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## The Volatility of FTSE Bursa Malaysia KLCI During the Covid-19 Pandemic

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### Abstract

The COVID-19 pandemic has turned into a social threat to both corporation financial growth and Malaysia's economic growth. The World Health Organization (WHO) declared COVID-19 as a global pandemic on March 11, 2020 that affecting many countries. COVID-19 had a significant effect on the majority of corporation and small businesses, as temporary closures of businesses implemented during the lockdown period. FTSE Bursa Malaysia KLCI (FBM KLCI) has been declining since January 2020 due to this pandemic. The goal of this study is to identify if there is a significant negative impact towards the FBM KLCI after the emergence of COVID-19 by using the paired sample t-test. There were total of 120 days before and after the emergence of COVID-19 used as data for the goal of this study. The data for the FBM KLCI were obtained from Finance.Yahoo.com (Yahoo! Finance website) and data that related to COVID-19 were collected from Worldometers.com and Kaggle.com. From this study, the findings suggested that there is a significant negative impact on the FBM KLCI after the emergence of COVID-19. It is recommended for future research to examine the factors related to COVID-19 pandemics towards the FBM KLCI.

**Keywords:** FBM KLCI, FTSE Bursa Malaysia, Stock Market, COVID-19, Volatility of Stock Market, Paired t-test, Emergence of COVID-19

### Introduction

FTSE Bursa Malaysia KLCI, or FBM KLCI is a capitalization-weighted stock market index in Malaysia. For further understanding of the meaning of FBM KLCI, 'F' stands for Financial Times Stock Exchange, 'BM' stands for Bursa Malaysia and 'KLCI' stands for Kuala Lumpur Composite Index. The Malaysia Stock Market Index (FBM KLCI) began trading on January 1, 1977, with a base value of 100 and a commencement date of April 4, 1986. The FBM KLCI uses the prices of the 30 largest companies, and the return is determined by index variation over time (Chia et al., 2020). The 30 companies comprise of, amongst others, CIMB Group Holdings Berhad, Malayan Banking Berhad and Maxis Berhad.

According to Rosbi and Haji-Othman (2020) claimed that the COVID-19 outbreak had a major and negative impact on the FBM KLCI market price. During the outbreak of COVID-19, the FBM KLCI market faced a negative influence that hindered all economic activities. Furthermore, based on Baker et al (2020) findings encompassing the years 1918–1919, 1957–1958, and 1968 the stock market's unexpected reaction to COVID-19 isn't only due to the virus' mortality. COVID-19 has caused an excess death rate that is only 1/14th that of the Spanish Flu, as of June 23, 2020.

Moreover, according to Lee, Jais, and Chan (2020), in general, the FBM KLCI has been declining since January 2020, reaching a low of 1,219.71 on March 19, 2020, the second day of the Movement Control Order (MCO), which is an initiative of the government of Malaysia to overcome the COVID-19 pandemic. This situation can be shown in Figure 1.



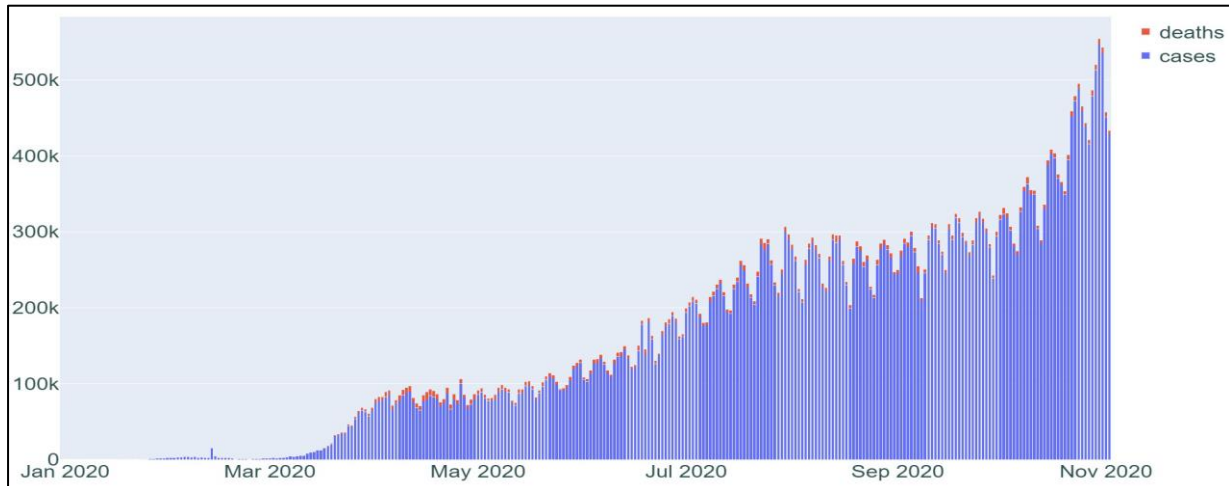
**Figure 1: FTSE Bursa Malaysia KLCI from January 2020 until July 2021**

