

INDONESIAN STOCK MARKET RETURN VOLATILITY AND FOREIGN PORTFOLIO CAPITAL: EVIDENCE BEFORE AND DURING COVID-19 PANDEMIC

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Abstract: The Covid-19 pandemic increased uncertainty in the Indonesian stock market. This paper aims to investigate foreign and domestic investors' behavior in the Indonesian stock market, especially during the Covid-19 pandemic. The method used was E-GARCH and DCC-GARCH. The results showed that the impact of shocks from bad and good news was greater on the return volatility during the pandemic. The shocks had a positive impact on the increase in the spillover effect of NFI's volatility to return volatility in the short and long term before the pandemic, but this did not happen during the pandemic. There is an indication of bias of forecasting errors and prospect theory in the behavior of investors in the Indonesian stock market. Conservatism bias is also indicated in the behavior of foreign investors.

Keywords: Covid-19, E-GARCH, DCC-GARCH, net foreign inflow, return volatility

Abstrak: Pandemi Covid-19 meningkatkan ketidakpastian di pasar saham Indonesia. Penelitian ini bertujuan untuk memahami perilaku investor asing dan domestik di pasar saham Indonesia, terutama selama pandemi Covid-19. Metode yang digunakan adalah E-GARCH dan DCC-GARCH. Hasil penelitian menunjukkan bahwa dampak guncangan dari berita buruk dan berita baik lebih besar terhadap peningkatan volatilitas return selama masa pandemi. Guncangan juga berdampak positif pada peningkatan efek spillover volatilitas aliran masuk bersih modal asing (NFI) ke volatilitas return pasar saham dalam jangka pendek dan panjang sebelum pandemi, namun hal ini tidak terjadi selama pandemi. Perilaku investor di pasar modal Indonesia juga ditunjukkan oleh bias kesalahan peramalan dan bias teori prospek. Perilaku investor asing juga terindikasi memiliki bias konservatisme.

Kata kunci: Covid-19, E-GARCH, DCC-GARCH, aliran masuk modal asing; volatilitas return

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INTRODUCTION

The Covid-19 pandemic caused a global recession, affecting various sectors of the economy, including the stock market. This is due to increasing global uncertainty from the low participation of businesses and households in the economy and financial markets. Business withholds their investment, also households hold back their spending, especially on luxury goods (Insaidoo et al. 2021). Indonesia's economic growth contracted for two quarters respectively in 2020. Figure 1 indicates that Indonesia is experiencing a recession (BPS, 2020b).

Jakarta Composite Index (*Indeks Harga Saham Gabungan/IHSG*) declined drastically in 2020 because uncertainty in the stock market increased due to shocks from the Covid-19 pandemic. Mazur, Dang, and Vega (2020) also stated that Covid-19 pandemic caused global stock market to fall and stock market volatility to increase as global economy contracted. Countries with open economies also have a higher risk of exposure during shocks. Financial Services Authority (Otoritas Jasa Keuangan/OJK) and Indonesia Stock Exchange (IDX) apply trading halts when capital market were under pressure or in an emergency. This regulation has been done since March 11, 2020. IDX has also carried out trading halts seven times throughout 2020 because IHSG fell by 5 percent in a day, so return fluctuations

in the Indonesian stock market are not higher or more volatile (IDX, 2020a).

Figure 2 shows that the trading halt of stock trading has been carried out several times throughout 2020. The first trading halt was conducted on the second trading session (at 15.33 JATS) on March 12, 2020, as the IHSG fell 258 points to 4,895 rupiahs (IDX, 2020a). The trading halt occurred again the next day, at the first session (09.15 JATS) on March 13, 2020. This was done because IHSG fell more than 245 points to 4,650 rupiahs (IDX, 2020b).

The worsening of stock market conditions was also reflected in the third to sixth trading halts of the same month, which are the second session (15.02 JATS) on March 17 (IDX, 2020c), the first session (09.37 JATS) on March 19 (IDX, 2020d), the second session (14.52 JATS) on March 23 (IDX, 2020e), and first session (10.20 JATS) on March 30, 2020 (IDX, 2020f). The seventh trading halt was carried out again six months after the last trading halt, at the first trading session (10.36 JATS) on September 10, 2020. The decline in IHSG was caused by news of the implementation of mobility restrictions (*Pembatasan Sosial Berskala Besar/PSBB*). The entire trading halt is carried out for 30 minutes without changing the trading schedule (IDX, 2020g).

