Impact of Confirmed, Death, and Recovered Cases of COVID-19 Toward Stock Exchange Composite Index

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ABSTRACT

The objective of this paper is to examine how COVID-19 cases affect the Stock Exchange Composite Index in Indonesia from April 1, 2020 to June 30, 2020. Daily data on the confirmed death and recovered cases of COVID-19 were obtained from the Indonesian government's website about COVID-19. Stock Exchange Composite Index data were obtained from the Indonesia Stock Exchange website. Ninety-one observations were analyzed using multiple linear regressions. The results showed that: (1) the number of confirmed COVID-19 cases does not significantly influence the Stock Exchange Composite Index; (2) the number of COVID-19-related death cases does not significantly influence the Stock Exchange Composite Index; and (3) the number of recovered COVID-19 cases significantly influences the Stock Exchange Composite Index.

Keywords: COVID-19 cases, Stock Exchange Composite Index

1.   INTRODUCTION

In the beginning of 2020, many countries in the world were affected by an infectious disease caused by the new type of coronavirus, SARS-CoV-2, known as coronavirus disease 2019 (COVID-19). This virus has spread rapidly between countries and regions. On March 11, 2020, the WHO declared COVID-19 as a pandemic. No country has gotten away from the boundless interruption caused by the COVID-19 pandemic. In the ASEAN, the pandemic has brought immediate disruptions in economic activities across the region. Tourist flows declined, and many countries enforced lockdowns, temporary school and business closures, and travel restrictions. This unpredictability brought capital outflow and the depreciation of exchange rates across the region. This pandemic has negative impact to financial system and economic activity (ASEAN Policy Brief, 2020). Businesses faced revenue losses and disrupted supply chain. Impulse response analysis revealed that a market shock will spread to other capital markets rapidly, which will make the financial market in the region unstable (Chantathaweewat, 2014). A vaccine is not yet available; hence, this uncertainty will take time.

COVID-19 is considered stronger compared with the severe acute respiratory syndrome (SARS) pandemic in 2003. An excess of 60 nations have been affected toward the start of March 2020 (Albulescu, 2020). COVID-19 has caused great fears from regulators and businesses and weakened global financial and economic systems (Phan and Narayan, 2020).

Indonesia announced the first two confirmed COVID-19 cases on March 2, 2020. The important dates related to COVID-19 spread in Indonesia are shown in Fig. 1.

Figure 1: Important Dates Related to COVID-19 in Indonesia
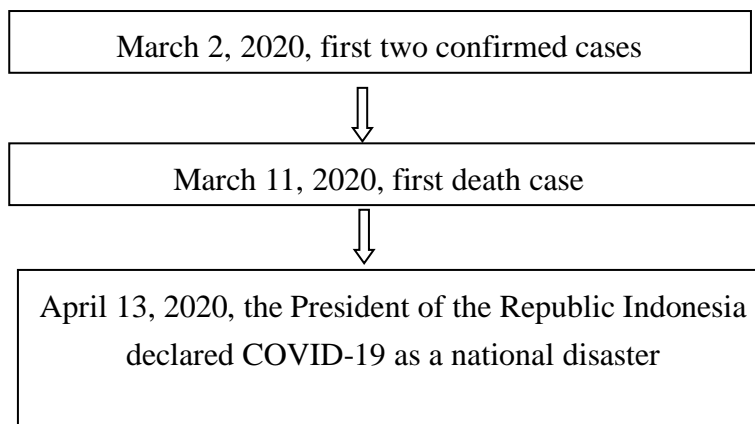
The rapid spread of the COVID-19 outbreak in Indonesia has had a major impact on the national economy. The Jakarta Composite Index (JCI) decreased by 1.67% when the government announced the first case of COVID-19. Over time, the number of COVID-19 cases in Indonesia has increased, and its influence on the capital market is getting bigger. The JCI closed down by 6.5% in trading on March 9, 2020.

