The Effect of Covid-19 Pandemic on Stock Returns: An Evidence of Indonesia Stock Exchange

Ajeng Mugiarni[1], Permata Wulandari[2]
University of Indonesia[1,2]
Jl. Salemba Raya No.4, RW.5, Kenari, Kec. Senen, Kota Jakarta Pusat, Daerah
Khusus Ibukota Jakarta, 10430, Indonesia
Correspondence Email: mugiarni.ajeng@gmail.com

ABSTRACT

The pandemic Covid-19 caused panic not only in health sectors but also weakened the world's economy. The stock market, as one of the barometers of the economy, was hit by the pandemic Covid-19. The impact of Covid-19 on the stock market provides a signal for investors. Stock returns are what investors look for when investing in stocks. Returns on the stock exchange respond to several events, one of which is the news about health related to the Covid-19 pandemic. This study aims to seek whether the Covid-19 outbreak affects stock returns in Indonesia Stock Exchange. Using daily data of Covid-19 confirmed case, daily data of Covid-19 death cases, and stock returns data in Indonesia from January 2, 2020, to December 31, 2020. The panel-data regression model is used to estimate the result of the study. This study shows that stock returns in Indonesia Stock Exchange respond negatively significantly as the number of confirmed cases increases also stock returns in Indonesia respond negatively significantly to the daily growth of death cases. This study also finds that stock return in consumer goods and basic chemical industry were the impacted industries caused by pandemic Covid-19. Empirical findings could be used for the practitioner to consider investing in the stock market to avoid the significant impact of such outbreaks in the future.

Keywords: Covid-19, Cases, Death, Indonesia, Pandemic, Stock Returns

JEL Classification Codes: G01, G10, G14, C23

INTRODUCTION

The Covid-19 pandemic was officially recognized as a global pandemic by the World Health Organization (WHO) on March 11, 2020. The spread of the disease is so fast. More than 200 countries have contracted this virus. As of July 2020, the number of confirmed cases has exceeded 17 million and 668.910 dead cases globally (WHO, 2020). Before Covid-19, there were several pandemic events globally, such as Spanish Influenza in 1918, Asian Influenza in 1957, Hong Kong Influenza in 1968, and Bird Flu in 2005 (Chen et al., 2007). When the pandemic happened, it is not fully known what long-term effects will occur. It is possible to have a long-term effect not only in the health sector but also in the economic sector, especially in the stock market (Yan et al., 2020). The decline in all economic activities globally is one of the effects of the rapidly increasing and spread of COVID-19 cases (Nair et al., 2021).

In response to the Covid-19 outbreak, governments around the world have taken various emergency measures, including lockdowns, travel restrictions, individual virus testing, and quarantine, as well as economic stimulus packages (Ashraf, 2020). Besides, efforts were made to contain the spread of the virus, such as quarantine and restrictions on labor mobility, but these activities slowed down the world's economy (Salisu & Vo, 2020). Activity restrictions and the imposition of lockdowns in several countries impact the global economy, supply chains are disrupted, industrial sectors collapse, and companies stop operating (Pinatih, 2020).

One of the indicators to value economic growth is Gross Domestic Product (GDP). As the country with the 16th largest economy in the World by GDP value (World Bank, 2019), Indonesia is also experiencing an economic slowdown. Indonesia's economy contracted by 5.32% in Q2 2020 compared to Q2 2019 (Central Bureau of Statistics of Indonesia, 2020). However, Indonesia continues to strive to overcome the economic slowdown, and by the end of 2020, Indonesia minimized GDP contraction by recording a value of 2.07% (Central Bank of Indonesia, 2020). Several industrial sectors were also affected. Based on the growing rate of Indonesia's GDP in 2020, the most impacted industry caused by Covid-19 is Transportation with a GDP of 15.04%, and the unimpacted industry is Healthcare with a GDP of 11.60%.