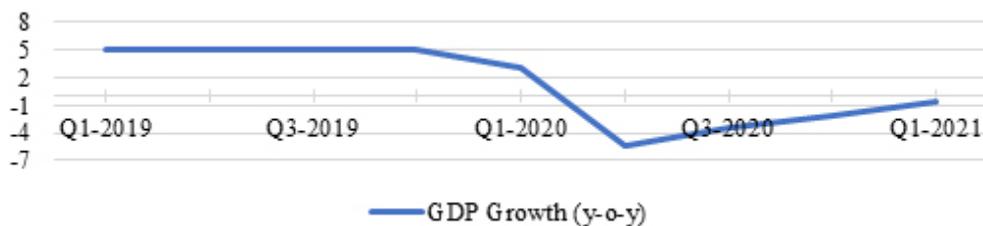


Figure 1. Indonesia's GDP Growth (yoy), Quarterly, 2019-2021 (BPS, 2020a)

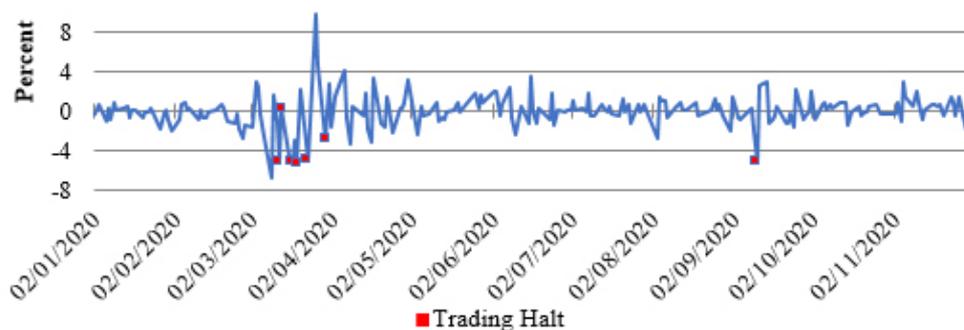


Figure 2. Indonesian Stock Market Return with Closing Price and Trading Halt in 2020 (Yahoo Finance, 2021)

Various studies on the volatility of stock market returns during the crisis and the relationship of returns with Foreign Portfolio Investment (FPI) have been carried out before. The crisis also has an impact on increasing the volatility of stock market returns in several countries, including ASEAN and countries with the largest GDP in the world, including Indonesia (Aditya et al. 2018; Kumar 2018; Abduh 2020; Baek et al. 2020; Chaudhary et al. 2020; Liu et al. 2020; Elhini dan Hammam 2021).

The pandemic continued until this paper was made, and the dynamic behavior of foreign investors is indicated to affect the volatility of the Indonesian stock market differently. These issues constitute a research gap on stock market return volatility and its dynamic correlation to FPI in Indonesia. Our goal is to fill this gap and analyze the stock market return and Net Foreign Inflow (NFI) volatility of the Indonesian stock market before and during the Covid-19 pandemic. This paper also examines spillover from NFI on the Indonesian stock market returns volatility before and during the Covid-19 pandemic. As far as the authors' knowledge, such a study has not been done before.

In this regard, we use two approaches with several steps. This study uses daily time series data sets, the Jakarta Stock Exchange Composite (JKSE), the number of foreign sells, the number of foreign buys, and the number of transactions in the Indonesian stock market. The data period is divided into two sub-periods, before and during the Covid-19 pandemic. The methods used are Exponential Generalized Autoregressive Conditional Heteroscedasticity (E-GARCH) and Dynamic Conditional Correlation Generalized Autoregressive Conditional Heteroscedasticity (DCC-GARCH). The E-GARCH method explains the return volatility and NFI of the Indonesian stock market before and during the Covid-19 pandemic. This model can detect bad news that has a greater impact than good news, such as asset price data (Enders, 2014).

The DCC-GARCH method explains NFI's impact (volatility spillover) on Indonesian stock market returns. DCC-GARCH is an extension model of the GARCH model, which considers the relationship between more than one type of variable. This model is widely used in financial sector analysis because it can capture the co-movement of the analyzed variables, such as the correlation of volatility between assets in different

capital markets. DCC-GARCH is also a multivariate GARCH model that can model the conditional variance of the univariate GARCH and detects its correlation (Orskaug, 2009).