The outcomes of this study could help the Malaysian government to improve the way they overcome the pandemic, especially if it is proven that there is negative difference towards the FBM KLCI before and after the emergence of COVID-19. Hence, the FBM KLCI can be restored and gradually improved right after the COVID-19 pandemic. If the stock market returns are revived in the future, the businesses are able to operate as usual again with the decreasing of COVID-19 outbreaks, thus the economy of Malaysia will recover soon. Regarding this, Malaysians will be more satisfied since their financial status will also improve and recover as before. Furthermore, this study benefits the investors and also traders. It is because they could differentiate the trend of FBM KLCI before and after the emergence of COVID-19, whether it keeps declining or increasing. Considering investors or traders were already aware of how the COVID-19 pandemic affects the stock market, they would be extra cautious while investing. Moreover, this research also benefits the researchers as it could add extra input and knowledge regarding economic issues during the pandemic of COVID-19.

### Literature Review

The COVID-19 epidemic was first discovered in the Chinese city of Wuhan, in the province of Hubei, in December 2019. The infection then spread to other cities and countries in less than a month. The World Health Organization (WHO) declared COVID-19 a global pandemic on March 11, 2020, affecting over 200 countries (Chakraborty & Maity, 2020). The WHO released the first coronavirus monitoring research on January 21, 2020. Two days later, China imposed

a curfew in Wuhan, Hubei. South Korea was the second country after China to experience a major COVID-19 outbreak, with roughly 9.1 million COVID-19 positive cases and 472, 539 deaths worldwide as of now (Vas, Hopkins, Feher, Rubino, & B Whyte, 2020). Since the disease's introduction, the number of positive cases and deaths had increased, and though the disease's growth had slowed in certain regions of the world, such as Europe, as of November 2020, it was still growing rapidly in others, such as America and Asia. The global spread of COVID-19 is shown in Figure 2.



**Figure 2: The global spread of COVID-19 from January 2020 until November 2020**

In many ways, the COVID-19 crisis had become more foreseeable. What was formerly referred to as a “Chinese problem”, and later, an “Italian problem” is now referred to as a “global problem” (Baldwin & Weder, 2020). As a result, governments were forced to adopt more harsh anti-recession measures. Governments, with few exceptions, initially downplay the disease before it spreads widely among the populace. Then they employed extreme social distancing measures like job and school closures to further isolate themselves. Since the recession, COVID-19 has significantly shaken the global economy and financial markets. All of this was attributable to the virus' highly contagious nature and the inevitability of its explosive spread during the epidemic's 'acceleration stage.'

As this disease is widespread, highly contagious sickness was detected, prompting investors' minds to be flooded with negative thoughts and concerns. The COVID-19 epidemic has had an impact on the stock market in Malaysia. As of March 27, 2020, the KLCI had plummeted 20.52% since the beginning of the year, reaching its lowest levels in a decade. Furthermore, Ozili and Arun (2020) reported that the COVID-19 pandemic has two effects on the stock market. Firstly, the pandemic put a halt to commercial and corporate operations, which then had an effect on the stock system. Secondly, the confusion surrounding the COVID-19 cases affected investors' investment decisions, resulting in increased volatility in the stock market. As a result, many businesses, regardless of its size, faced liquidity issues (Tashanova et al., 2020) which subsequently led to three organizations; the World Bank, the Asian Development Bank, and the International Monetary Fund allocating a total of 68.5 billion dollar to assist the affected countries (Almenfi et al., 2020).

