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Article

The Effect of Covid-19 Pandemic on Large-cap Stocks in Malaysia

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***Abstract*— Covid-19 that emerged in Wuhan, China and spread to Malaysia starting from 25th January 2020 has changed people's lives and impacted the world's economy, including the stock markets. The study investigates the impact of the Covid-19 pandemic on the stock returns in Malaysia by using a sample of thirty (30) constituents of FBM KLCI. The study utilises Malaysia's daily Covid-19 new cases, death cases, cumulative cases, and cumulative death cases, as well as Singapore new cases and death cases. The impact is observed from 31st December 2019 until 9th June 2020 using the panel regression model. The results show a significant positive but small impact of Covid-19 variables on the stocks' returns except for Singapore daily cases and death cases, which were negative. The study also identifies that the Malaysian stock market is more sensitive to Covid-19 local death cases during the pandemic.**

***Keywords*— Covid-19; FBM KLCI; Stock market return; Malaysia; Singapore.**

I. INTRODUCTION

Crisis or major events can have a significant impact on firms' performance and stock market return. Besides political news and issues, diseases and virus outbreaks can also strongly influence the market condition. For example, past studies have proven that diseases such as SARS, Ebola, Arab Spring, and H7N9 did not only endanger people's life but also hit the stock market badly [1][2][3].

The latest virus outbreak, the Covid-19 pandemic, emerged on 31st December 2020 in Wuhan, China [4]. The pandemic spread to Malaysia starting from 25th January 2020 with the first confirmed case. The virus then spread very quickly due to the exponential growth pattern of its infection, with only two months later, Malaysia reached more than 1000 confirmed cases of Covid-19. Because of the outbreak, the Malaysian government implemented the Movement Control Order (MCO) from 18th March to 31st March 2020. Given the rising trend in Covid-19 active cases,

the government declared the second phase of MCO that took effect from 1st April to 14th April 2020. The government extended the MCO several times until 9th June 2020. Coupled with unsettled political issues, the pandemic has impacted the Malaysian economy and the stock market severely.

The Covid-19 outbreak has been massively impacting the capital market worldwide. Many studies analyse the stock markets, both locally and internationally, to gain insight into market behaviour during this uncertain period. The Covid-19 impact on the stock market return shows a similar pattern with the past diseases' outbreaks. Reference [5] found evidence of the negative impact of Covid-19 on the returns for both daily cases and daily death cases on the Chinese stock market. In Indonesia, investors' fear of the outbreak is portrayed by the negative values of the portfolio's expected return [6].

Research specific to Malaysia on the impact of the Covid-19 outbreak is relatively scarce. While many studies have been done for the other countries' stock markets, the Malaysian stock market would have a different kind of reaction due to the tendency to overreact [7]. References [8] and [9] shows that the Malaysia stock market adversely reacted to Covid-19 cases. Reference [8] studied the impact of Covid-19 on the KLCI Index and 13 composite market indices and found that all the market indices suffered negative returns. However, the effects are insignificant for 9 indices. Reference [8] used Malaysia stock market data from 2nd January until 30th April 2020, which account for 3 phases of MCO. Every phase of MCO is observed to have an interestingly positive impact on the returns, though the impact varies across firm size.

Reference [9] investigated the Covid-19 impact on the Malaysian stock market using Covid-19 cases of Malaysia, China and the US. These three countries' Covid-19 cases were considered in [9] study due to their close economic relationship with Malaysia. The study uses individual stock data from January until 18th April 2020, i.e. until the 3rd phase of MCO and is relatively short. During this period, the economy was still closed. Most businesses were only allowed to resume operation not earlier than 4th May 2020. Previous studies did not analyse the effect of Covid-19 up to the fifth phase of Malaysian MCO when the Malaysian economy was reopening. This event might have an important effect on the market since the Malaysian stock market is sensitive towards new information and investors are more likely to react differently according to the new information and future statistics [10]. Moreover, reference [8] highlights that further study should be done on how the pandemic affects individual Malaysian companies or specific sectors. Previous studies also did not focus on the large-cap stocks which constituted the FBM KLCI and compare the magnitude of the effects on the returns of the stocks.

The study is motivated by the lack of analysis of the impact of the Covid-19 pandemic on the individual stock returns, especially blue-chip stocks using a longer observed period. Therefore, this study utilises a longer period from 31st December 2019 to 9th June 2020, which covers until the end of the fifth phase of MCO in Malaysia when the inter-state borders were opened and most businesses were permitted to resume their operations.