We also test our data before E-GARCH and DCC-GARCH modeling. The stationary time series process shows that the probability distribution of the data is stable over time. After that, we did Autoregressive Integrated Moving Average (ARIMA) modeling to obtain the mean equation for both E-GARCH and DCC-GARCH. The best ARIMA order is chosen with the lowest Akaike Information Criterion (AIC). After that, the ARCH effect test was conducted to detect heteroscedasticity in the residual mean equation. The best GARCH order is a model with the lowest AIC and significance. The GARCH model is evaluated by testing the model's residuals to prove that the model obtained is good. These tests include the Ljung-Box and LM tests (Enders, 2014; Firdaus, 2018). Our study aims to investigate the dynamic behavior and volatility relationship (spillover) of domestic and foreign investors in the Indonesian stock market.

METHODS

The variables in this study refer to Derbali and Lamouchi's (2020) research. The variables used are returns and Net Foreign Inflow (NFI) in the Indonesian stock market. Stock market returns are calculated using the closing price of the Indonesian stock market data. This data was taken from Yahoo Finance. The NFI variable is calculated using a combination of several data: the total value of shares bought and sold by foreign investors and the number of share value transactions by foreign and domestic investors. These data were taken from Indonesia Stock Exchange (IDX). We provide detailed information on our dataset in Table 1.

$$rJKSE_t = \ln(P_t/P_{t-1}) \quad (1)$$

$$NFI_t = (\text{Total Foreign Buy}_t - \text{Total Foreign Sell}_t) / \text{Total Transaction}_t \quad (2)$$

The research period is divided into two sub-periods, before and during the Covid-19 pandemic. The period before the pandemic uses data from January 2, 2019, to February 20, 2020, while the period during the pandemic uses data from February 21, 2020, to

February 26, 2021. The sub-periods are divided based on the detection of the average change point and the variance of Indonesian stock market returns using the changepoint feature in R Studio.

The equations above are the formula for the Indonesian stock market's return and net foreign inflows. $rJKSE_t$ shows the return of JKSE in period t . P_t and P_{t-1} are closing prices in the stock market in periods t and $t-1$, respectively. NFI_t reflects the net foreign inflow variable of the Indonesian stock market in period t . Buy is the total value of shares purchased by foreign investors. is the total value of shares sold by foreign investors. is the total transaction value of shares from foreign and domestic investors in the Indonesian stock market. This equation refers to several works of literature (Anggitawati and Ekaputra, 2018; Derbali dan Lamouchi, 2020; Dixit and Agrawal, 2020; Habiba et al. 2020).

First, we did a stationarity test with the Augmented Dickey-Fuller (ADF) test. This test detects unit roots in univariate time series (Wooldridge, 2018). Then, we try to find the best Autoregressive Integrated Moving Average (ARIMA) model to become the mean equation in the GARCH extension model. The variance of the model must be constant over time for time series data, so we did the ARCH effect test to detect heteroscedasticity in the residual mean equation. The ARCH effect test was carried out using the Lagrange Multiplier (LM) test.

The model in this study refers to the research model of Derbali and Lamouchi (2020), which uses the GARCH extension model to analyze the impact of foreign portfolio investment on stock market volatility in Southeast Asia and India. This study uses the E-GARCH model to explain Indonesian stock market volatility. The variables also refer to previous research as follows.

$$rJKSEPra_t = \alpha + \sum_{j=1}^p \beta_{t-j} rJKSEPra_{t-j} + \varepsilon_t + \sum_{j=1}^q \Phi_{t-j} \varepsilon_{t-j} \quad (3)$$

$$rJKSEDur_t = \alpha + \sum_{j=1}^p \beta_{t-j} rJKSEDur_{t-j} + \varepsilon_t + \sum_{j=1}^q \Phi_{t-j} \varepsilon_{t-j} \quad (4)$$

$$NFIPra_t = \alpha + \sum_{j=1}^p \beta_{t-j} NFIPra_{t-j} + \varepsilon_t + \sum_{j=1}^q \Phi_{t-j} \varepsilon_{t-j} \quad (5)$$

$$NFIDur_t = \alpha + \sum_{j=1}^p \beta_{t-j} NFIDur_{t-j} + \varepsilon_t + \sum_{j=1}^q \Phi_{t-j} \varepsilon_{t-j} \quad (6)$$

$$\log(h_t) = \lambda_0 + \sum_{j=1}^m \gamma_{1j} \left| \frac{\varepsilon_{t-j}}{\sqrt{h_{t-j}}} \right| + \sum_{j=1}^m \gamma_{2j} \frac{\varepsilon_{t-j}}{\sqrt{h_{t-j}}} + \sum_{j=1}^n \theta_j \log(h_{t-j}) \quad (7)$$

