INTRODUCTION

Coronavirus Pandemic (COVID-19) was recorded as the deadliest pandemic in history. According many resources, this deadly virus was discovered in Wuhan China on December 1st, 2019. COVID-19 was not only disrupting human health, but it was also disrupting the global economy. The economic downturn caused by the COVID-19 pandemic had driven most countries around the world into experiencing a global economic crisis. (Jones et al., 2021)

Indonesia was one of the most severely affected countries by the pandemic. The first case of Indonesian citizens who were infected with the COVID-19 happened in early March. The case was announced by President Joko Widodo on March 2nd, 2020 in Jakarta. In line with this announcement, Indonesia Composite Index (ICI) closed lower on Monday afternoon, March 2nd, 2020. ICI closed down for 91.46 points or 1.68 percent to 5,361.25 (Tempo, 2020). The weakening might happen because of the excessive panic selling in the capital market. CNBC Indonesia (2020) has reported that the excessive selling of shares has triggered a decline in stock prices which resulted in a weakening of the ICI Index (CNBC Indonesia, 2020).
Based on Figure 1, The stock market condition in Indonesia was quite stable prior COVID-19. Figure 1.2 shows that JCI tended to be stable prior 2020 (May 2019-December 2019). The correction of ICI started in January 2020 and reach the bottom around March 2020. At the same time, the COVID-19 outbreak began to appear in Wuhan, China. Shortly, it spread to other countries including Indonesia. The most substantial decline in the value of JCI occurred in February and March 2020. Coincidentally, the number of positive cases of the COVID-19 started to increase across the countries.

The fluctuation in stock prices also impacted the stocks listed in the LQ-45 stock index. The LQ-45 index which consist of the most liquid firms with the highest market capitalization is the index of the most frequently traded stock in the Indonesian Capital Market (ICM). Prior the COVID-19 appeared in Indonesia, the LQ-45 index was able to grow by 3.23% at the end of 2019. After the pandemic hit Indonesia in February 2020, the LQ-45 index decreased by 15%.

Stock market reactions such as panic selling were triggered by several events that investors believe would affect the performance of a company, in other words, investors tried to minimize losses by selling their stocks (Ganti, 2019). When information about the cataclysmic event is available, an investor often leaves the market and invest in a safer instrument, then, panic selling occurred (Chen & Siems, 2004).

Many events have an impact on the market's stock price. These occurrences have a variety of characteristics. It can be an event related to macroeconomics or other events that can influence the stability of a country such as terrorism, civil war, natural disasters, and pandemic (Machmuddah et al., 2020).

There is a methodology used by researchers to examine the financial conditions of the capital market in the context of events that impact the capital market, namely event studies. According to MacKinlay (1997), An event study is a research methodology for determining the influence of an event on a company's value. The company's value used in this study is based on financial data that is usually reflected in trading volume and prices of the shares.

The majority of event studies used events that are directly related to economic activities, but a few studies also used non-economic events. Non-economic events cannot be separated from stock market activity, this is because non-economic factors can indirectly affect the performance of the capital market and they are difficult to be predicted. A pandemic is one of the non-economic events that affected capital market conditions.

Various researchers have completed an event study examining the reaction of the market to COVID-19. Nafik et al., (2021) found that the abnormal return and TVA were not differentiated prior and after the COVID-19 announcement. He et al., (2020) said that the pandemic has badly affected the environment, electricity & heating transport, and mining industries. However, education, healthcare, Information and Technology, and manufacturing industries have proven to be resilient to the outbreak.

The above findings show the inconsistent result regarding the impact of the COVID-19 on the stock market reactions. Therefore, a new approach is required to clarify the phenomenon and its repercussions. Accordingly, the researcher is motivated to conduct this research to examine the reaction of the Indonesian Stock Exchange (ISE) to the COVID-19. In the next section, literature review, research methodology, research results will be discussed.

**LITERATURE REVIEW**

**Abnormal Return**

Abnormal returns are returns that do not match the expectations of the investors. According to McWilliams & Siegel (1997), an abnormal return indicates the return that the analyst has made after the "regular" return process has been adjusted. In addition, the difference between the actual return and expected return rates is represented by abnormal returns (Brealey et al., 2019).

