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# The Impact of COVID-19 Pandemic on Stock Market Performance in Indonesia

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## Abstract

This study explores the impact of COVID-19 pandemic and the lockdown policies that are used to tackle the pandemic on stock market returns in Indonesia. This study uses fixed-effects panel-data regression method to evaluate the impact of the growth in COVID-19 total confirmed cases and death as well as the lockdown policies on daily stock returns of 272 firms that are listed on the Indonesia Stock Exchange's main board and operate in the real sector from 2 March 2020 to 27 November 2020. The study confirms the significantly adverse impact of growth in the total of confirmed cases and death due to COVID-19 on Indonesia's daily stock returns. Moreover, the lockdown policies regardless how strict they are, have a positive and significant impact on the Indonesia's daily stock returns. This study further considers the different impact of COVID-19 pandemic on each of eight observed sectors; where the sector of property as well as trade, service and investment have a significantly negative performance; while the sector of basic industry, consumer goods and mining have a significantly better performance. This study suggests that COVID-19 pandemic and the lockdown policies have a mixed impact on the Indonesia's stock market returns.

**Keywords:** COVID-19, Lockdown, Pandemic, Stock Returns, Indonesia

**JEL Classification Code:** C23, G10, G15, I10

## 1. Introduction

Currently, Indonesia stock's market has 728 listed companies. This figure has increased compared to 502 listed companies in 2014. Indonesian Stock Exchange (IDX) authority classifies the companies into three different segments, according to the size and track record of the company. The segment for companies with the biggest size in terms of asset and longest track record is called the main board. IDX also classifies the companies further according to their line of business, which consists of nine different sectors.

In 2017, Indonesian financial services authority (OJK) issued several regulations so that an increasing number of enterprises are projected to go public up until 2022 (Jakarta Post, 2020). IDX has also tried to promote the practice of investing in capital market to the individual investors, such as through marketing campaign towards the citizens. As a result, Indonesia's market capitalization to GDP ratio has also increased to 45.15% in 2020 compared to 42.27% in 2015 (CEIC, 2020).

Since it first appears at the end of 2019, the coronavirus (COVID-19) has inflicted damage in several different aspects. On 11 March 2020, the World Health Organization (WHO) (2020) has declared this virus as a pandemic due to its spread around the globe and severity. Up until 22 February 2021, COVID-19 triggered 1,278,653 confirmed cases and 34,389 confirmed deaths in Indonesia (WHO, 2021). The country's stock market has also experienced some downturn, with Jakarta Composite Index dropping at its lowest point on 23 March 2020, only 21 days after the first government officially confirmed COVID-19 cases.

Unlike Vietnam, the United Kingdom and Germany, the Indonesian government does not impose a full-scale nationwide lockdown. To reduce the snowballing case and death of COVID-19 figures, Indonesian regional

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governments imposed a lockdown policy, better known as Social Restrictive Movement Policy (PSBB). Each region has different approaches in conducting the policy and not every region imposes such policy due to different levels of severity of COVID-19 between the regions. The policy itself aims to restrict citizen's movement in order to achieve social distancing through developing a curfew and restricting non-vital activities.

The capital city, Jakarta, has also imposed the lockdown policy on 10 April 2020. From that day forward, the governor has decided to extend the policy for several weeks before switching to a less strict policy, which is known as Transition from Social Restrictive Movement Policy (PSBBT). The former and latter have been used interchangeably throughout 2020 by the Jakarta government in order to suppress the growing number of cases and deaths due to COVID-19 pandemic. The practical usefulness of such policies is still not certain since the figures of confirmed cases and death are still on the upward trend.

The government has also provided incentives in order to hinder the negative impact of COVID-19 pandemic. While the Indonesian government has given incentives to companies operating in several sectors such as agriculture, mining, and financial services through tax reduction (Medina, 2020), the government has given more incentive to the financial sector. Through the Financial Services Authority, the government has conducted a debt restructuring in order to avoid an increase in non-performing loans (Aldin, 2020). According to Kacaribu, from the Indonesian Ministry of Finance (2020), the government has also provided a placement of funds in banks that have experienced debt restructuring. The Indonesian government believes that it is critical to keep the public's positive sentiment on the financial services industry in order to be able to promote economic recovery.