Table 1. Data description

Data Source	Description	Unit	Source of Literature
Yahoo Finance	Closing price of Indonesian stock market	Rupiah (IDR)	Derbali and Lamouchi (2020)
IDX	Total value of shares purchased by foreign investors	Billion Rupiah	Derbali and Lamouchi (2020); Anggitawati and Ekaputra (2018)
IDX	Total value of shares sold by foreign investors	Billion Rupiah	Derbali and Lamouchi (2020); Anggitawati and Ekaputra (2018)
IDX	Number of share value transactions by domestic and foreign investors	Billion Rupiah	Derbali and Lamouchi (2020); Anggitawati and Ekaputra (2018)

Where h_t is a variation of mean equation, γ_1 as a coefficient of the arch term (magnitude effect), γ_2 as a coefficient of asymmetric effect (sign effect), θ as a coefficient of the garch term, λ_0 as constant, ε as error, and m, n as E-GARCH order. Another GARCH extension model used to analyze the relationship and impact of NFI volatility on the volatility of stock market returns in Indonesia is Dynamic Conditional Correlation-Generalized Auto Regressive Conditional Heteroscedasticity (DCC-GARCH). The variables used are as follows:

$$Q_t = (1 - \sum_{m=1}^M a_m - \sum_{n=1}^N b_n) \bar{Q} + \sum_{m=1}^M \alpha_m \varepsilon_{i,t-1} \varepsilon_{j,t-1} + \sum_{n=1}^N \beta_n Q_{t-1} \quad (8)$$

Where Q_t as matrix covariance of standardized residual, Q_i as a diagonal matrix that consists of the root of the matrix elements Q_t , \bar{Q} as unconditional correlation matrix of standardized residual, ε as a standardized residual from mean equation, α as a spillover effect in the short run, β as a spillover effect in the long run, i and j are variables used, M and N as DCC-GARCH order. The evaluation of the GARCH model is carried out by testing the model's residuals, consisting of the Ljung-Box test and the LM test (Enders 2014; Firdaus 2018). The Ljung-Box test detects the correlation of residuals over time, while the LM test detects heteroscedasticity in the obtained GARCH model residuals.

Figure 3 shows that foreign investors have fewer share transactions compared to domestic investors during the pandemic. Ownership of share securities by foreign investors also tends to be stable compared to the number of shareholdings by domestic investors. Meanwhile, the Indonesian stock market has been more volatile during the Covid-19 pandemic. Based on these

arguments and the findings from previous studies, the following hypotheses were developed:

- H1: There is a dynamic behavior of stock market return because of uncertainty in the economy from Covid-19 pandemic. The hypothesis will be accepted if return volatility before and during Covid-19 pandemic change over time.
- H2: There is a dynamic behavior of foreign investors in the Indonesian stock market because of uncertainty in the economy from Covid-19 pandemic. The hypothesis will be accepted if net foreign inflow before and during Covid-19 pandemic change over time.
- H3: There is a volatility spillover from foreign investors (net foreign transaction in the Indonesian stock market) to the volatility of the stock market return that changes over time. The hypothesis will be accepted if there is a robust conditional correlation between net foreign inflow volatility and stock market return volatility that changed before and during Covid-19 pandemic.

Portfolio investment positively impacts a country's economy because it contributes to increasing liquidity in the capital market, deepening and expanding the capital market, to low-cost capital financing for domestic companies, so it is expected to encourage the country's economic activity. The Covid-19 pandemic has also shocked the Indonesian economy, as various economic activities have slowed and productivity has decreased. This study analyzes stock market return and net foreign inflow volatility of the Indonesian stock market before and during the Covid-19 pandemic. The impact of net foreign inflows on the volatility of Indonesian stock market returns is also analyzed to investigate the effects of NFI volatility on the Indonesian stock market volatility. Our research framework can be seen in Figure 4.