The economic slowdown continues as the growth of Covid-19 cases increases. As of December 31, 2020, there were 577.969 positive confirmed cases globally and 14.230 global deaths due to Covid-19 (WHO, 2020). Indonesia is ranked 2nd in Southeast Asia with the highest number of positive cases and deaths. The first case in Indonesia appeared on March 2, 2020, with a total of 2 positive people contracting the Covid-19 virus. As of December 31, 2020, Indonesia recorded 743.198 confirmed cases and 22.138 death cases of Covid-19 (Worldindata, 2020).

The capital market has an essential role in the economy because it can finance investors' businesses. One of the instruments traded in the capital market is stock. Returns are the income earned from the money invested (Bodie et al., 2014). Stock returns are what investors look for when investing in the stock. The Return on the stock market response to several events like health news related to the Covid-19 pandemic. The impact of the pandemic also hit the stock market, and it is one of the barometers of the economy where the stock market is one component of the market economy that is directly related to the real economy (Younis et al., 2020). The stock market is also sensitive to announcements or news, crises, natural disasters, political uncertainty, natural events, and shocks (Kartal et al., 2020).

The stock market in Indonesia began to fluctuated since the news regarding the confirmation of the Covid-19 case. Jakarta Stock Exchange Composite Index (JKSE) corrected by 27,99%, with the most profound correction from February 2020 until March 2020. As a result, Indonesia experienced the lowest point of its index in its history with an index price of Rp 3.938. The correction of the stock market index and the severe impact on several industries gave a signal for the investors. S&P Global Market Intelligence (2020) analyzes the impacted and unimpacted industrial sectors by calculating the prediction of one year of bankruptcy (Probability of Default) with the Credit Analytics Probability of Default Market Signal model, which uses stock price data and asset volatility to provide an industry explanation that experienced a significant change in the risk of bankruptcy and resulted in sectors affected by Covid-19 such as the transportation sector, especially air transportation, auto parts & equipment, oil and gas, and so on. This provides a view for investors to look at investment alternatives, one of which is investing in the stock market (Kartal et al., 2020).

Health news related to the announcement of daily news on the development of Covid-19 cases, both positive cases and death cases might affect stock returns. Before Covid-19 occurs, some pandemics happened in this world. Nippani and Washer in Loh (2006) found that the SARS outbreak negatively affects China and Vietnam's stock markets. Loh (2006) in his research focusing on airline stocks on the stock exchanges of Canada, China, Hong Kong, Singapore, and Thailand, found that airline stocks were sensitive to news related to SARS, and the negative impact was more reflected in an increase in volatility than a decrease in stock returns on average. Another study related to SARS by (Chen et al., 2007) focused on the

shares of companies engaged in tourism, especially hotels in Taiwan, found that the shares of these companies experienced a decline in revenue and share prices during the SARS outbreak. In addition, on the day of SARS occurred and after the day, SARS appeared to show a significant impact on the performance of hotel stocks.

Liu et al., (2020) evaluated the impact of Covid-19 on 21 top stock market indices in major affected countries like Japan, Korea, Singapore, USA, Germany, Italy, and other countries, and they found that stock indices fell quickly after the virus outbreak. In addition, Asian countries experienced more negative abnormal returns compared to other countries. Thus, it is shown that essential phenomena like death and contagious disease primarily negatively affect financial assets, especially in the stock market.

Stock markets in the world were affected by the Covid-19 pandemic. Al-Awadhi et al., (2020) examined the impact of Covid-19 using daily data on positive cases and daily death cases as a proxy for Covid-19 on the stock market in China. The study was conducted on all companies listed on the Hang Seng Index and the Shanghai Stock Exchange Composite Index with a research period from January 10, 2020, to March 16, 2020. Panel data was used as the research method, with stock returns being a function of the number of positive cases and death cases, daily market capitalization values, and daily market-to-book ratio data. The study found that the Covid-19 cases negatively affect stock returns.