### **Objective and Hypothesis**

The objective of this research was set up, which is to determine whether there is a significant negative impact towards the FBM KLCI after the emergence of COVID-19. Meanwhile, the

hypothesis was stated in this research, which is there is a significant negative impact towards the FBM KLCI after the emergence of COVID-19 for the alternative hypothesis and there is no significant negative impact towards the FBM KLCI after the emergence of COVID-19 for the null hypothesis.

### Methodology

This research was using a secondary data and the data set used was FBM KLCI before the emergence of COVID-19 (BCOVID) from August 1, 2019 until January 24, 2020 (120 days) and FBM KLCI after the emergence of COVID-19 (ACOVID) from January 28, 2020 until July 22, 2020 (120 days). To be more precise, the details of each variable is explained in Table 1.

**Table 1: The Description of Variables**

Type of Variables	Variables Name	Description of Variables
Numeric	BCOVID	FBM KLCI from August 1, 2019 until January 24, 2020
Numeric	ACOVID	FBM KLCI from January 28, 2020 until July 22, 2020

Based on the main objective of this study, a dependent t-test or paired t-test was conducted by using the SPSS software to determine if there is a significant negative impact towards FBM KLCI after the emergence of the COVID-19 pandemic. To be clearer, there was a graph constructed to see if there are any trends or patterns especially the components of time series analysis such as trend, cyclical, seasonal or irregular component between the FBM KLCI and the total cumulative cases of COVID-19 in Malaysia. Furthermore, the data set that used for the statistical testing, which is the paired t-test is a paired sample of the FBM KLCI with two different ranges of period, which are (1) before and (2) after the emergence of COVID 19 in Malaysia.

To identify whether there is a significant negative impact towards FBM KLCI after the emergence of COVID-19, a hypothesis testing must be conducted. It can be shown by:

$$H_0: \mu_d = \mu_{after} - \mu_{before} = 0$$

(There is a no significant negative impact towards FBM KLCI after the emergence of COVID-19)

$$H_0: \mu_d = \mu_{after} - \mu_{before} < 0$$

(There is a significant negative impact towards FBM KLCI after the emergence of COVID-19)

Furthermore, the mean difference ( $\bar{d}$ ), the standard deviation of the differences ( $S_d$ ), the standard error of the mean difference ( $SE(\bar{d})$ ), and the t-statistic ( $t$ ) need to be calculated first before proceeding to the results. The formulae can be shown by these equations:

$$\text{Mean difference, } \bar{d} = \frac{\sum d}{n} \quad (1)$$

$$\text{Standard deviation of the differences, } S_d = \sqrt{\frac{\sum d^2 - \frac{(\sum d)^2}{n}}{n-1}} \quad (2)$$

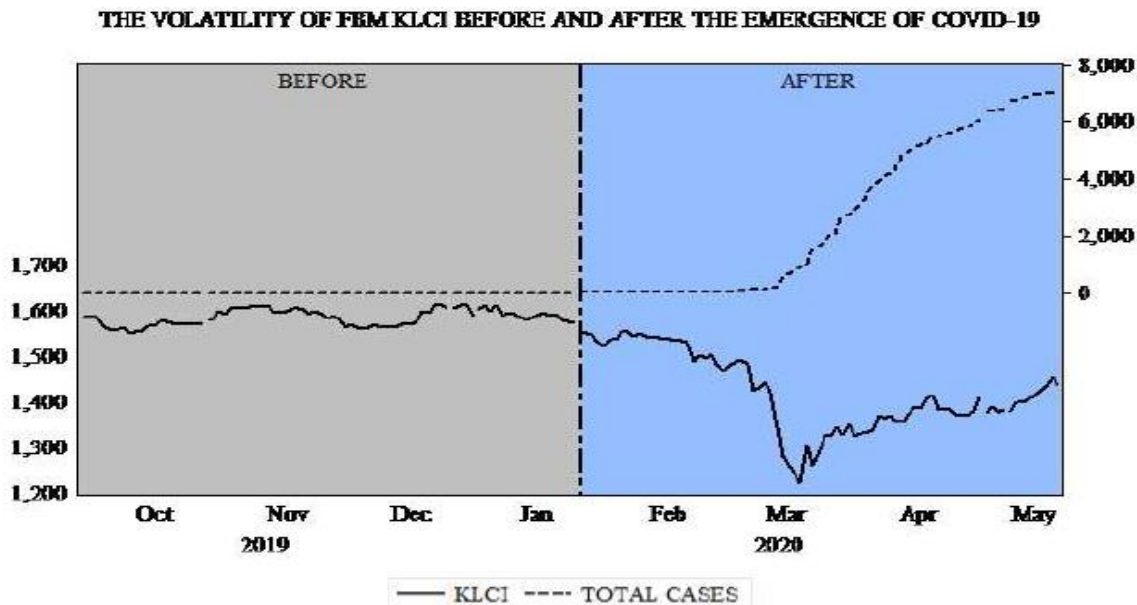
$$\text{Standard error of the mean difference, } SE(\bar{d}) = \frac{S_d}{\sqrt{n}} \quad (3)$$