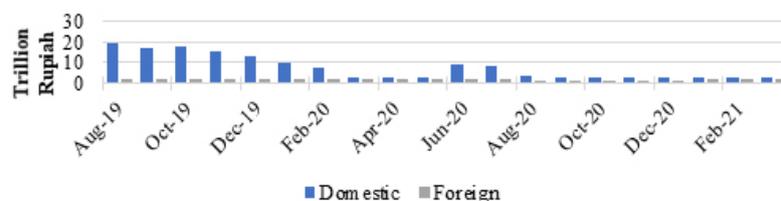


Figure 3. Total Shares Ownership by Foreign and Domestic Investors from August 2019-March 2021, Monthly (Indonesian Central Securities Depository (KSEI), 2021)

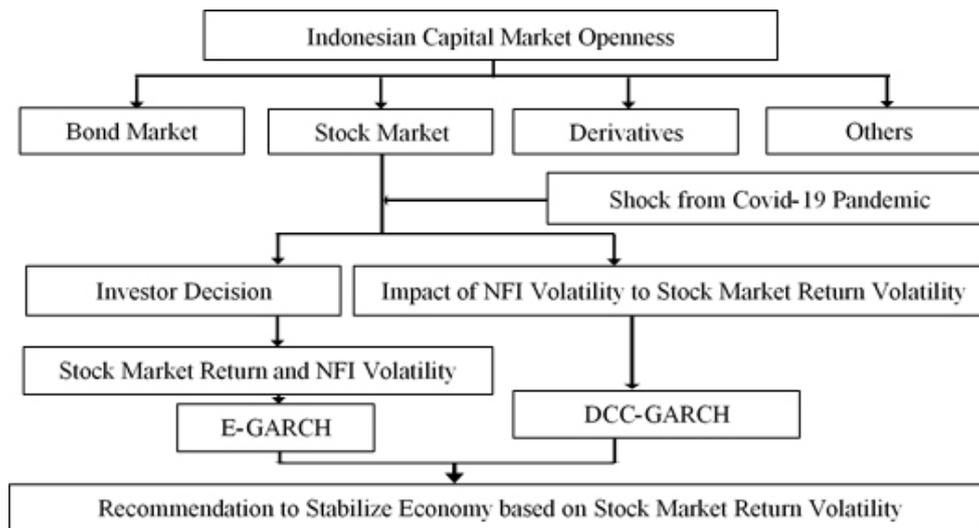


Figure 4. Research framework

RESULTS

Indonesian Stock Market and Net Foreign Inflow Performance

The global stock market, including Indonesia, has grown over the past decade (Drakos et al. 2018). There were 396 listed companies on IDX in 2008, which continued to grow until October 2020, reaching 709 companies (BPS, 2021). This shows that the stock market is one of the most attractive sources of corporate financing. The Indonesian stock market is also volatile because of the ease of stock trading transactions carried out every working day from 09.00 JATS to 14.50 JATS. Figure 5 shows a foreign investor's contribution to the total transactions in the stock market. The Indonesian stock market is also still dominated by buying and selling transactions by domestic investors, while transactions by foreign investors fluctuated from 2019 to 2020.

Furthermore, there are fewer share transactions by foreign investors compared to domestic investors, and ownership of share securities by foreign investors also tends to be stable compared to the number of shareholdings by domestic investors. This shows that foreign investors tend to hold their share ownership in the Indonesian stock market, indicating that foreign investors' confidence in the Indonesian stock market is good. The difference between the highest and lowest stock market returns between the two periods shows

that fluctuation is even greater during the Covid-19 pandemic. This can also be delivered from the standard deviation value, which is larger during the pandemic. Figure 6 shows fluctuations in Indonesia's stock market returns before and during the Covid-19 pandemic. The greater changes during the pandemic can be caused by economic uncertainty, such as regional quarantines and mobility restrictions.

The highest and lowest NFI range shows that the fluctuations in NFI before the pandemic were greater than during the Covid-19 pandemic. This can be shown from the standard deviation value, which is larger before the pandemic than during the pandemic. Figure 7 illustrates the fluctuations in NFI throughout the study period.

The average NFI shows an increase in net foreign outflow during the Covid-19 pandemic. Lower NFI fluctuations during the pandemic also indicate fewer transactions by foreign investors in the Indonesian stock market. This shows that most foreign investors are fundamental investors who invest with long-term goals in Indonesia. Domestic investors have different characteristics than foreign investors, who tend to invest in the short term to earn profits and are easily affected by the news. Table 2 shows the range (minimum to maximum) value for return and NFI before and during Covid-19 pandemic.