Also, in the research of Salisu & Vo (2020), Al-Awadhi et al., (2020), Ashraf (2020), dan Xu (2021) found that the development of the number of Covid-19 cases negatively affects stock returns. Stock returns decreased along with the development of the number of cases. Yan et al., (2020) and He et al. (2020), in their research, found that the Covid-19 case negatively affects the stock market in the short term. Death cases of Covid-19 are also in the spotlight of the world. High death rates indicate that this pandemic must be taken seriously because this outbreak can be classified as a deathly disease. Negative sentiment will rise if the country cannot control the rates of death cases and will impact the economy, especially the stock market. Derived from the study by Barro et al., (2020), the high rates of death cases when the Spanish Flu occurred significantly affected the USA stock exchange and lowered the stock returns.

Based on the previous studies and the arguments, the main objective of this study is to know how the stock market reacts to the development of the Covid-19 cases. Further research is interesting to do in the capital markets of developing countries, especially in Indonesia. By using the daily data of confirmed cases and death cases from Indonesia throughout January 1, 2020, to December 31, 2020, and the available stock returns data in companies listed in Indonesia Stock Exchange.

RESEARCH METHOD

To examine the impact of the Covid-19 pandemic on stock returns in Indonesia, this study following (Al-Awadhi et al., 2020; Ashraf, 2020) to use a panel-data regression approached for the research method. The samples were drawn from a targeted sample of public firms listed on the Indonesia Stock Exchange from January 2, 2020, until December 30, 2020 (242 days of trading). In terms of sampling, the firms were on the main board of the Indonesia Stock Exchange and have completed data that will be used for research. After purposive-sampling methods were met, 89 public firms with a total observation 19.699 according to the data observed.

The dependent variable of this study was the stock return of public firms listed on the Indonesia Stock Exchange. The calculation of the stock return in this study was obtained from the difference between today's closing price and the previous day's closing price divided by the last closing price (Bodie et al., 2014). The independent variables were the daily percentage of total confirmed cases donated as GCASE and the daily percentage of total death cases donated as GDEATHS. The Covid-19 data were obtained from the official website of Worlddata.org and WHO.

To support accuracy of the research results, the control variables were used, namely market capitalization donated as MCAP, which was proxied by the daily market capitalization value of the company's shares and market-to-book ratio donated as MBR. To get the daily market capitalization value, the calculation was to multiply the total outstanding shares by the daily price of the company (Ross et al., 2010). In addition, the market-to-book ratio was calculated by comparing the market value to the book value (Ross et al., 2010). Thus, factors such as company size, which is represented by market capitalization and market-to-book ratio were able to predict company stock returns (Bodie et al., 2014).

To test the impact of Covid-19 pandemic on stock returns in Indonesia, this study followed the regression models of (Al-Awadhi et al., 2020; Ashraf, 2020). The following equation present the regression model of the confirmed case of Covid-19:

$$(1)\ R_{it} = \alpha + \beta_1 GCASE_{it-1} + \beta_2 MTB_{it-1} + \beta_3 MCAP_{it-1} + e$$

Where R_{it} is the daily stock return of stock i on day t, GCASE is the daily percentage of total confirmed cases in Indonesia on t-1, MCAP is the natural logarithm of daily market capitalization of stock i on t-1, MTB is daily market-to-book-ratio of stock i on day t-1. The following equation present the regression model of the death case of Covid-19:

$$(2)\ R_{it} = \alpha + \beta_1 GDEATHS_{it-1} + \beta_2 MTB_{it-1} + \beta_3 MCAP_{it-1} + e$$

Where R_{it} is the daily stock return of stock i on day t, GDEATHS is the daily percentage of total death cases in Indonesia on t-1, MCAP is the natural logarithm of daily market capitalization of stock i on t-1, MTB is daily market-to-book-ratio of stock i on day t-1. Further analysis was conducted to examined the effect of Covid-19 of stock return in specific sector which has impacted industries of Covid-19, this study used the equation as below:

$$(3)\ R_{it} = \alpha + \beta_1 GDEATHS_{it-1} + \beta_2 GDEATHS_{it-1} + \beta_3 MTB_{it-1} + \beta_4 MCAP_{it-1} + \gamma_0 DSEKTOR + e$$

Where R_{it} is the daily stock return of stock i on day t, GCASE is the daily cumulative of confirmed cases in Indonesia on t-1, GDEATHS is the daily cumulative of death cases in Indonesia on t-1, MCAP is the natural logarithm of daily market capitalization of stock i on t-1, MTB is daily market-to-book-ratio of stock i on day t-1, DSEKTOR is a vector of dummy variables representing impacted industries. The dummy equals 1 if the firm belongs to a specific sector which has impacted industries of Covid-19.

