COVID-19 Pandemic: Evidence from JII Stocks

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Abstract. The purpose of this study is to analyze the reaction of the Jakarta Islamic Index (JII) stocks to the announcement of COVID-19 as a national disaster in Indonesia. The sample used is 30 of JII stocks and an event study methodology applied. The results of the study found that there were in the second and the fourth day after the event date having significant on abnormal return at 1 % level. Additionally, there was the pretty strong impact of the event on Trading Volume Activity and Bid-Ask Spread of JII stocks. In addition, based on the regression test indicated that the event has a significant effect on JII stocks, so that the result remain robust. It indicated that the announcement of COVID-19 as a national disaster in Indonesia has affected market stock.

Keywords: COVID-19 Pandemic, JII Stocks, Event Study

1 Introduction

COVID-19 is an infectious disease caused by the SARS-CoV-2 coronavirus, which was recently found. This new virus was found after an outbreak in Wuhan, China, in December 2019, and the World Health Organization (WHO) designated it a pandemic on March 11, 2020 [1]. The results of research on the impact of the COVID-19 pandemic state that social distancing, self-isolation and travel restrictions have caused a reduction in the workforce in all sectors of the economy and caused many jobs to be lost. Schools are closed, and the need for manufactured commodities and products has decreased. However, the medical requirement stock increased significantly and food sector as well due to a panic buying [2].

The other research on market reactions related to COVID-19 pandemic has previously been carried out [3], [4], [5], [6], and [7] as a whole showed similar results that COVID-19 pandemic has affected stock returns negatively. Meanwhile, other studies have discovered that high and low COVID-19 mortality rates are linked to low and high liquidity in emerging markets, and that government policy restricting people's movement has contributed to increased liquidity in the capital market[8]. In economic theory, if there is risk and uncertainty, the bid-ask spread will tend to increase, but in the end it will cause a decrease in liquidity in the market [9].

 The COVID-19 pandemic has had an impact on listed companies in Indonesia's capital market, as seen by a drop in stock indices, one of which is the Jakarta Islamic Index (JII). The JII is a sharia stock index that was initially introduced to the Indonesian capital market on July 3, 2000, and is comprised of 30 sharia stocks with high liquidity and high market capitalization, hence this research was done on JII.

This study aims to investigate the reaction of the JII stocks to the announcement of COVID-19 as a disaster in Indonesia. By looking at how it affects stock returns and liquidity, while in a liquidity perspective, this study measured liquidity from the dimensions of Trading Volume Activity (TVA) and Bid-Ask Spread (BAS).

2 Literature Review

COVID-19 is a new disease with an incomplete clinical course, where W. Liu et al described that the virus that causes COVID-19 was detected early in the epidemic due to a respiratory infection in Tongji Hospital, Wuhan and the World Health Organization (WHO) declared COVID-19 a Global Pandemic on March 11, 2020 [10].

In Indonesia case, on April 13, 2020 the Indonesian President declared the Covid-19 outbreak a national disaster through the issuance of Presidential Decree No. 12 of 2020 concerning the Determination of Non-Natural Disasters for COVID-19 as a national disaster [11].

Previous research has found that the COVID-19 pandemic has had a significant impact on global health and the economy, which has triggered the upcoming economic crisis and recession [2]. The rapid spread of the COVID-19 outbreak in Indonesia has had a great impact on the Indonesian economy, where there has been a spike in the number of sufferers with a high fatality rate of accumulated data from March 2 to May 4, 2020 as many as 11,192 positive cases and 8,452 deaths, this is very worrying and causing panic among the government, society, and the business world [12].