The top three ASEAN countries with the highest number of confirmed and death cases of COVID-19 are as follows:

Table 1: COVID-19 cases in three ASEAN countries

	Total cases	New cases	Total deaths	New deaths	Total recovered cases	Active cases
Indonesia	84882	+1752	4016	+59	43268	37598
Philippines	65304	+2357	1773	+113	22067	41464
Singapore	47655	+202	27	0	43577	4051

Source: WHO, as of 7:00 p.m. of July 18, 2020

The stock market is influenced by major events, such as political events, social events, natural disasters, terrorism, and pandemic event. Yilmazkuday (2020) explored the effects of COVID-19 cases on the US Standard & Poor (S&P)'s 500 Index by using COVID-19 daily cases from January 21, 2020 to August 6, 2020. Their results showed that a 1% increase in cumulative daily COVID-19 cases reduced the S&P 500 Index by 0.01% after 1 day and by 0.03% after a month. Chowdhury and Abedin (2020) investigated the impact of COVID-19 on the US stock market using GARCH (1,1), VAR, and Event Study methods. Their result showed the US stock market had negative response toward the confirmed and death cases of COVID-19, and stock market volatility was substantially affected by the death cases. The research results from Alber (2020) on the worst six countries based on the number of cumulative cases showed that stock market return reacts stronger to confirmed COVID-19 cases compared with death cases

and coronavirus cumulative indicators compared with new ones. Robustness check proved that COVID-19 spread has negative effect on stock market return in China, France, Germany, and Spain but has no confirmed effect on the stock market in Italy and the United States. Coronavirus indicators have been quantified by daily cumulative cases, new cases, cumulative deaths, and new deaths from March 1, 2020 to April 10, 2020. The pandemic is spreading rapidly and causing panic around the world; thus, this study aimed to evaluate the effect of COVID-19 as measured by daily data on new cases, deaths, and recoveries on the Stock Exchange Composite Index.

2.   LITERATURE REVIEW

Certain cases may incite a good or a bad feeling to investor and affect investment decisions and stock market prices (Donadelli et al., 2017). Investors, with their human nature, are willing to take on a little more risk to handle and be comfortable with going up markets compared with going down market. Epstein (1994) as cited by Chiang Soon (2010) stated that humans tend to act irrational when facing an exceptional feeling, which can be affected by the news and market environmental factors. Investors tend to rely on information gathered by other investors when evaluating investment alternatives (Atif Sattar et al., 2020). This behavior is called herding behavior. Herding behavior can lead to misestimate of stock prices because investors' rational decisions are affected by the expression of subjective expectations regarding future risk and profitability. The presence of herding behavior offers precious information in assessing the financial models used to construct the development of stock prices (Filip et al., 2015).

Khan et al. (2020) investigated the stock markets of 16 countries using the number of new COVID-19 cases and weekly stock return and analyzed the data using pooled Ordinary Least Squares. The results showed that an increasing number of new COVID-19 cases negatively foresees stock market return, whereas the leading stock indices did not respond to the news of COVID-19 cases at the beginning of the pandemic. However, the stock market responded negatively to the news that COVID-19 can be rapidly spread by human-to-human transmission.

According to the study of Baker et al. (2020), previous infectious disease outbreaks, including the Spanish flu did not affect the stock market as strongly as COVID-19. Stock market return is more sensitive to coronavirus cases compared to deaths. Coronavirus cumulative indicator is more sensitive to stock market return than new ones. The spread of Coronavirus cause a negative impact on market return in Germany, China, Spain and France.(Alber, 2020). Stock prices show the capability of future profit. Investors are aware that the pandemic is slowing economic activity and are worried about future income. Phan and Narayan (2020) found that 96% of markets from their research responded negatively when the WHO announced COVID-19 as a pandemic. Sixteen of 25 markets responded negatively when their respective number of COVID-19 cases was one to hundreds, but 12 of 22 markets had negative responses when the COVID-19 cases reached 10,000 cases. Only 10 of 24 markets reacted negatively when the number of COVID-19-related deaths reached a hundred cases.