The research models were tested using the stationarity test and classical assumption tests to ensure that the models have Best Linear Unbiased Estimator (BLUE). The classical assumptions tested on the research are the Multicollinearity test, heteroskedasticity test, and autocorrelation test. If the data did not meet the heteroskedasticity test and autocorrelation test assumption, it would be corrected using the heteroskedasticity and autocorrelation consistent (HAC) standard errors and covariance (Newey-West) method (Brooks, 2014; Karnadi, 2017).

RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics of the data on the daily percentage of total confirmed cases of Covid-19 (GCASE), daily percentage of total death cases of Covid-19 (GDEATHS), market-to-book-ratio, and market capitalization. Here are the results of descriptive statistical analysis for these factors on company stock returns. In the stock return variable, the variable mean is 0.168 with a standard deviation of 3.459. The daily growth of Covid-19 total positive cases (GCASE) has an average value of 2.995 with a standard deviation of 9.474. The variable for the daily growth cases of Covid-19 deaths has a mean value of 2.204 with a standard deviation of 6.932. The market-to-book ratio calculation has an average value of 0.324 with a standard deviation of 0.96. The market capitalization variable has an average value of 30.527 with a standard deviation of 1.328.

Table 1. Descriptive Statistics (N =19699)

	Mean	Median	Max.	Min.	SD
R_{it}	0.168	0.000	34.444	-27.848	3.459
GCASE	2.995	1.523	102.941	0.000	9.474
GDEATHS	2.204	1.089	75.000	0.000	6.932
MTB	2.264	1.252	50.358	0.119	2.876
MCAP	30.527	30.467	34.374	27.469	1.328

Note: R_{it} is the daily stock return, GCASE is the daily percentage of total confirmed case, GDEATHS is the daily percentage of total deaths cases, MTB is the daily market-to-book ratio, MCAP is the natural logarithm of daily market capitalization, SD is the standard deviation.
Sources: Author's finding and calculation (2021)

All models and equations in this study were tested for stationarity. A stationarity test is needed to ensure that the data does not have statistically different characteristics, and this test is closely related to the analytical technique used (Gujarati & Porter, 2009). Table 2 reports the result of the stationary test using the Augmented Dickey-Fuller (ADF) Test. Based on the result of the ADF test, the negative value for each variable is greater than the critical value at the significance level of 1%, 5%, and 10% so that it can be concluded that there is no unit root in the model or the data used is stationary.

Table 2. Result of the Stationary Test

Description	Variables			
	GCASE	GDEATHS	MTB	MCAP
ADF	-35.446	-31.359	-6.4896	-5.3384
1%	-3.430	-3.430	-3.430	-3.430
5%	-2.861	-2.861	-2.861	-2.861
10%	-2.566	-2.566	-2.566	-2.566

Note: ADF is the Augmented Dickey-Fuller (ADF) value, GCASE is the daily percentage of total confirmed case, GDEATHS is the daily percentage of total deaths cases, MTB is the daily market-to-book ratio, MCAP is the natural logarithm of daily market capitalization, SD is the standard deviation.
Sources: Author's finding and calculation (2021)

Table 3 reports the panel data regression result of panels A and B. In panel A, the result shows the regression results that explain the relationship between the daily percentage of total confirmed cases of Covid-19, market-to-book ratio, and market capitalization value on stock returns. The daily percentage of total confirmed cases

of Covid-19 has a significant negative effect on stock returns. The coefficient value on the daily percentage of the total confirmed cases of Covid-19 is -0.039351. Moreover, the resulting alpha value is significant because the resulting p-value is below the 1% significance level.

