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The Impact of COVID-19 on the Malaysian Stock Market: Evidence from an Autoregressive Distributed Lag Bound Testing Approach*

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Abstract

This paper investigates the impact of the domestic and global outbreak of the coronavirus (COVID-19) pandemic on the trading size of the Malaysian stock (MS) market. The theoretical model posits that stock markets are affected by their response to disasters and events that arise in the international or local environments, as well as to several financial factors such as stock volatility and spread bid–ask prices. Using daily time-series data from 27 January to 12 May 2020, this paper utilizes the traditional Augmented Dickey and Fuller (ADF) technique and Zivot and Andrews with structural break' procedures for a stationarity test analysis, while the autoregressive distributed lag (ARDL) method is applied according to the trading size of the MS market model. The analysis considered almost all 789 listed companies investing in the main stock market of Malaysia. The results confirmed our hypotheses that both the daily growth in the active domestic and global cases of coronavirus (COVID-19) has significant negative effects on the daily trading size of the stock market in Malaysia. Although the COVID-19 has a negative effect on the Malaysian stock market, the findings of this study suggest that the COVID-19 pandemic may have an asymmetric effect on the market.

Keywords: Malaysian Stock Market, COVID-19, ARDL

JEL Classification Code: G12, G13, G14, I12, C22

1. Introduction

Like other countries in the globe, Malaysia has endured economic hardship due to the rapid spread of the coronavirus (COVID-19) (Khanthavit, 2021; Khot & Nadkar, 2020; Goh, Henry, & Albert, 2021). The pandemic has a wide accelerating effect on the Malaysian economy (Hasanat et al., 2020). The economy was and still is grappling with the sudden recession that hit the majority of economic sectors and placed the economy in an uncertain situation. However, the positive effect of COVID-19 boosted the rapid growth and huge profits for the medical supplies and detergent sectors, as well as the technology and the food sectors because the higher demand for their products during the social isolation policy was unaffected.

At the beginning of the COVID-19 outbreak worldwide and in Malaysia, the government acted toward a lockdown decision for all factories and industries as well as the social isolation of citizens (Das et al., 2020). The government also injected approximately USD 60 billion to mitigate the effect of the unpredictable shock that occurred and maintain economic stability. Although the urgent expansionary policy was run

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effectively, the shutdown impacted factories and industries in relation to sustaining work and restricting investors. Moreover, the impact of the sudden and huge global shock of COVID-19 throughout the media, particularly given the rising deaths and the confirmed cases, has enhanced the turbulence overall the economies in the globe including the Malaysian economy (Ajami, 2020; Kristiana, Pramono, & Brian, 2021).

The genetic characteristics of the COVID-19 pandemic and its unexpected growth globally created panic in Malaysian society, caused the closing of borders among the Malaysian states and consequently significantly dropped the demand side of entry economic activity. The Malaysian Stock (MS) market is among the most hit sectors in response to a reduction in the demand for stock market products and services, the bid-ask price fluctuations and stock market volatility during the outbreak. This influence of the pandemic outbreak is notably confirmed via statistics provided by official institutions in the country and international organizations during the preliminary pandemic expansion and up to writing of this paper.

According to the Bursa Malaysia web (2020), the listed companies on the main stock market in Malaysia include 789 firms clustered into the entire sectors participating in the gross domestic production (GDP). The Malaysian stock market covers the main products of securities, derivatives and bonds (Bursa Malaysia, 2020). The Bursa Malaysia and Yahoo Finance Webs reveal that the development of the MS market performance during the spread of COVID-19 is in a diminishing trend and a volatile stage. This diminishing pattern of the MS market may be attributed to large financial losses for listed companies that traded in the market's stocks. The ongoing tight regulation of isolation accompanying the shutdown policy in the Malaysian economy created uncertainty throughout all sectors and led to suffering of the capitalists of financial institutions and industrial sectors of the Malaysian economy. This scenario exerted financial stress on the government, which was forced to adopt a new strategy as the economy is likely to experience a drop in its GDP.

