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Black Swan Event: Exchange Rate Impact on Jakarta Composite Index (Case Study of the Covid-19 Pandemic)

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Abstract

The Covid-19 pandemic brought economic, financial and social shocks to the world community. The emergence of this outbreak in Indonesia has made the capital market experience various challenges, especially earlier this year, which had decreased due to the emergence of the Covid-19 outbreak. No wonder the Covid-19 pandemic is likened to a black swan event for the global economy. The data analysis technique used in this study was a simple regression model. The test results prove that the exchange rate has a significant effect on the Jakarta Composite Index (JCI). The coefficient of determination was 48.4 (48.4%), which indicates that the exchange rate could explain 48.4% toward the variation of share prices during the pandemic for all companies listed on the Indonesia Stock Exchange (IDX) from March to August 2020. Meanwhile, the other 51.6% is explained by other factors which are not disclosed in this study.

Keywords
black swan event; JCI; exchange rate

I. Introduction

The Covid-19 pandemic brought economic, financial and social shocks to the world community. Until the first week of May 2020, the global epidemic that spread across continents, and even this country has caused at least 4.1 million people (276 thousands of them died) from 212 infected countries. The outbreak has also caused more than 8.9 billion people in Asia, America, Europe, Australia, Africa and Antarctica to become concerned about the dangers of the virus. Some of the residents are forced to undergo a social distancing phase (maintaining a safe distance, staying at home, working at home, even praying at home) for months.

The initial information was provided by the World Health Organization (WHO) on 31 December 2019 or towards the end of December 2019. There was a group of pneumonia with a new aetiology in Wuhan, Hubei Province, China (Li et al., 2020; Zhu et al., 2019). Then, it made some regions in China into lockdown and self-quarantine in their respective homes (CRC John Hopkin University, 2020). In nearly two months, this coronavirus has caused 80 thousand cases and 3,000 deaths starting in the third week of January 2020. Covid-19 then crossed to several countries in Asia, America, Europe, Australia, and even Africa. When this outbreak slowed down in China, the Covid-19 transmission exploded in several countries in America, Europe, Asia, then Africa. As of 8 May 2020, the number of infected cases in the US, Spain, Italy, UK, Russia, France, Germany, Brazil, Turkey and Iran has surpassed China as the initial epicentre. Briefly, six countries surpass China for their death toll, namely the

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US, Italy, Spain, France, Britain, Germany, Iran and Belgium. Meanwhile, the number of victims who died in the Netherlands and Canada has also begun to approach China's (Worlddometter, 8 April 2020).

On 30 January 2020, Covid-19 was declared to be the Public Health Emergency of International Concern (PHEIC). On 11 March 2020, Covid-19 has been declared a pandemic. The impact of Covid-19 has disrupted the world's economic chain. It has the potential to cause an economic crisis in some countries if it is not handled quickly and appropriately. The Organization for Economic Co-operation & Development (OECD) (2020) stated that the Covid-19 pandemic brought the third-largest economic, financial, and social shock of the 21st century after the 9 September 2011 terror attacks and the 2008 global financial crisis. The shock can cause a sharp decline in world production systems, supply chains and consumption. Even the OECD (2020) said that this pandemic would also have the potential to cause a world economic crisis. In various countries, the impact of Covid-19 is starting to be felt. In general, business growth has slumped because of the quarantine policies, travel restrictions and social restrictions which were implemented. Consumers who remain at home suppress a country's economic activity. As a result, various economic sectors are affected, such as transportation, services, trade and finance.

Indonesia is one of the countries affected by Covid-19. On 2 March 2020, Indonesia reported two positive cases of Covid-19 and the number of positive cases continued to increase (Ministry of Health, 2020a). As of 25 April 2020, Indonesia has reported 8,211 positive cases, 689 of them died, 1,002 have recovered from 50,563 people with 42,352 tests tested negative for Covid-19 (Indonesian Ministry of Health, 2020b). The government and community response in taking preventive measures, such as closing schools, work from home (WFH), especially formal sector workers. They also response by postponing and cancelling public and private events, stopping several modes of public transportation, and even carrying out large-scale social restrictions (PSBB) in various regions, prohibiting going home, making the economic cycle slow down.

In general, the existence of an economic crisis can be seen from the conditions of several indicators, such as the weakening of the currency exchange rate, JCI, foreign exchange reserves, the ratio of foreign debt to Gross Domestic Product (GDP), and economic growth. Besides, there was an increase in inflation, Non-Performing Loan (NPL), and a widening deficit in the balance of payments and trade. Until September 2020, there have been several countries entered into a recession situation, such as New Zealand, the United States, Germany, Hong Kong, Singapore, South Korea, Australia, France, Spain, Italy, England, the Philippines, Thailand, Malaysia, and many more (www.liputan6.com). By looking at this case, the current market behaviour has shown panic because being in the midst of uncertainty could be the beginning of crisis mitigation. The US dollar currency was superior during the Covid-19 outbreak because the situation is more uncertain in other countries. On the contrary, the exchange rate in almost currencies weaken against the US dollar, likewise with the stock or capital market.