Analysis conducted on the stock market in Indonesia proves that the daily development of the total confirmed cases of Covid-19 negatively affects stock returns. The analysis of the sample data used in the study showed a negative relationship, which indicates that the stock market responded negatively along with the development of positive cases of Covid-19 in Indonesia. The growth of confirmed case that continues to increase may have caused the government to tighten some activities, limiting economic activities that can affect the company's performance. In addition, uncertainty on stock prices can also provide negative sentiment in the market. Based on the regression results, it can be explained that the stock market has responded negatively along with the growth of the daily percentage of the total confirmed cases of Covid-19, and this result has the same finding as the research conducted by (Al-Awadhi et al., 2020).

In Indonesia, the stock market began to contract along with the announcement of the first positive confirmed case of Covid-19. Furthermore, at the end of March 2020, the Indonesian government began implementing a policy for social restrictions by enacting a policy of working, enforcing employees to be able to use technologies to do activities from home, which indirectly affected industrial activities (Bahagia & Putri, 2021). As a result, many companies eventually reduced their employees due to the decline in demand for goods, which affected their finances and performance (Saraswati, 2020).

Panel B shows that the daily percentage of total deaths cases of Covid-19 has a significant negative effect on stock returns. The coefficient value on the development of the total deaths cases of Covid-19 is -0.017984. Furthermore, the resulting alpha value is significant because the p-value is below the 1% significance level. The result shows that the stock market has responded negatively and the daily growth of the total Covid-19 deaths. The regression result is in line with research by (Al-Awadhi et al., 2020) which found that the Covid-19 death case had a significant negative effect on stocks listed on the Chinese stock exchange.

Based on the results, it is indicated that along with the development of the total number of Covid-19 deaths, the market in Indonesia responded negatively. The stock market in Indonesia reacted strongly to the development of the total number of Covid-19 deaths in line with statistical analysis results, which showed significant data. The panic that occurred in various sectors could be something that contributed to negative sentiment in the market. The symptoms of panic caused a decrease in purchasing power, a decrease in demand, a decrease in production, income, and an increasingly heavy burden of production costs which could impact the company's performance. However, this result is different from the findings by Ashraf (2020), wherein his research found that the stock market responded negatively to the development of the total number of Covid-19 deaths, but statistical calculations showed insignificant results. Furthermore, research conducted on stock indexes in 64 countries found that the stock market did not respond strongly to the development of the total number of Covid-19 deaths.

In Indonesia, the Covid-19 pandemic outbreak has caused panic in the business sector. Continued panic could slow down the wheels of the economy, which will trigger an economic crisis. Such conditions could signal investors to save their funds in safe assets and avoid risky assets, such as stocks (Haryanto, 2020). Several events that occur in the world can affect how investors execute their investments in

the capital market. The global crisis was caused by the Covid-19 pandemic, which forced market participants to focus on available information to adapt during a crisis. In addition to the pressure on the health systems, the pandemic Covid-19 had also done business in the world went bankrupt, and employees lose their job (Mui et al., 2021). There is a phenomenon behind financial behavior related to Covid-19, namely excessive trust, biased representation, behavior following each other, and bias of availability or when there is a significant impact on the market affecting the level of public trust in the financial system so that it will affect market performance (Putri et al., 2020).

The market-to-book ratio and market capitalization coefficient value show a negative sign which means that there is a negative relationship between the two control variables on stock returns. The result is not in line with the concept of how market-to-book ratio and market capitalization give their contribution to the stock returns. However, this study found different results, which was possible due to anomalies in the stock market in Indonesia, especially in 2020. Baldwin & Mauro (2020), McKibbin & Fernando (2020), and the OECD (2020) stated that the impact of the Covid-19 pandemic on the level of future economic uncertainty is very extreme due to the spread of diseases such as mortality rates, disease severity, the response from policymakers and the individual behavior is unknown (Khan et al., 2020).