An abnormal return is useful to observe how far a certain event affects the stock price. McWilliams & Siegel (1997) stated that the importance of the abnormal return enables the researcher to assume that the event had a major influence to the value of company. An abnormal return might have a positive value or negative value. If there is no certain event that affects the market, the realized return tends not to be different from the expected return. On the other hand, if there is an event that might cause a change in the cash flow of the market, the market will react to the relevant information available or the announcement of the event. This reaction will create a difference in actual return compared with the expected return (Kusdarmawan & Abundanti, 2018).

In an event study, abnormal return is commonly used to analyze whether there is relevant information about an event that occurred in the market. In addition, abnormal return is also used to test market efficiency. More comprehensive testing for semi-strong form efficiency is based on event studies examining abnormal returns from stocks that with the same sort of news report (Brealey et al., 2019).

**Trading Volume**

Trading volume is a stock liquidity indicator for capital market information. The volume of trade defines
as a volume of stocks traded during the hours of the trading day (Twin, 2021). Trading volume is considered as a function of supply and demand and can be used as a sign of changes in market strengths and weaknesses. The more often a stock is traded, the greater the trading volume of the stocks.

Theoretical Background

The efficiency market hypothesis (EMH) popularized by Fama in 1970 has become the subject of discussion concerning the efficiency of the capital markets. EMH proposed that a securities market is considered efficient if the security price is completely reflects the relevant information that available in the market. Hence, the efficient market is defined as a market that reflects all relevant information on the prices of securities. Fama (1970) argued that a capital market will be efficient unless someone, including the insiders and the intelligent investors, might get a return higher than the average market return (abnormal return), despite taking into consideration the risk and strategy used to get the profit.

Normally, the market will be responsive if there is information about a certain event or an announcement that contains important information. This information is considered as a particular signal that can affect the company's value. This reaction also occurs when a company issues a new policy or publishes an announcement that can trigger sentiment for investors.

EMH will be used as the basis for this study to test whether COVID-19 information could influence the market reaction. If the COVID-19 contained relevant information to the market, the market will react to the event. The reaction could be seen by the availability of abnormal returns in the market. An efficient capital market won't let any parties get an abnormal return in a long period. On the contrary, an inefficient market enables investors to acquire abnormal returns as the result of new information.

In line with the EMH, if the investors react to the COVID-19 information and reach a price equilibrium fast, hence the Indonesia Capital Market will be considered efficient in semi-strong form. On the contrary, if the investors take a long time to process the information, the Indonesian Capital Market will be considered inefficient in a semi-strong form.

PREVIOUS RESEARCH

Research Framework

Based on the explanation and the results of previous studies, as well as the research objectives mentioned in this study, a research framework is built as shown in figure below:

![Research Framework Image]

**Figure 2: Research Framework**

**Hypotheses**

**The Relations between Abnormal Return (Ar) and Covid-19 Event**

Several studies have shown that the COVID-19 event affected. Dilla et al., (2020) who conducted a research related to the impact of COVID-19 Outbreak to the Indonesia Capital Market found that there was abnormal return in the Transportation sector, Chemical sector, Utilities, Agricultural sector, Mining sector, Transportation sector, and Infrastructure, and Basic Industry. Handayani (2020) also discovered an abnormal return during the beginning of the COVID-19, and it could not be forecasted until when would the negative abnormal movements occurred. Adapting from these studies, the following hypotheses can be proposed:

**Hypothesis 1:** There was a significant abnormal return of the company listed in the LQ-45 index on the first day of the COVID-19 announcement in Indonesia.
Hypothesis 2: There was a significant difference in abnormal return prior and after the COVID-19 announcement within the LQ-45 index listed on the ISE.

The Relationship between Covid-19 Event and Trading Volume Activity (TVA)

The TVA movement might also be interpreted as a market response to information. Investors always assess the risks and returns prior choosing the investment. Any circulating information causes a reaction on the market. The number of stock trading activities can show this reaction on the market.