This is a first study to examine the impact of lockdown policies as well as the growth in the number of cases and deaths due to COVID-19 pandemic on Indonesia's stock market performance. This study contributes to the knowledge of stock market performance during pandemic in a country that has imposed two lockdown policies and still not be able to stop the pandemic from spreading and causing more deaths. This study will focus on the companies that operate outside the financial sector since those companies have not received the same amount of government incentives compared to the companies operating in the financial sector. Furthermore, this study will be concentrated on firms from the main board in order to determine the impact of COVID-19 pandemic even on the biggest listed firms in Indonesia.

## 2. Literature Review

### 2.1. Impact of Pandemics on Stock Market

Several studies have analyzed the impact of previous epidemics on stock market performance. Ichev and Marinč (2017) found that Ebola outbreak events are followed by negative returns in the financial market. The negative impact is more substantial on stocks of firms with small market capitalization and higher volatility. This study also found that such extreme event would enhance anxiety, bad mood and fear, which may induce pessimism among investors. Chen, Chen, Tang, and Huang (2009) confirm the negative impact of SARS outbreak on Taiwan's stock price, specifically in tourism, wholesale, and retail sector. However, Chen, Chen, Tang, and Huang (2009) also confirm the positive impact of SARS outbreak on the biotech firms stock price.

For the case of COVID-19 pandemic, numerous studies have documented the impact of the pandemic on stock market performance. Orhun (2020) found that stock market in countries with more confirmed COVID-19 cases are more prone to getting negative impact from the global pandemic. The research by Camba and Camba Jr. (2021) also documented the negative impact of COVID-19 daily infection rate on Philippine stock market index. The negative impact of confirmed cases on stock market performance is supported by other studies, such as the research by Liu, Manzoor, Wang, Zhang, and Manzoor (2020) that founded a negative and significant impact of COVID-19 confirmed cases on 21 stock market indices around the world, such as Japan, Germany, France, and Korea. The research by Ryandono, Muafi, and Guritno (2021) also found a negative impact of COVID-19 pandemic on Indonesia's sharia stock.

Bahrini and Filfilan (2020) also confirmed the negative impact of COVID-19 deaths on stock returns in Gulf Cooperation Council Countries. Ashraf (2020) found the negative impact of both confirmed cases and deaths because of COVID-19 on stock market returns in 64 countries. The increase in number of confirmed cases and deaths have a significant and positive impact toward market volatility (Baig, Butt, Haroon, & Rizvi, 2020).

According to research by Mishra and Mishra (2020), aside from COVID-19 confirmed case, the increase in volatility due to pessimistic and panic sentiments of investor has a negative impact on Asian stock market performance. According to several studies (Baek, Mohanty, & Glambosky, 2020; Bora & Basistha, 2021; Chaudhary, Bakhshi, & Gupta, 2020; Khanthavit, 2020), the volatility in the stock market increases during COVID-19 pandemic. Baek, Mohanty, and Glambosky (2020) further emphasizes that the negative news

is more impactful compared to the positive news, suggesting a negativity bias. The feeling of fear, thus, affected stock market performance in all region negatively (Al-Qudah & Houcine, 2021).

## 2.2. Impact of COVID-19 Lockdown on Stock Market

The spread of COVID-19 has forced many governments to impose a movement restriction policy and physical distancing measures, often referred as lockdown (WHO, 2020) in order to slow down the spread of COVID-19. Several studies have contributed to determine the impact of such policy on the stock market. Narayan, Phan, and Liu (2021) found the positive impact of lockdown on stock market returns in G7 countries. The research also found that lockdown is the most effective policy in cushioning the impact of COVID-19 compared to other policies such as economic stimulus packages. This is supported by Anh and Gan (2020) that find a positive impact of lockdown policy on Vietnam's stock returns.