Table 3. Result of the Panel Regression

Panel A. Daily Growth of Total Positive Cases		
	Coefficient	Prob
GCASE	-0.039351	0.0000***
MTB	-0.083706	0.0058***
MCAP	-0.051662	0.0095***
Adj-R^2	0.012655	
Obs.	19699	

Note: *) 10% level of significance,
) 5% level of significance, *) 1% level of significance
Obs.: Number of observations
Sources: Author's finding and calculation (2021)

Panel B. Daily Growth of Total Deaths Cases		
	Coefficient	Prob
GDEATHS	-0.017984	0.0021***
MTB	-0.078864	0.0089***
MCAP	-0.050692	0.0115**
Adj-R^2	0.002341	
Obs.	19699	

Note: *) 10% level of significance,
) 5% level of significance, *) 1% level of significance
Obs.: Number of observations
Sources: Author's finding and calculation (2021)

Table 4 present the regression result of impacted industries by Covid-19. The large trade, property, mining, infrastructure, consumer goods, and basic chemicals sectors are the most impacted industries in Indonesia due to Covid-19 based on the GDP growth rate in 2020 (Central Bureau of Statistics of Indonesia, 2020) shows a positive coefficient value. From the classification of the affected sectors, only stocks in the consumer goods and primary chemical sectors are affected. The resulting significant alpha value indicates this because the p-value is below the 10% significance level. The positive coefficient shows that the Covid-19 pandemic case

affects the stock returns of companies in the affected sectors. The result is signified in line with the factual evidence issued by the Central Bureau of Statistics of Indonesia (2020), namely the consumer goods sector contracted -10.22%, and the primary chemical industry with specifications for the manufacturing sector -2.93%. Accenture (2020) stated that companies in the manufacturing industry experienced a direct impact from the Covid-19 pandemic due to limited production activities and supply chains, and consumers in the manufacturing industry were also affected by this.

Table 4. Result of Regression of Impacted Industries

Panel C. Impacted Industries		
	Coefficient	Prob
TRADE	0.092777	0.2528
PROPERTY	0.023565	0.8082
MINING	0.081910	0.3493
INFRASTRUCTURE	0.133193	0.1199
CONSUMER_GOODS	0.151733	0.0870*
BASIC_CHEMICAL	0.162724	0.0895*
Adj-R^2	0.014367	
Obs.	19699	

Note: *) 10% level of significance,
) 5% level of significance, *) 1% level of significance
Obs.: Number of observations
Sources: Author's finding and calculation (2021)

The result of this study contributes to the research of the economic impact of the pandemic Covid-19. On stock prices, important events that occur can be positive or negative valuable information for investors in determining strategies for investment decisions to maximize investment returns. This research can also be input by observing events that can affect the market, especially the capital market in Indonesia. Nevertheless, in this study, several limitations were found. First, the research specifically used a year of the Covid-19 pandemic in Indonesia. Second, the research samples were used on companies with the largest market capitalization in each industrial sector on the Indonesia Stock Exchange, which is considered sufficient to be representative in concluding research problems. In addition, this research can be an additional illustration for regulators to make policies related to significant phenomena in the market for the period in the future. However, there are some implications of the research. Based on the analysis above, there are several suggestions for improvements such as: (1) further research could be considered by applying variations of the period before, during, and after the Covid-19 pandemic outbreak to find out the profound impact on the stock market in Indonesia; (2) Further research can add more supporting variables to obtain more substantial results, such as variables that can affect the stock market in macroeconomic instruments to be more accurate.

CONCLUSIONS

This research focused on analyzing the impact of the Covid-19 pandemic on stock returns in Indonesia. Analysis conducted on the stock market in Indonesia proved that the daily development of the total positive cases of Covid-19 negatively affects stock returns. The second test proved that the daily development of the total number of Covid-19 deaths negatively affects stock returns. The sample data results used both confirmed cases and death cases negatively affect the stock return. Further analysis was conducted to determine the industrial sector affected by the Covid-19

pandemic in Indonesia. The study results explain that there are 2 (two) industrial sectors affected by the Covid-19 pandemic in Indonesia, namely the consumer goods sector and the primary and chemical industry sectors. The positive relationship that occurs explains that the cases of the Covid-19 pandemic affect the stock returns of companies in these sectors. These findings gave empirical evidence that pandemic Covid-19 has effects on the stock market in Indonesia. The research results were helpful as information for evaluating and analyzing market behavior towards a significant phenomenon that will be occurred in the future.

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