result for DXY in 2019

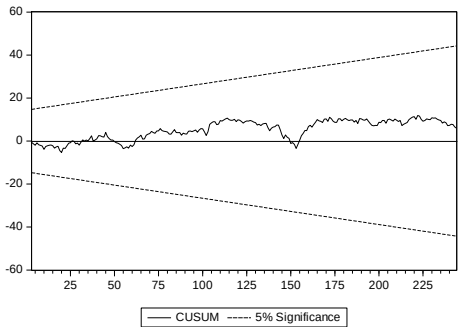


Figure 7. CUSUM Test Result for WTI in 2020

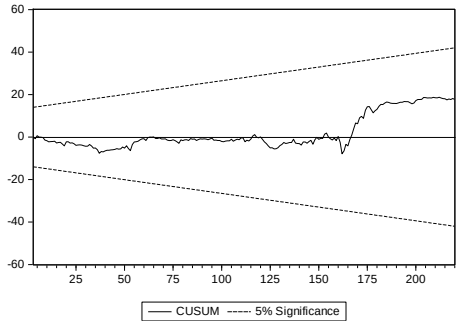


Figure 8. CUSUM Test Result for USD/IDR in 2020

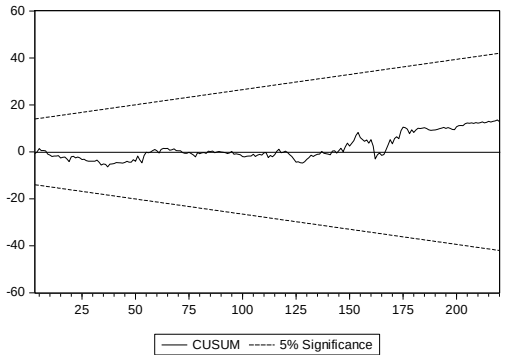


Figure 9. CUSUM Test Result for DXY in 2020

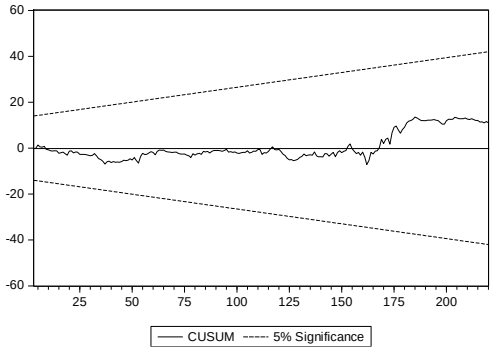


Figure 4 to Figure 9 show the results of CUSUM test and indicate that all the data in this study are stable.

Table 6. Autocorelation Test Result (36 Lags)

	GARCH	Quantile				
		0,5	0,4	0,3	0,2	0,1
Panel A: 2019						
WTI	5	5	5	5	5	5
USD/IDR	5	5	2	None	None	1
DXY	5	5	5	4	5	5
Panel B: 2020						
WTI	None	32	33	32	31	30
USD/IDR	1	28	29	32	33	26
DXY	1	34	34	34	34	34

Table 7, Theil Coefficient

	GARCH	Quantile				
		0,5	0,4	0,3	0,2	0,1
Panel A: 2019						
WTI	0.9626	0.9091	0.8130	0.7385	0.7028	0.7073
USD/IDR	0.6816	0.6732	0.6470	0.6261	0.6222	0.6622
DXY	0.9713	0.9547	0.8169	0.7400	0.7078	0.7092
Panel B: 2020						
WTI	0.9295	0.9309	0.8707	0.7954	0.7300	0.7142
USD/IDR	0.6182	0.5756	0.5874	0.6113	0.6198	0.6249
DXY	0.8543	0.8353	0.7847	0.7359	0.6780	0.6741

Table 6 shows the results of autocorrelation tests conducted using Q statistics in the correlogram of residuals. WTI, USD/IDR, and DXY during 2019 (Panel A) and

2020 (Panel B) indicate significant autocorrelation with a significance level of 5%.

Robustness Test Result

Table 7 shows the result of robustness test conducted using Theil coefficient.

According to Bliemel & MacKay (1973), the smaller value of the Theil coefficient, the better the model is. Based on Table 7, USD/IDR has the smallest Theil coefficient for Indonesian capital market, both in 2019 and 2020. This finding means that USD/IDR is a robust safe haven in the period before and during pandemic COVID-19, as the LQ45's regression coefficients in the USD/IDR models is negative in all quantiles. For WTI in 2019 and 2020, the coefficient in any quantiles decreasing gradually, indicates that the worse the market situation will lead to a better fit. Meanwhile for DXY in 2019, the QREQ with 20% quantile model has the smallest Theil coefficient. As the LQ45 regression coefficient in 2019 has an inconsistent negative sign, it means that DXY can not act as safe haven for Indonesian capital market in period before pandemic COVID-19. In 2020, DXY has the smallest Theil coefficient in the 10% quantile, since the LQ45 regression coefficient in 2020 has a consistent negative sign, it means that DXY can act as safe haven during pandemic COVID-19.

V. CONCLUSION AND IMPLICATIONS

This study found that in the period before COVID-19 pandemic in 2019, oil and exchange rate were able to become safe havens for the Indonesian capital market, but Dollar Index was unable to become a safe haven. Then the results of GARCH analysis prove that oil and Dollar Index could serve as diversifiers, while the exchange rate was able to act as a hedge.

This study also tested the period during the COVID-19 pandemic in 2020. QREQ analysis shows that oil, exchange rate, and Dollar Index were able to become safe havens against Indonesian capital market turmoil. Moreover, GARCH analysis found that oil, exchange rate, and Dollar index were able to act as diversifiers.

Based on the results of the anlysis in this study, stock investors in Indonesia may consider adding oil and exchange rate to the portofolio when the market in normal condition or during financial market turmoil. However, when the Indonesian capital market is in normal condition, investors should not switch their stocks with Dollar Index because it has the same direction of movement. Investors may add the Dollar Index into their portofolio when there are shocks in financial markets.

The period used in this study was before and during the COVID-19 pandemic in 2019 and 2020. So further research is recommended to extend the period until the end of the COVID-19 pandemic. In addition, further research is also recommended to use capital markets from other countries as a comparison with this study.

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