On the other hand, Liew (2020) found the negative impact of lockdown in Wuhan on stock prices of Booking Holdings Inc., Expedia Group, and Trip.com Group Ltd. since these companies derive their profits from tourism-related services that is now limited due to the lockdown policy. Alexakis, Eleftheriou, and Patsoulis (2020) also found that an increase in non-pharmaceutical interventions such as lockdown have a negative impact on stock market returns in 45 countries.

## 2.3. Hypotheses

COVID-19 pandemic brings an unprecedentedly impact on several aspects, such as to the stock market performance. Several researches have elaborated the relevant proxy regarding the pandemic, such as the growth in the number of confirmed cases and deaths due to the COVID-19 (Ashraf, 2020). Aside from that, the proxy of COVID-19 can also be explained through the government intervention in order to impede the spread of the virus, such as through the imposition of a lockdown policy (Narayan, Phan, & Liu, 2021). Those proxies mentioned before, the growth in the number of confirmed cases and death as well as the lockdown policy, are believed to be the relevant domain to interpret the impact of COVID-19 pandemic (Anh & Gan, 2020; Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020).

Hence, this study examines the impact of COVID-19 pandemic and the lockdown policies that were taken to investigate whether those variables would be affecting the stock returns. The investigation is based on the following hypotheses:

**H1:** *The growth of COVID-19 cases is significantly and negatively related to stock returns.*

**H2:** *The growth of COVID-19 confirmed deaths is significantly and negatively related to stock returns.*

**H3:** *The lockdown policies are significantly and positively related to stock returns.*

## 3. Research Methods and Materials

### 3.1. Data

This study examines the impact of COVID-19 pandemic and lockdown policy on daily stock returns of 272 listed firms on Indonesia Stock Exchange. Those 272 are categorized as companies from main board that are operating in the real sector. The data starts from 2 March 2020, which was the first day of the government's officially confirmed COVID-19 case in Indonesia. The end date of the daily stock data is 27 November 2020. The stock price data is obtained from Yahoo Finance while the firm-specific data is obtained from Thomson Reuters. The daily number of COVID-19 cases and deaths are from the official website of the Indonesian government for COVID-19 information (Covid19.go.id). The information regarding the lockdown variables is taken from Jakarta's official website for information and update on COVID-19 pandemic (Corona.Jakarta.go.id). In total, there are 48,960 observations in this study.

### 3.2. Methodology

Following Al-Awadhi, Alsaifi, Al-Awadhi, and Alhammadi (2020), Orhun (2020) and Sergi, Harjoto, Rossi, and Lee (2021), this study uses panel-data regression method rather than event-study method. Panel-data regression method has several advantages, such as the minimization of estimation bias and multicollinearity and controls of individual heterogeneity as well as the ability to identify time-varying relationship between dependent and independent variables (Wooldridge, 2011).

To test the impact of COVID-19 pandemic and lockdown policy on Indonesia Stock Exchange, this study follows the model of Anh and Gan (2020), Al-Awadhi, Alsaifi, Al-Awadhi, and Alhammadi (2020) and Ashraf (2020) to evaluate the impact of COVID-19 new confirmed cases and deaths as well as lockdown policy toward daily stock returns. In this study, the independent variables also consist of firm-specific data, following those variables in the Anh and Gan (2020) as well as Al-Awadhi, Alsaifi, Al-Awadhi, and Alhammadi (2020) such as the natural logarithm of firm's daily market capitalization and market-to-book ratio. The model in this study is on Eq. (A.1):

$$\begin{aligned} RE_{j,t} = & \alpha_1 + \alpha_2 GCASE_{t-1} + \alpha_3 GDEATH_{t-1} \\ & + \alpha_4 MRK_{j,t-1} + \alpha_5 MTB_{j,t-1} \\ & + \alpha_6 D\_PSBB_{j,t} + \alpha_7 D\_PSBBT_{j,t} + \varepsilon_{0,j,t} \end{aligned} \quad (1)$$