Previous studies have also proven that the COVID-19 pandemic has affected the world's capital markets by affecting stock prices, liquidity and volatility [3], [4], [5], [6], [8], [13]. Likewise with the capital market in emerging markets such as in Indonesia. Previous studies in Indonesia on the influence of the COVID-19 pandemic on the capital market in Indonesia [7], [14], [15], [16]. In the Indonesian capital market itself, the Covid-19 pandemic has also had an impact on listed companies, which is projected through a decline in stock indexes, one of which is the Jakarta Islamic Index (JII). JII is the first sharia index in Indonesia, which consists of 30 stocks that have a large market capitalization and high liquidity.

The extensive literature on liquidity agrees that various aspects of liquidity define different dimensions, although there is no clear list of dimensions [17].This study used liquidity dimensions such as trading volume, which takes into account depth and bid-ask spread which measures tightness.

Previous research has shown that COVID-19 pandemic in Indonesia has greatly affected the stock market on the IDX [18], [19],[16], [15], [14]. However, based on the knowledge of the authors, previous studies have not yet explored other liquidity proxy such as bid-ask spread, especially in JII stocks. Therefore, this study conducted on this issue by using bid-ask spread Corwin-Schultz to measure other liquidity proxy besides TVA.

3 Methodology and Data Analysis

The study conducted an event study methodology [20]. The event of this study is the announcement of the Indonesian President declared the COVID-19 outbreak a national disaster which happened on 13 April 2021. The observation period in this study used a short-term period lasting 21 days, which are detailed in Table 1.

Table 1. Window Period

Event Date	Event Window	Prior-Event Window	Post-Event Window
13 April 2020	26 March – 28 April 2020	26 March – 9 April 2020	14 – 28 April 2020

Source: Processed Data (2020)

For data analysis, t-test and regression employed in this study. Abnormal return employed to determine whether the event has an effect on the stocks return. Abnormal return is calculated in equation 1 [20]:

$$AR_{it} = R_{it} - E(R_{it})$$ (1)

Where, AR_{iT} is Abnormal Return, R_{iT} is Actual Return and $E(R_{iT} \ X_T)$ is the normal return. Expected return is calculated in equation 2 [21]:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$ (2)

Where $E(R_{it})$, α_i, β_i, R_{mt}, ε_{it} are expected return, constant, beta coefficient market return, market return and error term respectively.

Next, TVA is an equation that shows the comparison between the number of shares traded at a certain time and the number of shares outstanding at a certain time [22]. While bid-ask spread calculated in equation 3, This study employed bid-ask spread of Corwin-Schultz following the previous study [23].

$$S = \frac{2(e^\alpha - 1)}{1 + e^\alpha}$$ (3)

Where bid-ask spread denoted S and exponential denoted e.

$$\alpha = \frac{\sqrt{2\beta} - \sqrt{\beta}}{3 - 2\sqrt{2}} - \sqrt{\frac{\gamma}{3 - 2\sqrt{2}}} \ , \qquad \beta = \sum_{j=1}^{1} [\ln(\frac{H_{t+1}^0}{L_{t+1}^0})]^2$$

which is the sum of the expected squared ratios of high and low prices for two days in a row

Gamma (γ) equals to $[\ln(\frac{H_{t,t+1}^0}{L_{t,t+1}^0})]^2$ a squared ratio of high and low prices a range of two days.

Next, the regression model employed to examine the effect of the event on return, TVA and bid-ask spread (BAS) in equation 4, 5 and 6 respectively:

$$AR_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$ (4)
$$TVA_{it} = \alpha_i + \beta_i TVA_{mt} + \varepsilon_{it}$$ (5)
$$BAS_{it} = \alpha_i + \beta_i BAS_{mt} + \varepsilon_{it}$$ (6)

Where AR_{it}, TVA_{it}, BAS_{it} α_i, β_i, R_{mt}, TVA_m BAS_{mt}, ε_{it} are abnormal return, TVA, bid-ask spread constant, beta coefficient market return, beta coefficient market TVA, beta coefficient Market bid-ask spread, and an error term respectively.

The data used is JII stocks period of December 2019 – May 2020 which has 30 stocks. All data retrieved from Indonesian Stocks Exchange (IDX).