The multifaceted impact of COVID-19 on the Malaysian economy and the healthcare status of citizens led the government to reform a flexible strategy to mitigate the shock, facilitate a gradual emergence from the previous shutdown policy and the enhancement of economic sectors (Hasanat et al., 2020; Ramelli & Wagner, 2020). Nonetheless, the current economic influence of COVID-19 on the size of the Malaysian stock market cannot be eliminated in the near future. Similar to the behaviors of other markets, the MS market behavior depends on the change levels in the volatility of the stock market, the spread of bid–ask prices and the future pattern of pandemic outbreaks (Al-Awadhi et al., 2020). Conversely, these former factors of volatility and spread are not the only variables that explain how the stock market in Malaysia works. Indeed, stock markets react to the external or internal shocks that occur and affect investment environments, as investors respond to natural disasters in the afflicted countries (Wang & Kutan, 2013). Given the detrimental effect of the pandemic on Malaysia's stock market much like in other sectors and the continued period of economic contraction, this paper investigates the recent integral impact of the COVID-19 outbreak in terms of the domestic and global spread on the Malaysian stock market.

This paper builds on the following five aspects: Firstly, the lack of adequate studies that examine the influence of pandemics on Malaysian economic activity. Thus, the contribution herein is an empirical investigation of the impact of the COVID-19 pandemic on the Malaysian stock market during the outbreak. Secondly, this paper adds value to the empirical literature on the COVID-19 pandemic that has affected global economies including the Malaysian economy and contributes to the science of pandemic economics. Thirdly, the main contribution of this paper is that it not only considers the impact of the domestic spread pattern of COVID-19 on the MS market, but also considers the global confirmed active cases of COVID-19 outbreak as one of the determinants of the Malaysian stock market model. To the best of our knowledge, this variable has not yet been considered by previous authors. Fourthly**,** from a microbiological view, this work may guide Malaysian policymakers on constructing a suitable strategy for supporting the healthcare system to be, from a microbiological view, it may guide the Malaysian policymakers on how do they construct a capable strategy for supporting the healthcare system to be more fixable in response to unexpected disasters. Fifthly, from an economic perspective, this research may help the government in reducing and mitigating the economic effects of such pandemic in the future.

This study employs time-series daily data from January 27 to May 12, 2020. The analysis period is conducted with a sample size of 76 observations, except for Saturdays and Sundays when the market is closed. This work utilizes the traditional Augmented Dickey and Fuller (ADF) (1979) technique and Zivot and Andrews' (1992) procedures for a unit root test. Conversely, the autoregressive distributed lag (ARDL) bound testing approach for co-integration introduced by Pesaran, Shin, and Smith (2001) is employed in analyzing the MS market model.

This paper is structured as follows. The second section provides an actual model and the core hypotheses of the study. The third section explains the estimation methodology and source of the data used. The fourth section presents the empirical results of the estimation, and the final section concludes this paper.

2. Model Specification and Hypotheses

This work follows Lin et al. (1995), Dzielinski (2012), Hood et al. (2013), Bodie et al. (2018), Al-Awadhi et al. (2020), Gamal et al. (2019) and Kowalewski and

Spiewanowski (2020) in positing that stock markets are affected by their response to disasters and events that arise in the international or local environments, as well as to several financial factors such as stock volatility and spread bid–ask prices. The actual model of trading in the stock market in Malaysia is expressed as follows:

$$\ln \mathrm{SMS}_t = \alpha_t + \beta_1 \ln\mathrm{DOC}_t + \beta_2 \ln\mathrm{GOC}_t + \beta_3 \mathrm{SMV}_t + \beta_4(\mathrm{BA}_{i,t} - \mathrm{BA}_{i,t-j}) + \beta_5 \varepsilon_t \quad (1)$$

where SMS_t presents the trading size of the stock exchange market in the country at time t. DOC_t and GOC_t are the domestic and global outbreaks of COVID-19 in the world and in Malaysia at time t, respectively. SMV_t is the volatility of the MS market during the COVID-19 outbreak at time t. $(\mathrm{BA}_{i,t} - \mathrm{BA}_{i,t-j})$ is the difference in the spread of bid–ask prices of stock i between time t and $(t - j)$. is a constant, and is the error term.