There were research shreds of evidence that described the relationship between the COVID-19 event and trading volume activity. Machmuddah et al., (2020) discovered that trading volume was significantly difference after and prior the COVID-19 event when researching the market reaction to the COVID-19 in the consumer products sector the ISE. Based on these studies, the following hypotheses can be proposed:

Hypothesis 3: There was a significant difference in trading volume activity prior and after the COVID-19 announcement within the LQ-45 index listed on the ISE.

**RESEARCH METHOD**

**Population and Sample**

In this study, the 45 companies registered in the LQ-45 index were chosen as population. To avoid the confounding effect, purposive sampling will be applied to select the relevant companies. So, only the company that did not take any corporate action during the event period will be selected as the sample. The number of samples that meet the above criteria are 38 companies listed on the LQ-45 index in ISE during the study.

**Data Resources and Data Collection Techniques**

The data used in this study are secondary. The samples in this research are companies registered in the LQ-45 index between August 2019 and April 2020. The daily stock trading data from the company listed on the LQ-45 index from August 25th, 2019 to April 1st, 2020 were used for this study. The sample period taken for this study is 220 trading days. To maximize forecast accuracy as much as possible, the estimation period was set at 160 trading days prior to the event date. The event period is 30 days prior and 30 days after the event. It is better not to have a longer event period to decrease the influence of other effects. The length of the event period can be seen in Figure 3.

**Figure 3: Event Timeline**

The documentation method will be applied as the data collection technique in this research. Data collection began with the previous research stage, namely; (1) conducting a literature study by reading books, newspapers, and related previous articles published in reputable journals; (2) collecting the stock prices and trading volume data of the sampling company from the IDX daily statistics, and yahoo finance.

**Variable Operationalization**

The following section will explain the variables operationalization that will be used in this research:

**Abnormal Return (AR)**

The disparity between the actual return and the level of expected return is referred to as abnormal return. If the expected return is more than the actual return, the abnormal return is negative; otherwise, the abnormal return is positive if the expected return is less than the actual return. Here are some steps to calculate abnormal return:
Calculating the abnormal return with the following equation (Brown & Warner, 1985):

\[
AR_{it} = R_{it} - E[R_{it}]
\]

- \(AR_{it}\): Abnormal return stock \(i\) at period \(t\)
- \(R_{it}\): Actual return of stock \(i\) on day \(t\)
- \(E[R_{it}]\): Expected return of stock \(i\) on day \(t\)

Calculating the expected return with using market model as the following formula:

\[R_i = \alpha_i + \beta_i \times R_{m,t}\]

Where:
- \(R_{i,t}\) = Return of the \(i\)-th security
- \(\alpha_i\) = A random variable representing the components of return the \(i\)-th security that is independent of market performance -\(i\)
- \(\beta_i\) = Slope coefficient
- \(R_{m,t}\) = Market Return

Market return (RM) can be calculated using the following formula:

\[RM = \frac{\text{Index LQ-45} - \text{Indeks IQLQ 45:1}}{\text{Indeks IQLQ 45:1}}\]

Calculating actual return with the following formula:

\[R_{it} = \frac{P_t - P_{t-1}}{P_{t-1}}\]

- \(R_{it}\): Actual return of stock \(i\) on day \(t\)
- \(P_t\): Price of stock \(i\) on day \(t\)
- \(P_{t-1}\): Price of stock \(i\) on day \(t-1\)

Calculating Average Abnormal Return (AAR) by using the following formula:

\[\text{AAR}_t = \frac{\sum_{t=1}^{n} AR_{it}}{n}\]

- \(\text{AAR}_t\): AAR at day \(t\)
- \(AR_{it}\): ARR security \(i\) at day \(t\)
- \(n\): Number of securities

**Trading Volume**

According to Adam hayes (2021) trading volume is the total of security traded during some period, usually on the daily basis.