4 Research Result and Discussion

This study investigated the effect of the Indonesian President declared the COVID-19 outbreak as a national disaster which happened on 13 April 2021.

In table 2, the results of the one sample t-test on average abnormal returns showed a significant effect on the second day and the fourth day after the announcement day which indicated an abnormal return received by investors on that day. However, the average value of a negative abnormal return in the fourth day implies that investors received a lower return than expected.

Table 2. Results of One Sample t-Test Abnormal Return, TVA and BAS of JII Stocks

Date	AAR	p value	ATVA	p value	ABAS	p value
-10	0,00533	0,626	0,00084	***0,000	0,15369	**0,043
-9	-0,00500	0,450	0,00144	***0,000	0,07453	**0,047
-8	0,00547	0,659	0,00129	***0,000	0,10131	***0,000
-7	-0,00664	0,095	0,00117	0,318	0,10769	0,326
-6	0,00521	0,495	0,00141	***0,001	0,11780	0,326
-5	-0,00732	0,498	0,00132	***0,000	0,09313	***0,000
-4	0,02065	0,152	0,00125	***0,000	0,14999	***0,004
-3	0,02285	0,097	0,00139	***0,000	0,12765	***0,008
-2	-0,00053	0,926	0,00172	***0,000	0,07653	***0,000
-1	-0,00219	0,788	0,00233	***0,000	0,10095	**0,020
			Event Date			
+1	0,00898	0,330	0,00189	***0,000	0,07780	***0,000
+2	0,00041	***0,000	0,00186	***0,000	0,08272	**0,036
+3	0,01107	0,145	0,00173	***0,000	0,08187	***0,000
+4	-0,02412	***0,001	0,00134	***0,000	0,06381	***0,000
+5	-0,00253	0,553	0,00205	***0,000	0,06269	***0,000
+6	-0,01086	0,053	0,00199	***0,000	0,06529	***0,000
+7	-0,00039	0,969	0,00204	***0,000	0,10072	***0,000
+8	-0,00252	0,683	0,00212	***0,000	0,06794	***0,000
+9	0,00170	0,725	0,00261	***0,000	0,06631	***0,000
+10	-0,00237	0,593	0,00122	***0,000	0,05652	0,081

** *Indicates statistical significance at the 0.05 level*
*** *Indicates statistical significance at the 0.01 level*

Additionally, based on the results of the one sample t-test of average TVA (ATVA) in table 2, it is found that ten days after the announcement as a whole showed significant results. Next, based on the results of the one sample t-test of the average BAS (ABAS) in table 2, significant results were obtained on the first day to the ninth day after the announcement. These results indicated that the event has an effect on TVA and BAS of JII stocks.

In sum, generally, based on the paired sample t-test for abnormal return, TVA and BAS experienced a significant effect before and after the announcement day, however it didn't display in the report.

Furthermore, the results of the simple linear regression test in table 3 also strengthen the existing results where the significance value of market return is significant at 1% level, with a negative regression coefficient, which means that the announcement of the COVID-19 pandemic as a national disaster by Indonesian President was influential negative abnormal returns of JII stocks. The results of this study are in line with previous studies [3], [4], [5], [6], [24].

In addition, the results of the regression test in table 3 also strengthen existing findings where the significance is on 5%, with a positive regression coefficient on TVA. Next, in table 3 also show a significant level at 1%, on bid-ask spread, which means that the announcement of the COVID-19 pandemic as a national disaster has a positive effect on TVA and BAS as well. This result supports the previous research [8], [13].