Where  $RE_{j,t}$  is the return of stock  $j$  on day  $t$ , based on the formula of  $RE_{j,t} = \ln(P_{j,t}/P_{j,t-1})$ , where  $P_{j,t}$  is the price of stock  $j$  on day  $t$ .  $GCASE_{t-1}$  represent the growth in total number of COVID-19 confirmed cases in Indonesia on day  $t-1$ .  $GDEATH_{t-1}$  is the growth in total number of COVID-19 confirmed death in Indonesia on day  $t-1$ .  $MRK_{j,t-1}$  can be defined as the log of market capitalization of firm  $j$  on day  $t-1$ .  $MTB_{j,t-1}$  is the market-to-book ratio of firm  $j$  on day  $t-1$ .  $D\_PSBB_{j,t}$  equals 1 if the period is between 13 April 2020 and 4 June 2020 as well as between 14 September 2020 and 9 October 2020 where the capital city, Jakarta, was under the social restrictive movement policy. On the other hand,  $D\_PSBBT_{j,t}$  equals 1 if the period is between 5 June 2020 and 11 September 2020 as well as between 12 October 2020 and 27 November 2020 where Jakarta was under the transition from the social restrictive movement policy.

After conducting Chow and Hausman Test, this study uses fixed-effects estimation for panel-data regression model. This study also used clustered robust standard error to account for the serial correlation and heteroskedasticity, an applicable method for a dataset with larger number of cross section and smaller time series (Wooldridge, 2013).

## 4. Results and Discussion

### 4.1. Descriptive Statistics

Table 1 presents the descriptive statistics of all firms from IDX's main board, which operate in the real sector during the observation period. This study follows the sector classification of IDX, therefore excluding the firms that are listed in the financial sector. Surprisingly, the average return is on the positive side during the period of this study. The daily average for growth of total confirmed cases and death are 9% and 7.4%, respectively. The average for natural logarithm of market capitalization is 28.38 and the average for market-to-book ratio is 1.55. From the correlation matrix (Table 2), there is no coefficient of correlations that equals

**Table 1:** Descriptive Statistics

Variables	Mean	Standard Deviation
RE	0.0003888	0.0382624
GCASE	0.090485	0.3098906
GDEATH	0.0741541	0.3093508
MRK	28.37634	1.798067
MTB	1.548002	2.815068
D_PSBB	0.2944444	0.4557973
D_PSBBT	0.5499795	0.4975009

1 or -1, indicating that there is no perfect correlation between the variables.

### 4.2. Impact of COVID-19 Cases and Lockdown Policy on Indonesia's Stock Market Return

Table 3 reports the result of fixed-effects regression using equation 1. From column 1 to column 6, the independent variables are gradually added. Not surprisingly, the outcome shows that the growth in total confirmed cases of COVID-19 has a negative and significant impact on the stock returns. The finding is aligned with the research by Anh and Gan (2020), Ashraf (2020) as well as Chowdhury, Khan, and Dhar (2020) that confirms the negative impact of COVID-19 cases upon stock returns.

This study finds that the growth in total confirmed deaths due to COVID-19 has a significant and negative impact on stock returns. This finding is consistent with the findings of Bahrini and Filfilan (2020) as well as Al-Awadhi, Alsaifi, Al-Awadhi, and Alhammidi (2020) that found that new confirmed deaths due to COVID-19 has a negative impact on the stock returns. Compared to the growth of confirmed cases, growth of confirmed deaths has a bigger negative coefficient, implying that Indonesia's stock market is more prone to experiencing a negative performance due to the fatality rate. The finding is aligned with the research by Harjoto, Rossi, Lee, and Sergi (2020).

This study also finds the positive impact of the lockdown policy on stock market returns. Both of the dummy variables,  $D\_PSBB$  and  $D\_PSBBT$  have a positive and significant impact on the stock market returns, both at 1% significance level. This suggests that both lockdown policies, whether it is the stricter one or the more lenient one, have a positive impact on stock market returns. This finding is consistent with the study by Anh and Gan (2020) as well as Narayan, Phan, and Liu (2021) that find that the lockdown policy has a significant and positive impact toward stock market returns in Vietnam and G7 countries, respectively. According to Baldwin and Mauro (2020), countries that are slow in stopping the spread of the virus tend to have a lower level of market confidence. The Indonesian government's decision to impose a regional lockdown can be perceived as the commitment to limit the spread of COVID-19 in Indonesia, therefore positively influencing the market confidence.