The objectives of the study are twofold:

1) to analyse the effect of Covid-19 on the stock return in Malaysia using Covid-19 variables for Malaysia and Singapore,

2) to identify Covid-19 variables that have the most influence on the stock market return in Malaysia.

The finding of this study is significant to the stock market players in understanding the behaviour of the stock market during the current disease outbreak and could assist in making an investment decision. The study also helps businesses prepare for a similar event and plan for a risk mitigation strategy to reduce the impact. This study is also crucial in understanding the FBM KLCI stocks' behaviour during the unexpected event, whether they tend to exaggerate as indicated by reference [6].

The paper is organized as follows. Section 1 reviews the background of the study, Section II outlines the data and methodology used for this study, Section III discusses the empirical results and Section IV concludes the paper.

II. DATA AND EMPIRICAL METHOD

A. Data and Variables

The daily stock price of thirty companies listed in Bursa Malaysia was collected and their daily stock return was calculated as follows:

$$Return_t = \frac{\text{Price}_t - \text{Price}_{t-1}}{\text{Price}_{t-1}} x100\%. \quad (1)$$

They are large-cap stocks selected from various sectors in the FBM KLCI as they provide investors the outlook for the direction of the stock market. The stock price data were obtained from Yahoo! Finance and Investing.com web portal.

To measure the impact of the Covid-19 pandemic on stock performance, we use data for daily and cumulated Covid-19 cases and death obtained from the Worldometer web portal. Covid-19 greatly affects every part of the world and the cases are reported daily, thus render an importance for the study to examine its effect on the stock market on daily frequency [5]. However, a study on the stock market return in Egypt reported a more sensitive impact of Covid-19 cumulative statistics than the daily statistics [11]. Therefore,

this study uses both daily and cumulative indicators as proxies for the Covid-19.

The study also uses the USD/MYR exchange rate, the Brent crude oil price, and the CBOE Volatility Index following [9] and [12] as control variables. It is important to control the effects of these variables since the exchange rate is strongly linked to the returns of the FBMKLCI [13], while the changes in oil price positively impacted the FBMKLCI market return [14]. In addition, the CBOE Volatility Index is included as a proxy for global risk aversion (VIX). These data were also obtained from Yahoo! Finance and Investing.com. In addition to that, we also include daily and cumulated cases and death due to Covid-19 for Singapore to examine if they have any impact on Malaysia's stock performance. Singapore is one of Malaysia's main trading partners and the two markets have bi-directional causality [15]. Singapore is also the closest geographically and supplies significant numbers of visitors to Malaysia annually [16] hence bear the importance to be included in the examination. The sample period ranges from 31st December 2019, during which the pandemic started in China, until 9th June 2020, during which the fifth phase of the Malaysian movement control order ended.

B. *Empirical Method*

The empirical model used in this study follows the panel data approach conducted by [5] to examine the impact of Covid-19 on the stock market performances. The baseline model to estimate the stock return is as follows:

$$R_{it} = \beta i + \beta_1 DC_{it} + \beta_2 DD_{it} + \beta_3 CC_{it} + \beta_4 CD_{it} + \beta_5 SDC_{it} + \beta_6 SDD_{it} + \beta_7 EX_{it} + \beta_8 BR_{it} + \beta_9 VIX_{it} + \varepsilon_{it} \quad (2)$$

where R_{it} is the stock market return of company *i* at time t, DC_{it} is Malaysia daily Covid-19 cases, DD_{it} is Malaysia daily Covid-19 death cases, CC_{it} is Malaysia Covid-19 cumulative cases, CD_{it} is Malaysia Covid-19 cumulative death, SDC_{it} is Singapore daily Covid-19 cases, SDD_{it} is Singapore Covid-19 death cases, EX_{it} is the Malaysia-USD exchange rate, BR_{it} is the Brent crude oil price, VIX_{it} is the CBOE volatility index, and ε_{it} is the error term. We test the model for random effects using the Breusch-Pagan Lagrange Multiplier and identify the appropriate model [17]. We also test for multicollinearity, heteroscedasticity, and autocorrelation and rectify the problem to arrive at the final model.

III. RESULTS OF ANALYSIS

A. *Descriptive Statistics*

Tables I and II show the descriptive statistics of each variable of the study and the individual stock return, respectively. For all thirty stocks, the mean daily return is 0.033%, with the highest daily return of 17.66% and the lowest daily return of -22.12%. Top Glove reported the highest mean daily return of 1.25% among the thirty companies, while CIMB reported the lowest average daily return of -0.21%. From the thirty stocks, it can be seen that two-thirds of them have a negative mean return, and all stocks from healthcare equipment and service sectors have positive returns. It is also important to note that the returns of the 30 stocks are inconsistent as its standard deviation is quite large from its mean, i.e., 2.473%. This study, therefore, uses panel data analysis to test if unique characteristics of individual stocks are present in the measurement set and determine the best estimation model.