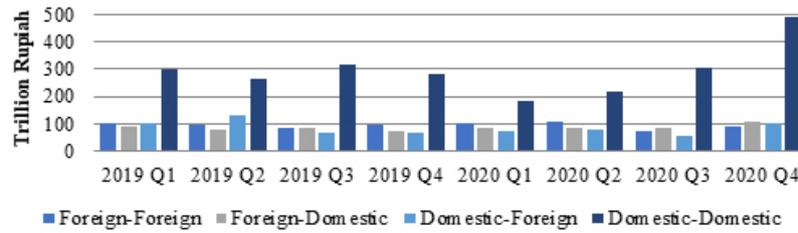


Figure 5. Buying-Selling Transactions Based on Share Value in 2019-2020 (KSEI, 2021)

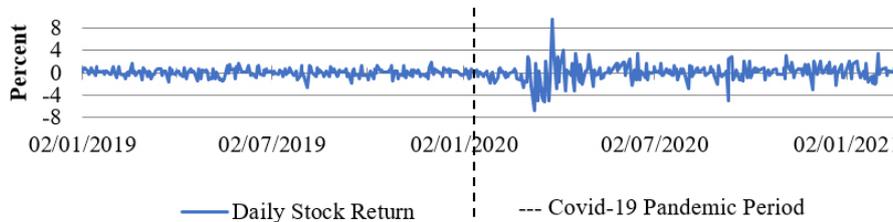


Figure 6. Indonesian Stock Market Returns January 2019-February 2021 (Yahoo Finance, 2021)

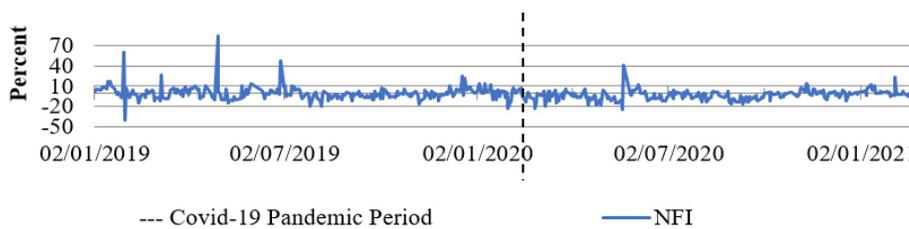


Figure 7. NFI of Indonesian Stock Market from January 2019-February 2021, Daily (IDX, 2021)

Table 2. Summary of variable descriptive statistics

Variable	Min	Mean	Max	Standard Deviation
rJKSEpra	-0.0263	0.0004	0.0195	0.0071
rJKSEDur	-0.0681	0.0007	0.0970	0.0172
NFIPra	-0.4119	-0.0024	0.8505	0.1019
NFIDur	-0.2407	-0.0285	0.4092	0.0710

Return and Net Foreign Inflow Volatility of the Indonesian Stock Market

The first stage is to test the stationarity of the data and determine the best ARIMA model. All variables used are stationary at a significant value of 5 percent, showing that all the data used have a constant mean and variance. The best ARIMA model is selected based on the smallest AIC value. The next stage is testing the ARCH effect, which indicates that the data has a heteroscedasticity problem. The results show that all data used had an ARCH effect, so we can continue to analyze with the GARCH model. The best E-GARCH models were selected based on the smallest AIC. The Ljung-Box test and LM test evaluated this model. All Ljung-Box and LM values for all models are

insignificant. This shows that the model has residuals that are not correlated over time and are homoscedastic. In conclusion, the best E-GARCH model is good and can be interpreted further.

The E-GARCH model estimation (Table 3) shows that shocks affect the volatility of returns and NFI of the Indonesian stock market before and during the pandemic. This finding is in line with the results of research conducted by Derbali and Lamouchi (2020) and also Sharma, Aggarwal, and Yadav (2020), where past shocks and volatility influenced the volatility of Indonesia’s stock market returns during the GFC crisis. The effect of shocks had a greater impact on return volatility and strengthened on the second day after the shock occurred during the Covid-19 pandemic.

Table 3. E-GARCH Coefficients Before and During the Covid-19 Pandemic

Coefficient	Before the Covid-19 Pandemic		During the Covid-19 Pandemic	
	rJKSE	NFI	rJKSE	NFI
λ_0	-0.102841*	-0.326393*	-0.602038*	-0.042588*
γ_{11}	-0.033576*	-0.274055*	-0.241651*	0.045550*
γ_{12}	-0.074808*	0.294543*	0.148834**	-0.095740*
γ_{13}	-	0.023933*	-	-0.127644*
γ_{21}	0.274823*	0.929772*	0.582272*	0.787520*
γ_{22}	-0.349661*	-1,515135*	-0.250531*	-0.758458*
γ_{23}	-	0.356219*	-	-0.117070*
θ_1	0.989681*	0.946121*	0.550272*	0.817722*
θ_2	-	-	0.380570*	0.176426*
θ_3	-	-	-	-

Notes: *, **, and *** are significant at the 1%, 5%, and 10% significance levels respectively.