In terms of firm characteristics, market capitalization is negatively significant at 1%, indicating that the variable is negatively related to stock returns. This finding suggests that the stocks of a large cap company tend to attain lower returns compared to the stocks with smaller cap. The finding is further supported by the research of Alquist, Israel and Moskowitz (2018) that concludes that firms with smaller

**Table 2:** Correlation Analysis

Correlation	RE	GCASE	GDEATH	MRK	MTB	D_PSBB	D_PSBBT
RE	1						
GCASE	-0.0514	1					
GDEATH	-0.0791	0.2482	1				
MRK	-0.0072	-0.0027	-0.0087	1			
MTB	-0.0168	-0.0002	-0.0056	0.3756	1		
D_PSBB	0.0135	-0.0768	-0.0597	-0.0147	-0.0059	1	
D_PSBBT	0.0332	-0.2321	-0.1935	0.0200	0.0067	-0.7142	1.00

**Table 3:** Fixed-Effect Regression Result

	(1)	(2)	(3)	(4)	(5)	(6)
CONS	0.00096***	0.00142***	0.66059***	0.67831***	0.68959***	0.71883*** (0.069917)
GCASE	-0.00635***	-0.00418***	-0.00426***	-0.00426***	-0.00435***	-0.00237*** (0.000555)
GDEATH		-0.00875***	-0.00991***	-0.00992***	-0.0099***	-0.00861*** (0.0006266)
MRK			-0.02323***	-0.023868***	-0.02426***	-0.02544*** (0.0024757)
MTB				0.0003124	0.0034	0.00044** (0.0002047)
D_PSBB					-0.0008**	0.00316*** (0.0005642)
D_PSBBT						0.00508*** (0.0006724)

Note: \*\*\*, \*\* and \* indicates significant at 1%, 5% and 10% level of significance based on *t*-statistics. The number in the parentheses represent the clustered-robust standard error.

market capitalization tend to have on average higher returns compared to firms with larger capitalization.

This study also confirms the positive coefficient of market-to-book ratio on stock returns at 5% of significance. The implication of this finding is that during the study period, the firm with higher market-to-book ratio that implies an overvalued stock tends to attain a higher return compared to an undervalued stock. The high market-to-book ratio itself can be associated with the increase of investor's confidence on the business's future prospect, therefore making the returns for such companies higher compared to the firms with lower market-to-book ratio.

### 4.3. Further Analysis: Sector Analysis

Table 4 reports the result of panel-data regression of Eq A.1 with added dummy variables that represent firm's specific sector. This study showed a negative coefficient on two sectors, namely, property as well as trade, service, and investment. Those sectors have a worse performance

compared to other sectors during the study period. However, three sectors have performed significantly better than the others, namely, basic industry, consumer goods, and mining. This finding is aligned with the research by Alam, Wei, and Wahid (2020), He, Sun, Zhang, and Li (2020) as well as Herwany, Febrian, Anwar, and Gunardi (2021) that find the mixed impact of pandemic on each sector's stock performance.

## 5. Conclusion

This study examines the impact of the growth in COVID-19 confirmed cases and deaths as well as the lockdown policies on daily stock returns of 272 firms that operates in the real sector and are listed in the Indonesia's stock market main board from 2 March 2020 to 27 November 2020. Using panel-data regression model, this study finds that the daily growth in COVID-19 total confirmed cases has a negative and significant impact on the stock returns. Furthermore, the daily growth of total increase in the number