If *S* are significant, then an effect is present, but its direction depends on signs obtained from the regression estimation. The expected signs of the estimated coefficients of the variables are in accordance with information from existing literature and recent experimental research. For example, in assuming that all variables affecting the trading size of stock market are constant, the literature states that stock market volatility may exert a positive or negative influence on the magnitude of transactions in the trading market (Andrei & Hasler, 2015). If the financial information available on stock market behavior enhances a pessimistic perception of investors, then this negative picture may lead investors to reduce their current investment and consequently decrease the current trading volume (Narayan et al., 2015). The opposite scenario will be the prevailing case if the trading volume is increased with an optimistic insight of investors towards the market.

The literature also revealed a positive or negative relationship between the volatility of the spread of bid–ask prices and the magnitude of the exchange stock market depending on market behavior, past spread expectations and the current prediction of existing and future investors (Reilly & Brown, 2011; Smart et al., 2017; Bodie et al., 2018). Investors affect the volume of the trading market according to their historical and current knowledge on the spread of bid–ask prices, which are basically considered their source of disposable profit (Smart et al., 2017). Assuming that a stock has slow liquidity, then a large spread with higher cost may result in lower profit to traders and then reduce the current trading size of their stock in the market. The assumption only accounts for the liquidity while restricting the other factors affecting the spread as constant. According to Lin et al. (1995) and Smart et al. (2017), the time for converting stock into cash is considered the dealer's cost, which affects his decision on trading in the market. Moreover, a lower spread with less cost may lead traders to increase their trading for stocks in the market as their profit increases (Lin et al., 1995; Bodie et al., 2018). Wang and Kutan (2013), Bourdeau-Brien and Kryzanowski (2017), Mahalingam et al. (2018), Tavor and Teitler-Regev (2019) and Al-Awadhi et al. (2020) revealed that natural disasters such as the COVID-19 pandemic exert a negative effect on the stock market and the underpinning of economic activity. In line with this finding and given the rapid spread of COVID-19 in Malaysia and all over the globe, this study examines the impact of the global and domestic COVID-19 outbreak on the trading magnitude of the stock market in Malaysia.

From the literature presented on the relationships between the dependent variable of the trading market size of the Malaysian stock market exchange and its determinants, we formulate the following major hypotheses.

H1: *Increasing or decreasing the domestic outbreak of coronavirus (COVID-19) does not affect the trading size in the Malaysian stock market.*

H2: *Increasing or decreasing the global outbreak of coronavirus (COVID-19) does not affect the trading size in the Malaysian stock market.*

H3: *Higher (lower) stock market volatility does not affect the trading size in the Malaysian stock market.*

H4: *Higher (lower) volatility in the spread of the bid–ask prices of the stock market does not affect the trading in the Malaysian stock market.*

3. Estimation Methodology and Data

A time-series daily data analysis is conducted to obtain the main objective of this paper. To this end, the stationarity tests will be checked for all variables using the traditional ADF procedure of Dickey and Fuller (1979) and Zivot and Andrews' (1992) tests. This approach ensures that none of our variables deal with the second order or the I(2) process, and the co-integration test will be conducted using the ARDL bound test approach of Pesaran et al. (2001). To this end, a general system of the ARDL bound test approach of the trading size of the Malaysian's stock market economy is formulated as an unrestricted error correction model as follows:

$$\begin{aligned}\Delta \ln \mathrm{SMS}_t = {} & \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta \ln \mathrm{SMS}_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta \ln \mathrm{DOC}_{t-i} \\ & + \sum_{i=0}^{n} \beta_{3i} \Delta \ln \mathrm{GOC}_{t-i} + \sum_{i=0}^{n} \beta_{4i} \Delta \ln \mathrm{SMV}_{t-i} \\ & + \sum_{i=0}^{n} \beta_{5i} \Delta(\mathrm{BA}_{i,t} - \mathrm{BA}_{i,t-j})_{t-i} + \delta_6 \ln \mathrm{SMS}_{t-1} \\ & + \delta_7 \ln \mathrm{DOC}_{t-1} + \delta_8 \ln \mathrm{GOC}_{t-1} + \delta_9 \ \mathrm{SMV}_{t-1} \\ & + \delta_{10} (\mathrm{BA}_{i,t} - \mathrm{BA}_{i,t-j})_{t-1} + e_t \end{aligned} \quad (2)$$

where Δ stands for the first difference operator, and n is the lag order. Δ ln SMS_{t-j} indicates the changes in the lagged dependent variable. α_0 denotes the drift term, and e_t is the disturbance term. The ARDL bounds procedure is conducted per Equation (2) and allows for a joint significance test of the null hypothesis of no co-integration (H0: $\delta_6 = \delta_7 = \delta_8 = \delta_9 = \delta_{10} = 0$) against its alternative of extant co-integration (H1: $\delta_6 \neq \delta_7 \neq \delta_8 \neq \delta_9 \neq \delta_{10} \neq 0$).

The rejection of the H0 hypothesis test involves the existence of a co-integrating long-run relationship if the calculated value of the Fisher-statistics (F-statistics) exceeds its upper critical value. A non-rejection of the H0 hypothesis test involves the absence of a long-run co-integration relationship if the calculated value of the F-statistics is less than its lower critical value. The test is inconclusive if the calculated value of the F-statistics ranges between the bounds. The optimal lag will be used according to the Akaike information criteria (AIC).

In this paper, the existence of a co-integrating long-run relationship will be captured according to the criteria that the calculated value of the F-statistics should be compared to its critical values as tabulated by Narayan (2005). This process is conducted as the F-statistics test has a non-standard distribution with small sample sizes ranging from 30 to 80 observations, as proven by Narayan (2005).

3.1. Long-Run and Short-Run Estimates

Once the model confirms the existence of a co-integrating relationship, the ARDL analysis is utilized to capture the long-run and short-run estimates according to the Malaysian stock market exchange model. From the estimation outcome of Equation (2), the coefficients of the variables of $\delta_7 - \delta_{10}$ are normalised by δ_6 and signifies the dynamic long-run relationship between the SMS model and its determinants. The estimated coefficients of the variables of $\beta_1 - \beta_5$ in their first differences indicate the short-run dynamic relationship. Equation (2) represents the estimated short-run dynamic error correction model (ECM) as follows:

$$\begin{aligned}\Delta \ln \mathrm{SMS}_t &= \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta \ln \mathrm{SMS}_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta \ln \mathrm{DOC}_{t-i} \\ &+ \sum_{i=0}^{n} \beta_{3i} \Delta \ln \mathrm{GOC}_{t-i} + \sum_{i=0}^{n} \beta_{4i} \Delta \ln \mathrm{SMV}_{t-i} \\ &+ \sum_{i=0}^{n} \beta_{5i} \Delta (\mathrm{BA}_{i,t} - \mathrm{BA}_{i,t-j})_{t-i} + \lambda \mathrm{ECM}_{t-1} + V_t \end{aligned} \quad (3)$$

where ECM_{t-1} refers to the residuals obtained from the co-integrating long-run Equation (2). The said residuals are entered with a one period lagged for a dynamic error correction model as in Equation (3), in which λ represents the speed of adjustment to the equilibrium in the SMS model. Finally, the model will be checked for its stability and functionality by using several diagnostic tests.