Table 3. Regression Results of Abnormal Return, TVA and BAS of JII Stocks

Variable	Coefficient	t-statistics	p-value
Model 4			
Constant	0,001	0,641	0,529
Market Return	-6,169	-3,012	***0,007
Model 5			
Constant	4,037	24,285	0,000
Market TVA	3,087	2,716	**0,014
Model 6			
Constant	0,040	3,564	0,002
Market BAS	1,566	4,806	***0,000

*** *Indicates statistical significance at the 0.01 level*
** *Indicates statistical significance at the 0.05 level*

In sum, these findings imply that Indonesian President declaration of COVID-19 as a national calamity contained information because the incident was accompanied by abnormal returns, causing investors to respond. Thus, these findings support the previous research. Furthermore, using the Corwin-Schultz formulation, the outcomes of this study added the liquidity dimension to the dimension of bid-ask spread.

5 Conclusion

This study found that there was a significant abnormal return on the second and the fourth after the event date. Additionally, there were significant differences in abnormal returns, TVA and bid-ask spreads of the JII before and after the announcement of COVID-19 as a national disaster by Indonesian President. In addition, the announcement of COVID-19 had a negative effect on abnormal returns, however, had a positive effect on TVA and bid-ask spread, therefore, these results supporting the previous researches.

6 Implication and Suggestion for Future Research

The implication of this study is to give companies and investors an overview of an event like a pandemic as a factor to consider when making investment decisions. Because the present

pandemic is still ongoing, this study has limitations, such as the fact that it only looks at stock market liquidity over a short period of time. As a result, it can be expanded to include more research on capital market liquidity over a longer length of time.

7 References

[1]   WHO, "Covid-19," 2019. [Online]. Available: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q- a-detail/coronavirus-disease-covid-19.

[2]   M. Nicola, Z. Alsafi, C. Sohrabi, A. Kerwan, and A. Al-jabir, "The COVID-19 resource centre is hosted on Elsevier Connect , the company â€™ s public news and information," *Int. J. Surg.*, vol. 78, no. January, pp. 185–193, 2020.

[3]   A. M. Al-awadhi, K. Alsaifi, A. Al-awadhi, and S. Alhammadi, "Death and contagious infectious diseases : Impact of the COVID-19 virus on stock market returns," *J. Behav. Exp. Financ.*, vol. 27, no. September, pp. 1–5, 2020.

[4]   P. K. Narayan, Q. Gong, and H. Joher, "Is there a pattern in how COVID-19 has affected Australia ' s stock returns ?," *Appl. Econ. Lett.*, vol. 0, no. 0, pp. 1–4, 2021.

[5]   M. Yousfi, Y. Ben, N. Ben, and H. Bouzgarrou, "Technological Forecasting & Social Change Effects of the COVID-19 pandemic on the US stock market and uncertainty : A comparative assessment between the first and second waves," *Technol. Forecast. Soc. Chang.*, vol. 167, no. February, pp. 1–12, 2021.

[6]   L. Xu, "Stock Return and the COVID-19 pandemic : Evidence from Canada and the US," *Financ. Res. Lett.*, vol. 38, no. July 2020, p. 101872, 2021.

[7]   S. Muzdalifah, Maslichah, and Afifudin, "Perbandingan Harga Saham Dan Volume Perdagangan Saham Sebelum dan Saat Covid-19," *E-JRA*, vol. 10, no. 1, pp. 22–31, 2021.

[8]   O. Haroon and S. A. R. Rizvi, "Flatten the Curve and Stock Market Liquidity – An Inquiry into Emerging Economies Flatten the Curve and Stock Market Liquidity – An Inquiry," *Emerg. Mark. Financ. Trade*, vol. 56, no. 10, pp. 2151–2161, 2020.

[9]   L. R. Glosten and P. R. Milgrom, "Bid, Ask and Transaction Prices In A Specialist Market With Heterogeneously Informed Traders," *J. financ. econ.*, vol. 14, pp. 71–100, 1985.

[10]   D. Cucinotta and M. Vanelli, "WHO Declares COVID-19 a Pandemic," *Acta Biomed*, vol. 91, no. 6, pp. 157–160, 2020.

[11]   BPK, "Keppres No 12 covid sbg bencana nasional 2020.pdf." 2020.