A. *Empirical Results*

Table III presents the result of panel data analysis using STATA. Model 1 and Model 2 were analysed, and the Breusch-Pagan LM tests were performed to see if individual stocks' unique characteristics were present in the measurement set. The $\chi 2$ value of 2.54 and $p>0.05$ indicates that the pooled OLS model is more appropriate as there are no individual stock-specific effects in the data. Hence, the study uses the pooled OLS model to analyse the effect of Covid-19 on stock return. We performed diagnostic checks to test for multicollinearity, heteroscedasticity, and the autocorrelation problem. Model 1 reported a mean VIF of 57.32, indicating the presence of multicollinearity problem among the variables. As the rule of thumb, individual variables with VIF larger than 10, i.e., Malaysia cumulative death (CD) and Brent oil price (BR), were excluded and resulted in a significant decrease in mean VIF to 4.38. Model 3 shows the model corrected for the multicollinearity problem. The White test detected the presence of heteroscedasticity problems. The $\chi 2$ value reported is 374.59, with $p<0.05$ indicating non-constant variances. The Wooldridge test for autocorrelation reported the F value of 24.462 and $p<0.05$, indicating a serial correlation problem. To rectify both problems, the clustered OLS model was analysed to produce robust standard error estimates for the panel model. The rectified model is shown in Model 3.

The final results show that all three Covid-19 variables have a significant positive but very small effect on the stock market returns. An increase in daily cases (DC) increases the stock return by only 0.00226% ($p<0.10$). On the other hand, an increase in daily death (DD) increases the stock return by 0.1331% ($p<0.01$), while an increase in the cumulative cases (CC) only increases the stock return by 0.0001% ($p<0.01$). These results are contrary to the results reported by [8] and [9] that found a significant negative impact on the stock market return using Malaysian main and sectoral indices. However small the impact is, these significant results support that large-capitalization stocks are more favourable during the crisis as they are less risky than small-cap stocks [18].

TABLE I
DESCRIPTIVE STATISTICS

Variables	Mean	SD	Min	Max
Return	0.0326	2.473	-22.124	17.663
Daily Cases	50.073	63.922	0	277
Daily Death	0.688	1.239	0	6
Cumulative Cases	2677.991	3012.694	0	8317
Cumulative Death	41.514	48.307	0	117
Singapore Daily Cases	231.569	327.262	0	1426
Singapore Daily Death	0.128	0.386	0	2
Exchange Rate (USD/MYR)	4.246	0.115	4.055	4.445
Brent Oil Price	170.488	71.151	40.087	288.306
CBOE Volatility Index	141.141	78.046	49.066	356.270

TABLE II
MEAN RETURN FOR INDIVIDUAL STOCK

Stock's Name	Mean	Std. Dev.
Axiata	-0.1044	2.3633
Hartalega	0.8072	3.3057
Dialog	0.1140	2.3106
Digi.com	-0.0086	1.5683
IHH Heal THCare	0.0091	2.0307
IOI Corporation	-0.0477	1.7628
KLCC Property	0.0349	1.0214
Kuala Lumpur Kepong	-0.0829	1.9735
Maxis	0.0146	2.2514
MISC	-0.0020	1.9544
Nestle (Malaysia)	-0.0491	0.7698
Petronas Chemical	0.0160	3.8169
Petronas Dagangan	-0.0063	2.4125
Petronas Gas	0.0644	2.1299
Press Metal Aluminium	0.0770	3.3846
PPB	-0.0811	1.5241
Sime Darby	-0.0032	2.4493
Sime Darby Plantation	-0.0669	2.8743
Tenaga Nasional	-0.1042	1.7543
Telekom Malaysia	0.1209	1.7436
Top Glove	1.2492	3.5599
CIMB	-0.2091	2.9861
Genting Malaysia	-0.1414	2.9383
Genting Berhad	-0.1700	3.4279
Hap Seng Consolidated	-0.0765	2.8344
Hong Leong Bank	-0.1177	2.1577
Hong Leong Financial	-0.0746	2.8642
Malayan Bank	-0.0412	1.7746
Public Bank	-0.0962	2.6068
RHB Bank	-0.0380	2.5635