3.2. Data Source

Five variables are used in this paper, including the daily domestic and daily global COVID-19 outbreaks as gathered from the reports published by the Malaysian Health Ministry and World Health Organization (https://www.moh.gov.my., https://www.who.int/diseases/novelcoronavirus-2019/situation-reports). The variables are measured by the daily active confirmed cases in Malaysia and overseas. The variables of the daily trading size of the Malaysian stock market, daily Malaysian stock market volatility and daily spread in the bid–ask prices were obtained from the statistics published by Bursa Malaysia web (https://www.bursamalaysia.com). In this paper, the daily volatility of the Malaysian stock market was constructed according to the method provided by Garman and Klass (1980) as follows:

$$V = 0.5[\ln(\mathrm{HP}) - \ln(\mathrm{LP})]^2 - [2\ln 2 - 1][\ln(\mathrm{CP}) - \ln(\mathrm{OP})]^2 \quad (4)$$

where V refers to the daily volatility in the market, and HP and LP are the daily higher and lower prices in the market, respectively. CP and OP are the daily close and open prices.

4. Empirical Results

This section presents the empirical results of the daily time series data analysis of the trading size of the Malaysian stock market from 27 February to 12 May 2020.

4.1. Stationary Analysis and Co-integration Test

For the time series data analysis, testing the stationarity of each variable included in the model of the daily trading volume of the Malaysian stock market SMS is an imperative condition to ensure that variables are not integrating with a second order. Accordingly, the stationarity analysis in this paper utilizes ADF and Zivot and Andrews' (1992) ZA tests. The ZA test is employed in line with the usual ADF test to conclude the final accurate inference on the stationarity analysis for the variables included in the SMS model. The ZA test for stationarity is employed here given its robustness, consideration of the structural break and shocks that occurred, and greater statistical fit than traditional ADF (Gregory & Hansen, 1996; Atil et al., 2014). The results are presented in Panels A and B of Table 1.

The optimal lag order at k = 1, 2, …, n, was selected automatically according to the AIC (1979) for the ADF test. Meanwhile, the ZA test applied Schwert's (1989) procedure, which suggested an optimal lag set at k = 6 for each tested

Table 1: ADF and ZA Stationarity Tests Results in Level and First Difference

Panel (A): Variables	*T*-Sta (Level)		*T*-S (First Difference)		Order of Integration
Ln(SMS)	–2.96 (1)**		–7.86 (0)**		*I*(1)
Ln(DOC)	–1.60 (5)**		–7.36 (0)**		*I*(1)
Ln(GOC)	–2.81 (0)**		–7.47 (0)**		*I*(1)
(SMV)	–2.64 (3)**		–4.80 (0)**		*I*(1)
$(BA_{i,t} - BA_{i,t-j})$	–1.68 (0)**		–8.23 (1)**		*I*(1)
Panel (B): Variables	***T*-Sta (Level)**	**Break Date**	***T*-St (First Difference)**	**Break Date**	**Order of Integration**
Ln(SMS)	–3.84 (6)**	29/02/2020	–8.41 (6)**	18/03/2020	*I*(1)
Ln(DOC)	–4.86 (6)**	25/03/2020	–8.05 (6)**	23/03/2020	*I*(1)
Ln(GOC)	–4.23 (6)**	16/03/2020	–6.94 (6)**	25/03/2020	*I*(1)
(SMV)	2.19 (6)**	17/03/2020	–13.93 (6)**	16/03/2020	*I*(1)
$(BA_{i,t} - BA_{i,t-j})$	–3.87 (6)**	23/03/2020	–7.51 (6)**	23/03/2020	*I*(1)

Notes: 1. Critical values from MacKinnon (1996) are –4.09, –3.47 and –3.16 at the 1%, 5% and 10% levels, respectively. 2. **Specifies the 5% significance level. 3. Both tests were applied for all variables using EViews with constant and trend. 4. The optimal lag is selected automatically by the Akaike information criteria (AIC) (1979) for ADF test, while for ZA test, the optimal lag at $k = 6$, which is stated in parentheses, was selected based on the Schwert's (1989) procedure. 5. The Zivot and Andrews (1992) provided critical values at the 1%, 5% and 10% levels with –5.57, –5.08 and –4.82, respectively.

variable. Both tests were conducted on the logarithmic form of the variables included in the model, except for the stock market volatility and the difference of the spread. The variables are tested for their levels and first differences with an intercept and trend at the 5% significance level. The results of both tests (Panels A and B, Table 1) indicate that all our variables are stationary after taking their first differences.