The Covid-19 pandemic and a mix of domestic and foreign policies brought pressure on the stock market (Kiky, 2020; https://bebas.kompas.id). In Indonesia, the JCI fell to below the psychological level of 6,000. The performance of the JCI decreased by 10.75 per cent in the second week of March (9-13 March 2020) and compared to the previous week (2-6 March 2020). Similarly, market capitalization decreased by 10.68 per cent during that period. During trading 9-13 March 2020, the JCI was at the level of 4,907.

Meanwhile, the index at the end of last year was closed at the level of 6,299.5. This JCI weekly performance was the worst performance since October 2008. On the other hand, the stock exchange in the United States, Wall Street, on 16 March 2020, was the most seriously affected by Covid-19. The performance of Wall Street became the worst since 1987. Trading on Wall Street was forced to stop 15 minutes after stocks in the S&P 500 index plunged 8 per cent. The emergence of this outbreak in Indonesia has made the capital market experience various challenges, especially earlier this year, which had decreased due to the emergence of the Covid-19 outbreak. Sihombing (2020) state that Covid-19 pandemic caused everyone to behave beyond normal limits as usual. The outbreak of this virus has an impact especially on the economy of a nation and Globally (Ningrum, 2020). The problems posed by the Covid-19 pandemic which have become a global problem have the potential to trigger a new social order or reconstruction (Bara, 2021). This has an impact on world activity to be hampered. The outbreak also shook domestic stock and financial markets, as well as set new records.

The Covid-19 pandemic is likened to a black swan for the global economy. The term black swan is used by Taleb (2007) to emphasize rare events that are difficult to predict and have the potential to affect the world of finance and the global economic system. This phenomenon raises fears of a weakening economy and threatens an economic recession. The market is sensitive to such unexpected events, likewise the impact on exchange rates. Black swan surprises on financial markets have occurred before, such as the 1997 Asian financial crisis, the 2008 subprime mortgage crisis, and the 2010 Greek debt crisis. Then, in early 2020 optimism for the market was interrupted by negative sentiment. The sentiment from the assassination of the Iranian General and Covid-19 is considered a black swan because it triggers the market to overreact. Portfolios from the stock market are transferred to low-risk asset instruments, such as gold and bonds (safe haven) (https://bebas.kompas.id).

The results of the Covid-19 black swan scenario frighten the global economy. Covid-19 has had a direct impact on the stock market, manufacturing industry and tourism. In fact, until now, the position of the rupiah (IDR) exchange rate or the movement of the rupiah exchange rate has weakened further and has taken a hit on industrial productivity, the trade balance and people's purchasing power. According to data from the Jakarta Interbank Spot Dollar Rate (Jisdor) (2020), the rupiah exchange rate exceeded IDR 16,608 per US dollar on 23 March 2020. Its position is the weakest currency in Asia. Depreciation has become 15.2 per cent since early March 2020 when the announcement of the first Covid-19 case in Indonesia. Whereas previously, the rupiah exchange rate had strengthened to the level of IDR 13,612 per US dollar in early 2020.

The research focuses more on "special events", namely Covid-19 itself and its effects on the capital market, the JCI, and the exchange rate in Indonesia. Have you ever heard of the term "black swan"? At least, have you ever met a black swan? The black swan is a term that refers to an event with a very small probability (almost unpredictable, at least with statistics but it can have a large and systematic impact. The term was originally introduced by Taleb (2007) in a book entitled "black swan". Something interesting in this incident is that no matter how good mathematics and statistics are in making predictions, once this incident occurs, the resulting impact can result in a very far shift in the prediction results. Of course, there needs to be an adjustment made as a response. Which is the main point in this research. This is a discussion related to black swan as a research topic that is part of financial science.

Research on the effect of exchange rates on stock prices conducted in Indonesia found different results. In Aziz's (2020) research, the results show that: first, interest rate and exchange rate have an effect on stock price movements in the financial sector; second, there is a long-term relationship between the exchange rate and the share price of the financial sector; third, there is an asymmetric effect of the exchange rate variable on stock prices in the financial sector. Kartikaningsih et al.'s (2020) results of regression analysis show that exchange rate affects the stock price of the infrastructure sector listed on the Indonesia Stock Exchange (IDX).