Coefficient λ_0 shows a constant of each E-GARCH equation. Coefficient $\gamma_{11};\gamma_{12};\gamma_{13}$ shows past shock effects from time lag-1, lag-2, and lag-3 on each E-GARCH equation, respectively. Coefficient $\gamma_{21};\gamma_{22};\gamma_{23}$ shows the asymmetric effect from time lag-1, lag-2, and lag-3 on each E-GARCH equation, respectively. Coefficient $\theta_1;\theta_2;\theta_3$ shows past volatility effect from time lag-1, lag-2, and lag-3 on each E-GARCH equation, respectively.

Shocks are also proven to have an asymmetrical impact on Indonesia's stock market returns volatility. This finding is in line with the research results of Sharma, Aggarwal, and Yadav (2020), where there is an asymmetric effect on the volatility of Indonesian stock market returns during the GFC crisis. The asymmetric effect during the pandemic is stronger than before the pandemic. Higher volatility during a pandemic indicates forecasting error bias, in which investors make decisions based on current information. This is shown by the investors who reacted directly to the news of the pandemic so that transactions in the stock market were high and return volatility increased.

As indicated by significant changes in returns on the Indonesian stock market, changes in investor wealth suggest a prospect theory bias. This is reflected in the increased risk-seeking behavior (higher share buying and selling transactions) during the pandemic. Volatility during the pandemic tends to be more persistent in the Indonesian stock market. This finding is also in line with the results by Sharma, Aggarwal, and Yadav (2020), where the volatility of the Indonesian stock market was more persistent during the GFC crisis.

Foreign investors tend to respond to shocks longer during the pandemic than before. The impact of bad news on NFI volatility also lasts longer during the pandemic. The volatility of past NFIs also affects the increase in current volatility and more persistent during a pandemic. Foreign investors' responses to bad news suggest a conservatism bias. Investors tend to take longer to respond to bad news than good news. The impact of bad news was greater and longer during the pandemic.

Impact of Net Foreign Inflow Volatility on Indonesian Stock Market Return Volatility

The estimation results using the DCC-GARCH model show that shocks positively impact the spillover effect of NFI volatility to return volatility throughout the study period in the short term, but not in the long term. This finding is also consistent with Derbali and Lamouchi (2020), where the volatility of NFI has a spillover effect on return volatility in Indonesia. This shows that shocks on the previous day have an impact on strengthening the correlation and spillover effects of NFI volatility on return volatility on the current day. Figure 8 (a) shows the correlation between NFI volatility and returns volatility throughout the study period, but fluctuations are greater during the pandemic. This indicates that the correlation between volatility is stronger during the pandemic. A positive correlation also illustrates that an increase in NFI volatility causes an increase in return volatility. Figure 8 (b) shows the correlation between NFI volatility and fluctuating returns before the Covid-19 pandemic. This illustrates a positive correlation between volatility, so an increase

in NFI volatility will impact the increasing return volatility. These findings are also consistent with the results of Derbali and Lamouchi (2020), where there is a spillover effect from NFI volatility to Indonesian stock market returns before the GFC crisis. During the Covid-19 pandemic, shocks do not affect the spillover effect of NFI volatility to return volatility. This finding is also consistent with the results of Derbali and Lamouchi (2020), where the spillover effect of NFI volatility on returns is not significant during the GFC crisis. Figure 8 (c) shows the correlation between NFI volatility and returns is more stable only during the period during the pandemic.

The results of the DCC-GARCH analysis show a correlation between volatility that varies over time. If we use the entire data period, the correlation between volatility during the pandemic tends to be high and fluctuating. In contrast, if we only use data during the Covid-19 pandemic period (without past information), the correlation between volatility during the pandemic tends to be stable. This shows that the high correlation between volatility during the pandemic is caused by past information, and the correlation varies over time. The pandemic shock does not cause volatility correlations

to change over time, so the impact of these shocks on correlations is constant. This finding also aligns with Derbali and Lamouchi's (2020) research, where the relationship between NFI volatility and Indonesia's return is not affected by GFC shocks.