[12]   K. Perencanaan, P. Nasional, and B. R. Indonesia, "Dampak Covid-19 terhadap Pergerakan Nilai Tukar Rupiah dan Indeks Harga Saham Gabungan (IHSG) Dampak Covid-19 terhadap Pergerakan Nilai Tukar Rupiah dan Indeks Harga Saham Gabungan (IHSG)," *Indones. J. Dev. Plan.*, vol. IV, no. 2, pp. 151–165, 2020.

[13]   A. S. Baig, H. Anjum, O. Haroon, S. Aun, and R. Rizvi, "Deaths , panic , lockdowns and US equity markets : The case of COVID-19 pandemic," *Financ. Res. Lett.*, vol. 38, no. January, pp. 1–9, 2021.

[14]   N. Alfira, "Al-Kharaj : Jurnal Ekonomi , Keuangan & Bisnis Syariah Pengaruh Covid-19 terhadap Indeks Harga Saham Gabungan (IHSG) dan Nilai Tukar Rupiah Al-Kharaj : Jurnal Ekonomi , Keuangan & Bisnis Syariah," *Al Kharaj J. Ekon. Keuang. Bisnis Syariah*, vol. 3, no. 2, pp. 313–323, 2021.

[15]   N. N. Halisa, U. L. Mangkurat, and S. Annisa, "Pengaruh Covid-19 , Nilai Tukar Rupiah dan Indeks Harga Saham Gabungan Asing Terhadap Indeks Harga Saham Gabungan

Indonesia (IHSG) The Effect of Covid-19 , Rupiah Exchange Rate and Foreign Composite Stock Price Index on The Indonesian Composite Stock Price Index (IHSG),” vol. 11, no. 3, pp. 170–178, 2020.

[16]   H. M. Lathifah, D. S. Febrianti, A. P. Utami, and A. A. Ulhaq, “Dampak Pandemi Covid-19 Terhadap Harga Saham Syariah di Indonesia,” *J. Ilm. Ekon. Islam*, vol. 7, no. 1, pp. 223–229, 2021.

[17]   A. Díaz and A. Escribano, “Measuring the multi-faceted dimension of liquidity in financial markets : A literature review,” *Res. Int. Bus. Financ.*, vol. 51, no. December 2018, p. 101079, 2020.

[18]   M. H. Rifai, Junaidi, and A. F. Sari, “Pengaruh Peristiwa Pandemi Covid-19 Terhadap Indeks Harga Saham Gabungan,” *E-JRA*, vol. 9, no. 6, pp. 41–53, 2020.

[19]   Siswantoro, “Efek diumumkannya kasus pertama Covid-19 terhadap harga saham dan total saham yang diperdagangkan (The effect of the first Covid-19 case announcement on stock prices and stock trading totals),” *J. Akuntansi, Keuangan, dan Manaj.*, vol. 1, no. 3, pp. 227–238, 2020.

[20]   A. C. MacKinlay, “Event Studies in Economics Finance and Finance,” *Am. Econ. Assoc.*, vol. 35, no. 1, pp. 13–39, 2014.

[21]   H. Jogiyanto, *Teori portofolio dan analisis investasi*, 10th ed. Yogyakarta: BPFE, 2015.

[22]   D. Morse, “Price and Trading Volume Reaction Surrounding Earnings Announcements : A Closer Examination,” *J. Account. Res.*, vol. 19, no. 2, pp. 374–383, 2015.

[23]   E. Listyaningsih, E. Sariningsih, and R. Mudrikah, “Stock Market Reaction to Indonesia Presidential and Legislative Election,” *Binus Bus. Rev.*, vol. 11, no. July, pp. 91–96, 2020.

[24]   D. Le, T. Anh, and C. Gan, “The impact of the COVID-19 lockdown on stock market performance : evidence from Vietnam,” *J. Econ. Stud.*, 2020.