Steps in calculating the Trading Volume Activity can be seen as follows:

Calculate the TVA TVA can be done by using the following formula:

\[\text{TVA} = \frac{\sum \text{The number of stocks i traded on day } t}{\sum \text{The number of stocks circulated}}\]

Where:
- \(\text{TVA}\) = TVA security, at \(t\)
Calculate the Average Trading Volume Activity (ATVA). It can be calculated by using the following formula:

$$\text{ATVA} = \frac{\sum_{t=1}^{n} TVA_{it}}{n}$$

$TVA_{it}$: TVA$_{i}$ at day$_{t}$

$n$: Number of securities

### Analysis Method and Hypotheses Testing Design

The analysis method of this study is conducted adopting the event study method. The steps to analyze the data are as follows:

- Determining the research sample.
- Determining the research time. Observation of events uses period Research of 195 trading days, which consist of 220 days of estimation period and 61 of event period.
- Recording daily stock prices during observation time.
- Recording daily stock prices and trading volume during the time of the observation.
- Computing the actual return during the observation time.
- Computing the expected return.
- Computing abnormal returns.
- Computing the ARR.
- Computing the TVA.
- Computing the ATVA.
- Conducting a Normality test using Kolmogorov-Smirnov test.
- Use one-sample t-tests and paired sample t-tests to test hypotheses if the data normally distributed.
- Use the Wilcoxon signed ranks test if the data is not normally distributed.

### Research Result and Discussion

In this part, data processing was conducted using the MS Excel 2019 program and the data normality test and hypothesis testing in this study using the SPSS for Windows version 26.0 program.

### Descriptive Statistic

In this study, the calculation analysis was carried out using Microsoft Excel 2019 and the IBM SPSS Statistics 26 program.

### Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AARPRIOR</td>
<td>38</td>
<td>-0.0212</td>
<td>0.004519</td>
<td>-0.004153</td>
<td>0.004932</td>
</tr>
<tr>
<td>AARAFTER</td>
<td>38</td>
<td>-0.0230</td>
<td>0.008945</td>
<td>-0.000861</td>
<td>0.007487</td>
</tr>
<tr>
<td>AARAROUND</td>
<td>38</td>
<td>-0.0195</td>
<td>0.003618</td>
<td>-0.002407</td>
<td>0.005054</td>
</tr>
<tr>
<td>TVAPRIOR</td>
<td>38</td>
<td>0.0000</td>
<td>0.022495</td>
<td>0.001739</td>
<td>0.003553</td>
</tr>
<tr>
<td>TVAAFTER</td>
<td>38</td>
<td>0.0000</td>
<td>0.037853</td>
<td>0.003300</td>
<td>0.006110</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Data processed (2021)

Description:

AAR: Average Abnormal Return

TVA: Trading Volume Activity

Based on descriptive statistical testing using SPSS ver.26, the data showed that the ARR prior COVID-19 is -0.004153, indicating that the expected average return prior to the announcement is lower than the actual return, resulting in a negative abnormal return. The descriptive statistical testing for post-announcement data showed that the ARR following the COVID-19 event is -0.000861, indicating that the expected average return following the announcement is lower than the actual return, resulting in a negative abnormal return.

The statistical testing for the data around the event date showed that the ARR around the COVID-19 announcement is -0.00241, indicating that the expected average return around the announcement is lower than the actual return, resulting in a negative abnormal return. While descriptive statistical tests for the ATV activity prior the announcement of COVID-19 is 0.00174, this value is smaller than the ATV activity after the announcement event, which is 0.00330.
These data illustrates that that there was an increase in the amount of stock trading in Indonesia prior to and after the COVID-19.

**Hypothesis Testing**

1st Hypothesis Testing

From the normality test, the result shows that the Asymp Sig (2-tailed) varies by the company around the announcement of the COVID-19 event. Some data shows Asymp. Sig value (2-tailed) more than 0.05, while some other data shows Asymp. Sig value (2-tailed) less than 0.05. So, based on normality testing results, the 1st hypothesis needs to be carried out using two kinds of hypothesis testing. The one-sample t-test will be used for hypothesis testing on normally distributed data. Hypothesis testing will be performed using the one-sample Wilcoxon sign rank test for data that are not normally distributed.