Managerial Implications

Portfolio management aims to maximize profit for investors while the risk of loss keeps to its minimum. Investors should know about behavior of the capital market to decide on their portfolio of wealth in the capital market. Regulators also have that information to regulate and preserve competition and healthy development in the capital market. From this study, we know that the behavior of investors in the Indonesian stock market is also indicated by the bias of forecasting errors and prospect theory. The behavior of foreign investors is also shown to have a conservatism bias. This behavior could affect changes in stock prices, especially during a crisis like the Covid-19 pandemic. Including this information in investors' portfolio analysis will contribute to better portfolio management to maximize profit and minimize the risk of loss, especially during a crisis.

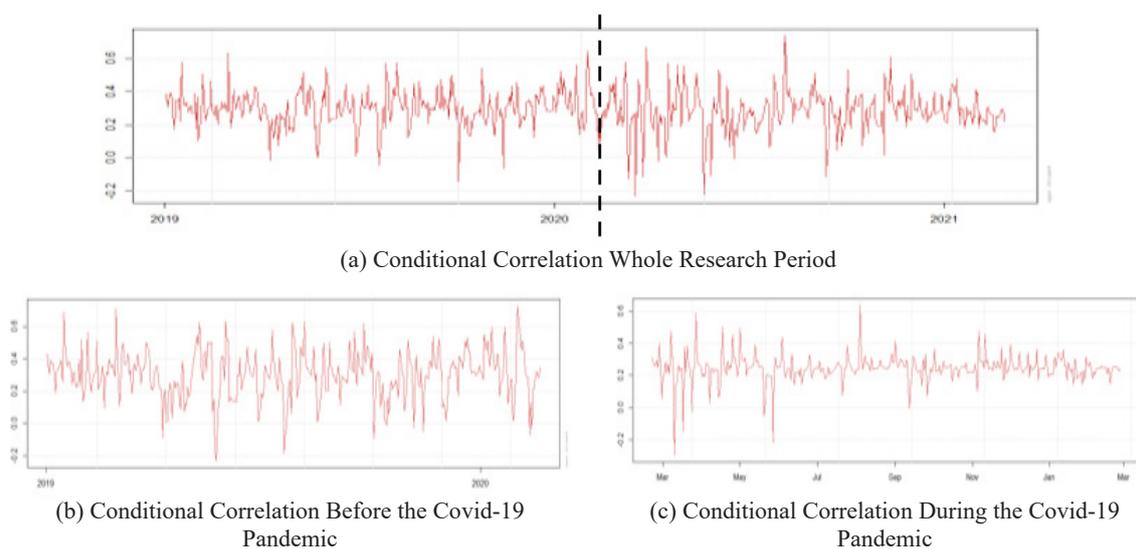


Figure 8. Time-varying conditional correlation return and NFI of the Indonesian stock market

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This paper contributes to the scant literature on domestic and foreign investor behavior in the Indonesian stock market. Fluctuations of stock market returns were higher during the Covid-19 pandemic. This can be caused by economic uncertainty, such as regional quarantines and limitations on mobility. Foreign investors have also made fewer transactions in the Indonesian stock market during the pandemic, as they prefer to hold their investments. Furthermore, the pandemic has led to increasingly volatile stock market conditions, so the risk of investing is higher. The behavior of investors in the Indonesian stock market is also indicated by the bias of forecasting errors and prospect theory. The behavior of foreign investors is also shown to have a conservatism bias. This behavior could affect changes in stock prices, especially during a crisis like the Covid-19 pandemic. Therefore, investors in the Indonesian stock market should consider foreign investors' share value in the stock they hold/buy/sell in their portfolio.

The Covid-19 pandemic also does not affect the spillover effect of NFI volatility to return volatility. The government or related institutions can strengthen the communication of economic recovery policies to the public so that good news can reduce volatility in the Indonesian stock market. More than that, the government should accelerate national economy recovery, so domestic investors feel safe to invest and hold their investment in the Indonesian stock market, thereby reducing stock market volatility.

Recommendations

Behavioral investors are volatile and tend to change over time. Therefore, this topic could be extended to the post-pandemic period, adding more variables that represent actors in the capital market and adding more capital for further research. Continuous improvement of this research will provide better knowledge and benefits to investors, regulators, analysts, and scholars.

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