Al-Awadhi et al. (2020) examined the effect of COVID-19 on the Chinese stock market from January 16 to March 16, 2020. Two measurements were used to investigate

the effect of this pandemic on stock returns: (1) daily increase in total confirmed cases and (2) daily increase in total deaths caused by COVID-19. The research results indicate that in the Hang Seng Index and Shanghai Stock Exchange, the daily increase in total confirmed COVID-19 cases has substantial negative effects on stock returns across all companies and the daily increase in total death cases has remarkable negative effects on stock returns. According to Haryanto (2020), a 1% increase in daily COVID-19 case will affect the Stock Exchange Composite Index by 0.03%. Ashraf (2020) examined the stock markets' reaction to COVID-19 in 64 countries using daily COVID-19 confirmed cases, death cases, and stock market return data from January 22, 2020 to April 17, 2020. The daily change in major stock market index of a country is the measurement of stock market return. The results showed that the increase in confirmed COVID-19 cases has a negative and strong effect to the stock market; however, the stock market is not statistically affected by the growth in deaths. Additionally, the results showed that stock markets react powerfully between 40 and 60 days after the initial confirmed cases. Albulescu (2020) studied the impact of legitimate declarations on new infection cases and death ratio on the financial market volatility index (VIX) in China and outside China from January 20, 2020 until February 28, 2020. Simple regression was used to analyze the effect of COVID-19 on financial volatility. The results showed that (i) new cases outside China positively affect VIX; (ii) the death ratio in all tested models has a remarkable and positive impact on VIX, and the effect is stronger for the death ratio outside China; and (iii) the spread of COVID-19 builds financial volatility.

Based on the literature review, the conceptual framework is as follows:

Figure 4: Research Framework
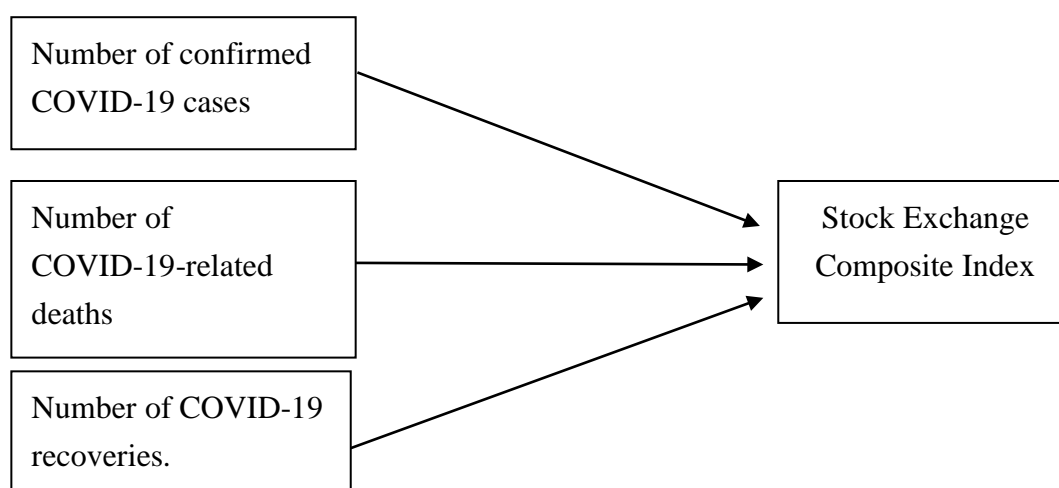
The research hypotheses are as follows:
1. H1: The number of confirmed COVID-19 cases has negative and significant influence to the Stock Exchange Composite Index.
2. H2: The number of COVID-19-related deaths has negative and significant influence to the Stock Exchange Composite Index.
3. H3: The number of recovered COVID-19 cases has positive and significant influence to the Stock Exchange Composite Index.

3. RESEARCH METHODOLOGY

This study examined the impact of COVID-19 pandemic to Stock Exchange Composite Index. Daily data on COVID-19 from April 1, 2020 to June 30, 2020 were obtained from the government's website. A confirmed case of COVID-19 is a person with laboratory-confirmed COVID-19 infection irrespective of clinical signs and symptoms (Culp, 2020). A death case is defined for surveillance purposes as a death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case, unless a clear alternative cause of death not related to COVID-19 (e.g., trauma) is present. No period of complete recovery must be present between the illness and death cases (WHO, 2020). A confirmed COVID-19 case without symptoms or with mild, moderate, or severe/critical symptoms is declared cured if the person completed isolation and was given a statement letter, which indicates the completion of monitoring based on the assessment from the doctor at the health facility where the monitoring was carried out. (Kemenkes, 2020)

The regression equation was:

$$JCI_t = \beta 0 + \beta 1 CC_t + \beta 2 DC_t + \beta 3 RC_t + \varepsilon_t,$$

where JCI is Stock Exchange Composite Index at day t, CC_t is total confirmed cases at day t, DC_t is the total death cases at day t, and RC_t is total recovered cases at day t.