The ZA's null hypothesis that the tested variables have unit roots in their first differences with structural break dates is rejected (Panel B, Table 1), thereby confirming the same final inference of the ADF tests on the underlying variables. The break date points (Panel B, Table 1) coincide with the starting growth phase of the pandemic outbreak and the urgent actions by the government during the period of the movement control order (MCO) (Hasanat et al., 2020).

The study continues to investigate the presence of the co-integrating long-run relationship between the daily trading volume of the Malaysian stock market SMS and its determinants. Accordingly, the ARDL bounds test approach is applied with the optimal lag order at $k = 5$, which was selected according to the AIC. The ARDL's null hypothesis of no co-integration is tested against its alternative of extant co-integration. Table 2 presents the computed *F*-statistic values as compared with the Narayan (2005) critical values.

The critical values provided in Narayan (2005) are used because they are statistically more powerful and robust for small sample size ranges from 30 to 80 than the critical values of the *F*-statistic, which are invalid for small sample sizes (Bahamani-Oskooee & Hajilee, 2013). The computed *F*-statistic value of 13.450 is superior to the critical value of 3.718 (which was introduced by Narayan (2005) at the 5% significance level (Table 2). Our variables co-integrate over time. This final inference on the existing co-integration is confirmed by testing for the residuals obtained from the long-run co-integrating relationship for the preferred model of ARDL in its level.

Accordingly, the null hypothesis of a unit root in the residuals is tested against its alternative hypothesis, which

Table 2: Bounds Cointegration Test Result

Model	Calculated *F*-statistic	
Ln (SMS) = F(Ln(DOC), Ln(GOC), (SMV), $(BA_{i,t} - BA_{i,t-j})$	13.450**	
	$K = 4$, $N = 76$	
Critical value for bounds test: case II: restricted intercept and no trend	*I*(0)	*I*(1)
1%	3.687	4.842
5%	2.725	3.718
10%	2.313	3.228

Notes: **Denotes to the 5% significance level, while *k* is the number of determinants. Critical bounds of *F*-statistic are shown in Narayan (2005).

Table 3: Testing for Residuals

Variable	ADF-Stat.	*t*-Crit. 5%	*P*-value	Decision	I(d)
ε	–5.24**	–3.48	0.003	Reject of Null	Stationary I(0)

Note: The test is performed with an intercept and trend. **Indicates significance at 5% level.

Table 4: Long-Run and Short-Run Estimates

Panel A: ARDL (1, 5, 1, 1, 4) Long–Run Coefficients Estimates					
Cons	**Ln(DOC)**	**Ln(GOC)**	**(SMV)**	$(BA_{i,t\_} - BA_{i,t-j})$	
8.67 (3.15)	–0.15 (–1.46)*	–0.34 (–2.05)**	–0.57 (–2.44)**	0.81 (5.96)**	

Panel B: ARDL (1, 5, 1, 1, 4) Short–Run Coefficients Estimates						
			Lag Order			
Regressors	**0**	**1**	**2**	**3**	**4**	**5**
ΔLn(SMS)		–0.15 (–1.10)				
ΔLn(DOC)		–0.64 (–2.13)**	–0.27 (–0.98)**	–0.67 (–2.43)**	–0.81(–2.83)**	–0.53(–1.96)**
ΔLn(GOC)		–0.92 (–1.94)**				
Δ(SMV)		–0.29 (–2.33)**				
$\Delta(BA_{i,t} - BA_{i,t-j})$		0.29 (5.45)**	–0.38 (–4.91)**	–0.19 (–2.82)**	–0.08 (–1.56)**	