The result showed that there were significant abnormal returns on some observation period and there were no significant abnormal returns in some other observation period. It is possible to conclude that the first hypothesis, which discovered significant abnormal returns around the event time, is acceptable, implying that there were reactions in the LQ-45 index related to the occurrence of COVID-19 around the event date.

2nd Hypothesis Testing

2nd hypothesis stated that there was a significant difference in abnormal return after and before COVID-19 event within LQ-45 index listed on ISE.

![Table 2: Normality Testing of ARR Prior and After the Event](source)

<table>
<thead>
<tr>
<th>One-Sample Kolmogorov-Smirnov Test</th>
<th>AAR before</th>
<th>AAR after</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Normal Parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>-0.00415314</td>
<td>-0.00086118</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.004931772</td>
<td>0.007467275</td>
</tr>
<tr>
<td>Most Extreme Differences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td>0.138</td>
<td>0.105</td>
</tr>
<tr>
<td>Positive</td>
<td>0.072</td>
<td>0.097</td>
</tr>
<tr>
<td>Negative</td>
<td>-0.136</td>
<td>-0.105</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>0.067</td>
<td>0.200</td>
</tr>
</tbody>
</table>

*Source: Data Processed (2021)*

The results of hypothesis testing using a paired-sample t-test are shown in Table 5. According to the table above, the value of Sig (2-tailed) is 0.013, which is smaller than the probability with α value of 0.05. As a result, it is possible to conclude that H02 is rejected and Ha2 is accepted, implying that there was a significant difference in abnormal returns prior and after the introduction of COVID-19 in Indonesia.

3rd Hypothesis Testing

3rd hypothesis stated that there was a significant difference after and prior the announcement of the COVID-19 event in trading volume activity within the LQ-45 index.

![Table 4: Normality Testing of ATVA Prior and After the Event](source)

<table>
<thead>
<tr>
<th>TVAPRIOR</th>
<th>TVAAFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>38</td>
</tr>
<tr>
<td>Normal Parameters</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.00173936</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.003552782</td>
</tr>
<tr>
<td>Most Extreme Differences</td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td>0.336</td>
</tr>
<tr>
<td>Positive</td>
<td>0.336</td>
</tr>
</tbody>
</table>

*Source: Data Processed (2021)*
As the result of normality test, data on the average volume of trading activity were not normally distributed prior and after the first COVID-19 announcement. Because of that, this hypothesis needs to be carried out using Wilcoxon-Sign Ranks Test which is which is an alternative to the Paired Sample T-test, is used to determine whether data is normally distributed between two dependents or pair samples. The result of 3rd hypothesis testing can be seen as follows:

Table 5: The Result of 3rd Hypotheses Testing Wilcoxon Signed Ranks Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Negative</th>
<th>0.313</th>
<th>-0.297</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>0.336</td>
<td>0.309</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Data Processed (2021)

The results of hypothesis testing using the Wilcoxon Signed Ranks Test are shown in Table 7. According to the table above, the value of Sig (2-tailed) is 0.000, which is less than the probability with α value of 0.05. As a result, it may be determined that H03 is rejected and Hα3 is approved, implying that there was a significant variation in average trading volume activity in Indonesia after and prior the release of COVID-19.

**CONCLUSION**

This research is targeted at analyzing abnormal return and trade volumes in companies listed on the LQ-45 index in Indonesia prior, during, and after the announcement of the COVID-19. Based on the discussions in the previous chapters. It is concluded that there was a significant abnormal returns throughout the event time on the LQ-45 index during the announcement of the COVID-19. This research also found that there was a significant difference of abnormal return prior and after the announcement of the COVID-19. Moreover, this research shows that there was a significant difference of trading volume activity prior and after the announcement of the COVID-19. In other words, the market reacted to the announcement of the COVID-19 in Indonesia.

This finding confirmed the result of the previous research by Trisnowati (2021) that the COVID-19 announcement affected the reaction of the market in Indonesia. This research can give an insight to the investors in Indonesia that the non-economic event affect the market, so that the investors should react accordingly either to economic as well as to non-economic events that might happen in the future. If the investors make the right decision related to the particular event, they will increase their asset.

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