The increase in the daily number of people with COVID-19 is as follows:

Figure 1: Confirmed COVID-19 cases (April 1, 2020 to June 30, 2020)
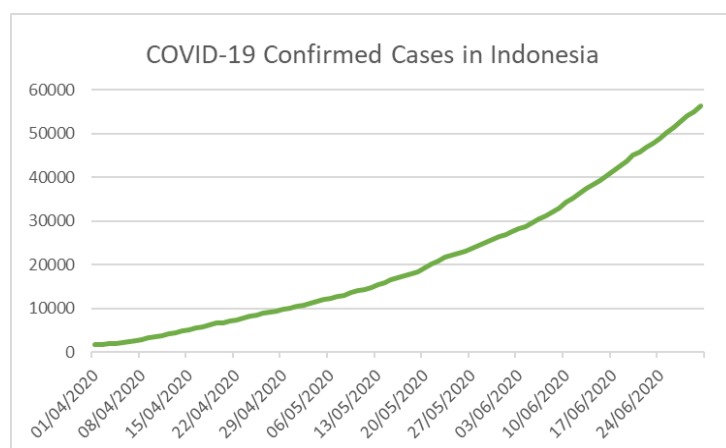
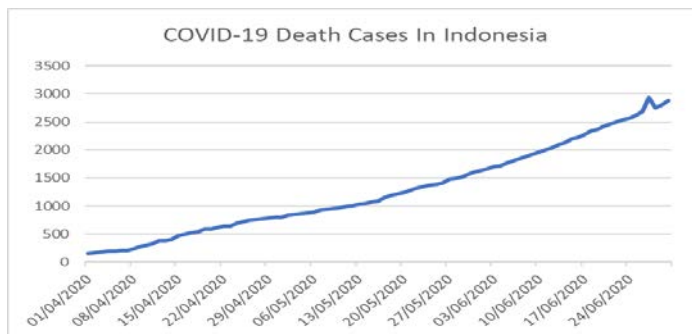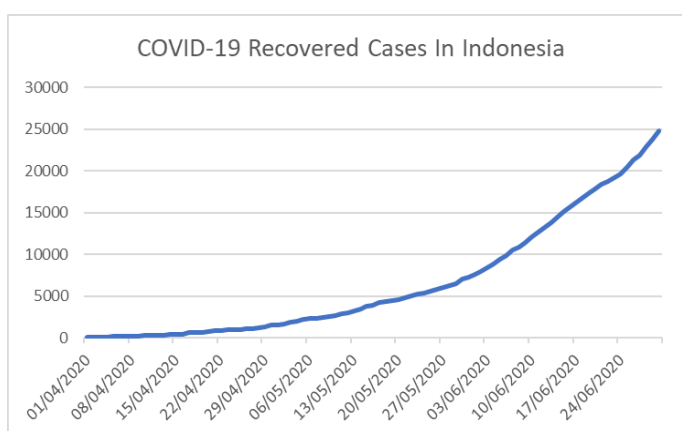Figure 2: COVID-19 death cases (April 1, 2020 to June 30, 2020)

Figure 3: COVID-19 recovered cases (April 1, 2020 to June 30, 2020)

Daily data on the Stock Exchange Composite Index were obtained from the Indonesia Stock Exchange website. The Stock Exchange Composite Index is a statistical measure that reflects the overall price movement of a group of stocks selected based on certain criteria and methodology and is evaluated periodically. The Stock Exchange Composite Index used in this research was JCI, which is an index that measures the stock price performance of all listed companies in the Main Board and Development Board of the Indonesia Stock Exchange (Indonesia Stock Exchange, 2019)

Figure 4: Jakarta Composite Index (April 1, 2020 to June 30, 2020)

The hypotheses were analyzed using multiple regression analysis.

4. RESULT

The descriptive statistics and hypothesis results are as follows.