Panel C: Diagnostic Statistics Tests							
ECM (–1)	$\chi^2_{SC}(5)$	$\chi^2_{ff}(2)$	$\chi^2_{H}(5)$	$\chi^2_{N}(5)$	**Adj. R^2**	**F-Sta/P.V.**	**CU(CU²)**
–0.54 (–4.39)	3.77 (0.58)	0.48 (0.62)	1.72 (0.89)	23 (0.00)	0.57	4.18 (0.00)	S(U)

Notes: The number in the parentheses as in Panels A and B refer to the value of the *t*-ratio. χ^2_{SC}, χ^2_{ff}, χ^2_{H} and χ^2_{N} in Panel C are Lagrange multiplier statistics for diagnostic tests of residual correlation, functional form misspecification, heteroscedasticity and normality, respectively. These statistics are distributed as chi-squared variants with degrees of freedom as in the parentheses, while the Probability values are in brackets. The chi-squared critical values at the 5% significance level with two and five degrees of freedom are 5.99 and 11.07, respectively. The ARDL method for cointegration is used to estimate Equation 2 in the specification model of SMS with a maximum lag of 5. * and ** indicate significance at 10% and 5% levels, respectively.

suggests that residuals are stationary with an $I(0)$ process. Table 3 indicates that the residuals are stationary at its level or $I(0)$ process given that the calculated absolute value of ADF test statistic (5.24) is larger than the 3.48 critical value at the 5% level of significance. Thus, a long-run relationship exists among our variables of interest.

4.2. Long-Run and Short-Run Estimates

The long-run and short-run estimates for the daily trading volume model of the Malaysian stock market are obtained using the ARDL method. The estimates are obtained according to the R-BAR Criteria. The long-run estimate is conducted to investigate the impact of our explanatory variables on the daily trading volume in the Malaysian stock market during the study period. The estimated dynamic ECM form is performed to check the long-run co-integrating characteristic among variables and the predictable capability of the underlying model throughout its functionality of diagnostic and stability tests. The estimation results of the ARDL in the long- and short-run estimates along with diagnostic tests are presented in Table 4.

Panel A of Table 4 displays the long-run estimate of the SMS. The coefficients show their expected signs and are significant at the 5% significance level, except for the coefficient of the local outbreak of the COVID-19 pandemic, which is significant at the 10% significance level. Results supported the long-run existing impacts of our hypothesized determinants on the trading size in the Malaysian stock market (SMS) during the study period. Almost all our explanatory variables have short run effects on the MSM model (Panel B, Table 4).