Table 4: Panel Regression with Dummy Variables for Sector

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CONS	-0.00015 (0.002139)	-0.00076 (0.0021151)	0.00061 (0.0022284)	-0.00017 (0.002138)	0.0007 (0.002126)	0.00007 (0.0020966)	0.00035 (0.0021244)	0.00039 (0.0021569)
GCASE	-0.00279*** (0.0005513)	-0.00279*** (0.0005513)	-0.00279*** (0.0005513)	-0.00279*** (0.0005513)	-0.00279*** (0.0005513)	-0.00279*** (0.0005513)	-0.00279*** (0.0005514)	-0.00279*** (0.0005513)
GDEATH	-0.00776*** (0.0005905)	-0.00776*** (0.0005905)	-0.00777*** (0.0005908)	-0.00776*** (0.0005905)	-0.00776*** (0.0005905)	-0.00776*** (0.0005905)	-0.00777*** (0.0005906)	-0.00776*** (0.0005906)
MRK	-0.00004 (0.0000712)	-0.00002 (0.00007)	-0.00007 (0.0000744)	-0.00004 (0.0000713)	-0.00007 (0.0000712)	-0.00005 (0.0000698)	-0.00005 (0.0000703)	-0.00005 (0.0000717)
MTB	-0.00022*** (0.0000498)	-0.00023*** (0.0000504)	-0.00025*** (0.0000468)	-0.00022*** (0.0000499)	-0.00021*** (0.0000493)	-0.00022*** (0.0000497)	-0.00022*** (0.0000499)	-0.00023*** (0.0000485)
D_PSBB	0.00331*** (0.0005969)	0.00331*** (0.000597)	0.00333*** (0.0005967)	0.00331*** (0.0005969)	0.00331*** (0.0005969)	0.00331*** (0.0005969)	0.00331*** (0.0005969)	0.00331*** (0.0005969)
D_PSBBT	0.00339*** (0.0005625)	0.00339*** (0.0005624)	0.00339*** (0.0005619)	0.00339*** (0.0005625)	0.00339*** (0.0005626)	0.00339*** (0.0005624)	0.00339*** (0.0005624)	0.00339*** (0.0005625)
Agriculture	0.00011 (0.0003505)							
Basic Industry		0.00102*** (0.0003474)						
Consumer Goods			0.00148*** (0.0005355)					
Infrastructure				0.00018 (0.0003525)				
Mining					0.00124*** (0.0004254)			
Miscellaneous						-0.00044 (0.0004225)		
Property							-0.00101*** (0.0003782)	
Trade, Service, and Investment								-0.00148*** (0.0003719)

Note: \*\*\*, \*\*, and \* indicates significant at 1%, 5% and 10% level of significance based on t-statistics. The number in the parentheses represent the clustered-robust standard error.

of confirmed death due to COVID-19 also has a negative impact on stock return. This implies that the COVID-19 pandemic has a negative impact on Indonesia's stock market return, where the daily growth of total confirmed cases and confirmed deaths have a negative influence on the stock market's return.

Parallel to the positive impact of lockdown policy on Vietnam's stock market returns (Anh & Gan, 2020) and on stock market returns in G7 countries (Narayan, Phan, & Liu, 2021), both lockdown policies have a positive and significant impact on Indonesia's stock market returns. The reasons behind this occurrence are the improving confidence of the investors due to the government action that shows that they wanted to contain this COVID-19 pandemic.

This study presents several implications for governments and investors. First, the adverse effects of total confirmed cases and deaths due to the COVID-19 on stock market returns suggest that in the current or even later pandemics, the spread of the virus as well as the fatality rate should be minimized or even be eliminated in order to prevent the stock market from having a negative performance.

The government should also consider the policy of lockdown, not only for the purpose of slowing or even stopping the spread of the disease, but also for protecting the stock market performance from deteriorating. The government may alter the restrictiveness of the lockdown policy according to the current situation since both policies have a positive impact on stock market returns.

This study also contributes to the knowledge of government that even a partial lockdown, not a nationwide one, could bring positive impact on stock market's return. The government should also remember that imposing a lockdown policy may be one of the ways to increase the level market confidence (Baldwin & Mauro, 2020).

Investors can plan their investment decision based on the sector in which a firm operates. They can choose to invest in a firm that operates in the basic industry, consumer goods, and mining sectors since this study has concluded that those sectors perform better compared to the other. Furthermore, the investors should avoid investing in property as well as trade, service, and investment sectors since those two sectors has significantly lower returns compared to the other remaining sectors.

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