$$\text{Test statistic, } t = \frac{\bar{d} - \mu_d}{\frac{S_d}{\sqrt{n}}}$$

(4)

## RESULTS AND DISCUSSION



**Figure 3: The Volatility of FBM KLCI Before and After the Emergence of COVID-19**

In the process of describing or summarizing a set of data, the researcher used trend lines as statistical technique to make the data more meaningful. A trend line is a straight line that connects two or more price points and then extends into the future to act as a line of support or resistance. In this study, a graph of two trend lines was constructed regarding the FBM KLCI versus the total cases of COVID-19 in Malaysia. It is to be more clearly seen if there is a negative impact towards the FBM KLCI after the emergence of COVID-19 in Malaysia.

According to Figure 3, the period of the data set is divided into two sections which are before COVID-19 (BCOVID) and after COVID-19 (ACOVID). The data of BCOVID are from August 1 2019 until January 24 2020 while the data of ACOVID are from January 28 2020 until July 22 2020. The graph shows the volatility of the FBM KLCI and the cumulative cases of COVID-19. The graph shows an irregular component and trend component for the two data sets which are the KLCI and COVID-19 cases. However, the graph shows that there is no cyclical and no seasonal component exist in the data series.

Then, the FBM KLCI is ranges from 1550 to 1600. This shows a sideways movement. However, starting from January 25 2020 the first COVID-19 cases were detected. At that time, there were only 4 cases of COVID-19. The COVID-19 cases in Malaysia started to give effect to the FBM KLCI at early March 2020 and continued to rise until the total cases reached 7,000 in May 2020. Moreover, the KLCI went down drastically to the lowest level in March 2020 which is 1279.36 after the sudden cases of COVID-19 started to appear. However, KLCI steadily increased from 1,279.36 to 1,450.54 even though the total cases of COVID-19 showed no signs of decreasing.

**Table 2: Paired Samples Test**

Paired Differences					t	df	Sig. (2-tailed)
Mean	Standard Deviation	Standard Mean Error	95% Confidence Interval in the Difference				
			Lower	Upper			
129.4290	92.1412	8.4113	112.7738	146.0842	15.388	119	.000

Based on Table 2, the mean difference of the FBM KLCI before and after the emergence of COVID-19 is 129.420 with a standard deviation of 92.1412. Moreover, the confidence interval of the mean difference is ranging from 112.7738 and 146.0842. Furthermore, it shows that the p-value is equal to 0.000 (p-value = 0.000/2) which means that the null hypothesis is rejected. Hence, it is concluded that there is a significant negative impact towards FBM KLCI after the emergence of COVID-19.

### Conclusion

As conclusion, this research shows that the results of this study tally with the results of previous studies which say that there is a significant negative impact on the FBM KLCI after the emergence of COVID-19. This finding is supported by Lee et al (2020) studied which indicated that since the beginning of January 2020, the FBM KLCI has been on a downward trend, hitting a low point of 1219.71 on March 19, 2020, the second day of the Movement Control Order (MCO). Based on Bakar and Rosbi (2020) article, the outbreak of COVID-19 has created problems among equities market investors. Therefore, the FBM KLCI index indicated a greater decrease in value from January to March 2020. In January, the FBM KLCI index was 1602.5, and by March 2020, it had dropped to 1348.72. During the three months of the COVID-19 pandemic, the stock fell by 253.78 points. On the date the report is returned on January 4, 2022, the FBM KLCI index is 1537.190 (Malaysia, 2022). It shows that the index is ranging from 1500 to 1600 which is an almost similar value to that of before the pandemic. Therefore, this study concludes that the FBM KLCI is slightly recovering from the impact of COVID-19.

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