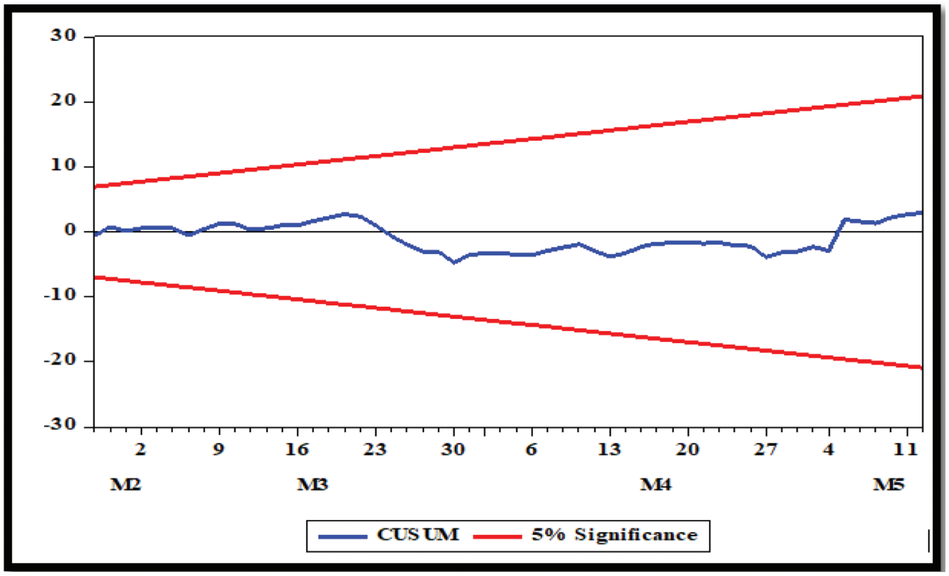

Figure 1: Plot of CUSUM Statistics for SMS Model

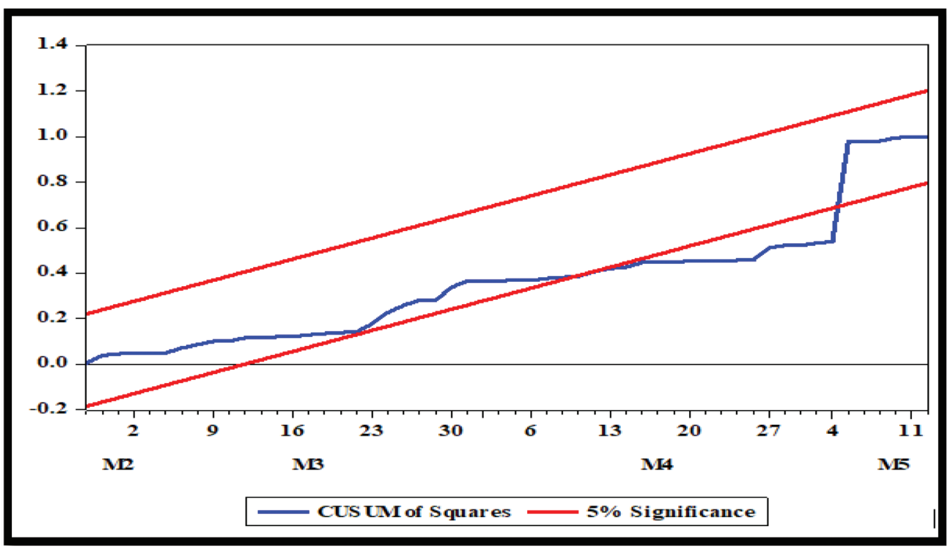

Figure 2: Plot of CUSUMSQ Statistics for SMS Model

Overall, the empirical outcomes of coefficients in the long run and short run have negative impacts on the trading size of the SMS in Malaysia during the COVID-19 pandemic. The one lagged ECM (Panel B, Table 4) carries the negative value of –0.54 with a statistically significant coefficient at the 5% level. The ECM provides the co-integration evidence and its size indicates that 54% of adjustment speed for one day is considered toward the equilibrium of the SMS. The adjusted *R*-squared value suggests that 57% of the variation in the MSM model occur within its explanatory variables.

The validation and stability of the short-run MSM model is checked using several statistical diagnostic tests. Our model (Panel C, Table 4) was correctly identified and has a powerful empirical inference to explain the reduction in the trading size of the Malaysian stock market because of the current disaster of COVID-19. Lastly, the CUSUM test indicates some instability over the study period, where the plot of the test statistics within its standard significance level of the 5% lies out its two lines (Figures 1 and 2). The instability date points are clearly volatile throughout the implementing period of the MCO policy in Malaysia.

5. Conclusion

Our paper investigates the impact of the COVID-19 outbreak on the trading size of the stock market in Malaysia. Time-series daily data analysis with a sample size of 76 observations was employed. The analysis covered the period from February 27 to May 12, 2020, for all 789 listed companies working in the main market of the KLSE. The daily trading size of the Malaysian stock market reacted negatively with the daily growth in the domestic and global extent of the COVID-19 pandemic. This paper also provides recommendations to the beneficiaries. Given that the government did not anticipate the sudden shock of the current event of the COVID-19 outbreak, building a strong and flexible healthcare system must occur in the future.

As the economy still remains in recession, the government must effectively re-employ savings and encourage investors and capitalists to re-invest in new businesses to support the economic recovery. Revising the macroeconomic labor market policy for the private and public sectors should be considered because the monetary and fiscal policies are insufficient to stabilize the economy or mitigate shock. This study reveals that the current pandemic had asymmetric effects on the economic sectors for all countries worldwide. However, examining the positive effect of the COVID-19 shock is needed.

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