On the other hand, Ardelia and Saparila's research (2018) shows that the interest rate and rupiah exchange rate variables have a significant negative effect on the JCI. Research conducted by Debora et al. (2019) shows that the inflation rate and the rupiah exchange rate do not have a significant effect on the stock price of manufacturing companies in the consumer goods industry sector on the Indonesia Stock Exchange (IDX) for the 2013-2017 period both simultaneously and partially. Due to the differences in the research results, the issue raised is how the influence of the rupiah exchange rate toward the JCI as the impact of the black swan event (case study of the COVID-19 pandemic) empirically is.

II. Research Method

This research design uses an event study with a quantitative approach. According to MacKinlay (1997), event study is a research methodology that uses financial market data to measure the impact of a specific event on firm value, usually reflected in share prices and transaction volume. The application of event studies is widely used in research in the field of finance (as well as accounting) with a very wide variety of events, such as issuance of new debt or equity, announcements of macroeconomic variables such as trade deficits and others. The statistical analysis technique in this study used SPSS 20 Simple Linear Regression Analysis. The analysis was carried out to test whether the data in this study were normally distributed. The simple linear regression analysis method is assessed from the t-test and the coefficient of determination. The population and sample in this study were the rupiah exchange rate against the dollar and the JCI. The type of data used was secondary data from March to August 2020. This research was conducted on the Indonesia Stock Exchange (IDX) through the website www.idx.co.id, and Central Bank of Indonesia through the website www.bi.go.id. Figure 3 below shows the research framework.

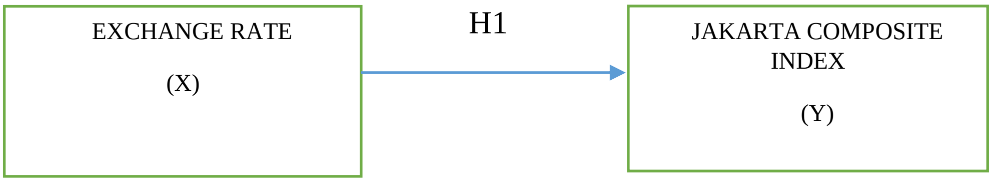

Figure 1. *Research Framework*

H1: The Effect of the Rupiah Exchange Rate on the Jakarta Composite Index (JCI)

III. Discussion

Based on statistical tests, the results of the t-test (Table 1) and the coefficient of determination (Table 2) are shown below.

Table 1. T-test Result

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	9.754	.471		20.719	.000
	Exchange	-.327	.032	-.696	-10.383	.000

a. Predictors: (Constant), exchange
b. Dependent Variable: the JCI
Source: Data processed by SPSS 20

The results of simple regression analysis using the t-test in Table 1 for the exchange rate show the beta coefficient value of -0.327 with a significance level of 0.00. The findings in this study indicate that the rupiah exchange rate has a significant effect on the JCI during the pandemic for all companies listed on the Indonesia Stock Exchange (IDX) for the period March to August 2020.

The results of this study are in line with empirical research conducted by Aziz (2020) and and Kartikaningsih, et al. (2020) in which the results of regression analysis show that exchange rate has a significant effect on stock prices. However, the results of this study contradict the empirical test conducted by Lintang et al. (2019) and Andriana (2015). The results of the regression analysis show that the exchange rate has no significant effect on stock prices.

Table 2. Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Std. Error of `the Estimate	Durbin-Watson
1	.696[a]	.484	.479	.237916	.162

a. Predictors: (Constant), exchange
b. Dependent Variable: the JCI
Source: Data processed by SPSS 20

Meanwhile in Table 2, the coefficient of determination found in this study is 0.484 (47.4%). This value shows that the variation in exchange rates can explain 48.4% of the composite stock price index during the pandemic for all companies listed on the Indonesia Stock Exchange (IDX) for the period March to August 2020. Meanwhile, the other 51.6% are explained by other factors that are not disclosed in this study. The research shows that there is a significant effect of the rupiah exchange rate on the composite stock price index from the results of simple regression analysis with the t-test instrument for the exchange rate showing the beta coefficient value of -0.327 with a significance level of 0.00. Meanwhile, the coefficient of determination found in this study was 0.484 (47.4%).

IV. Conclusion

This value shows that the variation in exchange rates can explain 48.4% of the Jakarta Composite Index during the pandemic for all companies listed on the Indonesia Stock Exchange (IDX) from March to August 2020. Meanwhile, the other 51.6% are explained by other undisclosed factors in this research. This study has several limitations that can be taken into consideration for further research. First, this study only uses the exchange rate variable as an independent variable to determine its effect on the composite stock price index during the Covid-19 pandemic. The future studies can add other independent variables. Second, this study only conducted during a pandemic for all companies listed on the Indonesia Stock Exchange (IDX) from March to August 2020. A longer observation period would certainly provide more in-depth research results.

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