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard deviation
CC	91	1677.00	56385.00	21131.7802	15710.16093
DC	91	157.00	2876.00	1278.9670	774.95479
RC	91	103.00	24806.00	6645.2857	7020.33731
JCI	91	4466.00	5070.60	4707.8802	166.39308

Within 90 days, the number of confirmed cases increased by 54708 cases (32.6%) from 1677 to 56385 cases, the death cases increased by 2719 cases (17.3%) from 157 to 2876 cases, and the recovered cases increased by 24703 cases (239.8%) from 103 to 24806 cases.

Table 3: Model Summary

Model	*R*	R^2	Adjusted R^2	Standard error of the estimate
1	0.792[a]	0.628	0.615	103.219

a. Predictors: (Constant), RC, DC, CC

b. Dependent variable: JCI

A coefficient of correlation of 79.2% means that the correlation between independent and dependent variables is strong.

Table 4: Hyphothesis results

Model		Unstandardized Coefficients B	Standard error	Standardized Coefficients β	t	Sig.
1	(Constant)	4565,630	41.608		109.731	0.000
	Confirmed	−0.033	0.023	−3.100	−1.419	0.159
	Death	0.405	0.307	1888	1.322	0.190
	Recovered	0.048	0.020	2.017	2.407	0.018

The results showed that the number of confirmed COVID-19 cases does not have significant influence on the Stock Exchange Composite Index. This result is consistent with the result of Baker et al. (2020) but not with those of Al-Awadhi et al. (2020), Khan et al. (2020), Ashraf (2020), and Haryanto (2020). A negative perception of confirmed

COVID-19 cases could instill a negative sentiment to investors; however, some investors probably still believe in the government in managing the COVID-19 pandemic and do not follow other investors' decisions but focus on their own long-term investment strategy.

COVID-19 death cases does not have significant influence to the Stock Exchange Composite Index. This result is consistent with the results of Ashraf (2020) and Alber (2020) but not with that of Al-Awadhi et al. (2020). The difference was probably caused by several actions and relaxation done by Indonesian government authorities to reduce the effect of COVID-19 on the market and the investors' focus on long-term investment goals. Investors could perceive dangerous infectious diseases as a beneficial venture opportunity.

The number of COVID-19 recovered cases has a positive and significant influence to the Stock Exchange Composite Index. Thus, the number of recovered cases increases the investors' optimism. The Financial Services Authority support the capital market with the regulation to avoid stock price volatility from being too high amid pressures from the global economic downturn by the determined buyback at a maximum of 20% of the paid-up capital (previously 10%), and the minimum number of shares outstanding is 7.5% of the paid-up capital. The Indonesia Stock Exchange issued a trading halt regulation to ensure regular, fair, and efficient securities trading. Trading is temporarily frozen for 30 minutes when the Stock Exchange Composite Index decreases by 5% with the condition that all orders that have not been allocated (open orders) will remain in the Jakarta Automated Trading System (JATS) and can be withdrawn by the Exchange member. This trading halt will continue for the next 30 minutes if the Stock Exchange Composite Index is continuing drop for more than 10%. If the Stock Exchange Composite Index drops by more than 15%, the trading process is suspended with specific terms and conditions. The implementation of trading halt allows the market to properly absorb the information and ensures that all investors have the same timely access to important information.

5. CONCLUSION

This paper aimed to examine the impact of COVID-19 cases to the Stock Exchange Composite Index of the Indonesia Stock Exchange from April 1, 2020 to June 30, 2020. The COVID-19 cases were measured by daily confirmed cases, daily death cases, and daily recovered cases. The results showed that the number of confirmed COVID-19 cases and COVID-19-related death cases do not have significant influence to the Stock Exchange Composite Index, whereas the number of COVID-19 recovered cases have positive and significant influence to the Stock Exchange Composite Index. The implications of this study are that the government should keep on informing about the recovery program to reduce market volatility and strengthen the trust from domestic and foreign capital market investors.

The government should anticipate the impact of a second wave and focus on detecting cases, reducing new cases, decreasing mortality rate, and strengthening the stability of financial market and monetary market, otherwise investors will feel hesitant to invest in Indonesia. Every investment has risks. Investors should allocate their investments rationally and keep updated with government programs in handling this

pandemic. The limitations of this study are the narrow research period and that the control variables that might have an impact on the Stock Exchange Composite Index were not considered. We proposed that future research should use a longer period of study and other control variables, such as exchange rate and oil prices.

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