TABLE III
RESULTS OF PANEL DATA ANALYSIS
DEPENDENT VARIABLE: STOCK RETURN

	Model 1: Pooled OLS	**Model 2: Random Effect**	**Model 3: OLS with Heteroscedasticity & Serial Correlation**	**Model 3: Rectified OLS**
Constant	-21.762 (-4.20)	-21.762 (-4.20)	-18.608 (-3.84)	-18.608 (-3.84)
DC	0.000619 (0.48)	0.000619 (0.48)	0.00226* (1.92)	0.00226* (1.92)
DD	0.1986*** (3.55)	0.1986*** (3.56)	0.1331*** (2.62)	0.1331*** (2.62)
CC	0.0011*** (5.18)	0.0011*** (5.19)	0.0001*** (3.23)	0.0001*** (3.23)
CD	-0.067*** (-4.67)	-0.067*** (-4.68)		
SDC	-0.000285 (-0.95)	-0.000285 (-0.95)	-0.001*** (-4.09)	-0.001*** (-4.09)
SDD	0.08979 (0.69)	0.08979 (0.69)	-0.0622 (-0.50)	-0.0622 (-0.50)
EX	5.5374*** (4.48)	5.5374*** (4.49)	4.648*** (3.89)	4.648*** (3.89)
BR	-0.00128 (-0.51)	-0.00128 (-0.51)		
VIX	-0.0123** (-6.89)	-0.012*** (-6.90)	-0.01*** (-7.49)	-0.01*** (-7.49)
Breusch-Pagan LM Test (χ^2 – stat)	2.54 (0.0553)		-	-
Observations	3120			
Multicollinearity (mean vif)	57.32		4.38	-
Heteroscedasticity (χ^2 – stat)	-	-	374.59 (0.0000)	-
Serial Correlation (F – stat)			24.462 (0.0000)	-

1. Figures in parentheses are t-statistics, except for Breusch-Pagan LM, Heteroscedasticity, and Serial Correlation tests, which are p-values.
2. *, **, and *** indicate the respective 10%, 5%, and 1% significance levels

The regression results also show that Singapore's daily cases (SDC) have a significant negative impact on the stock returns. An increase in Singapore's daily cases decreases the stock return by 0.001% ($p<0.01$). Singapore has been among Malaysia's main trading partners for decades and the two markets have bi-directional causality [15]. Reference [19] reported Singapore among the countries that experienced the most reduction in their stock market indices after Covid-19 hit the country. With the movement control order in force and the decision to close border enforced, the trading activities between the two markets are in halt hence affecting the stock return in Malaysia accompanying the spill over effect of Singapore's stock market downturn. However, Singaporean daily death cases have no significant impact on Malaysia's stock returns. Researcher [11] incorporated Europe Covid-19's cases in the Turkish stock market study, reported that the neighbouring states' Covid-19 cases have a lesser impact on the local market. The results also show that the USD/MYR exchange rate (EX) tends to positively impact the stock returns while the volatility index (VIX) tends to negatively impact the stock returns, which supports the study of [9].

IV. CONCLUSIONS

The Covid-19 outbreak affects the stock market differently across industries, with some wins while some losses. From descriptive statistics results, one-third of the stocks manage to secure positive returns during the pandemic, though the remaining two-third of stocks have negative average returns, which include the banking sector. On the other hand, healthcare equipment and service sectors are more resilient to the pandemic, as shown by positive returns during the observed period.

The two objectives of this study are fulfilled. Based on the first objective, the numbers of Malaysia daily Covid-19 cases and cumulative cases have a small, positive and significant effect on Malaysia's stock market returns. The daily local death cases also positively impact the stock market returns consistent with [8] and [9]. Compared to other Covid-19 variables, the local death cases have a larger influence on the Malaysian stock market. The positive impact of daily Covid-19 cases is attributed to the blue-chip stocks, which constituted in the FBM KLCI. Large market cap stocks are more stable and less risky during crisis periods than small or mid-cap stocks. The significant positive impact of the Covid-19 pandemic revealed from this study could benefit general investors from a diversification point of view. Holding multiple stocks from various sectors could benefit the investors, especially during the pandemic, as significant losses from losing stocks will be offset by positive returns from winning stocks such as from healthcare equipment and service sectors that reaping 1.25% daily return, on average.

Furthermore, the control variables – exchange rate and the CBOE volatility index-significantly impact the stock market. These are the external factors that investors should consider during the Covid-19 outbreak period. For future studies, it is recommended that future researchers to analyze the effect of Covid-19 by using a more extended sample period or comparing the sample period before and after the end of the fifth phase of MCO. It is also recommended to explore more proxies of Covid-19 to examine their effects.

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