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IMPACT OF MYR AGAINST USD EXCHANGE RATE TO ZOOM VIDEO COMMUNICATION STOCK DURING PANDEMIC OF COVID-19

Yong Yien Ling[a] and Nurshila Ahmad[b*]

[a,b] Labuan Faculty of International Finance, University Malaysia Sabah, FT Labuan, Malaysia.
**Corresponding author's email: nurshila@ums.edu.my*

ABSTRACT
This study is aimed to investigate the impact of MYR against USD exchange rate to Zoom video communication stock after the pandemic of Covid-19 over the period from 27th January 2020 to 6th October 2020. The pandemic of Covid-19 brings a lot of economic issues to a country especially for the exchange rate and more and more people are using the video communication apps for various purpose. The ARDL model would be used to examine the long-run impact and short-run impact of MYR against USD exchange rate to Zoom video communication stock. A long-run impact represent that MYR against USD exchange rate fluctuation are positively influence on the stock price. At the same time, there have no short-run coefficient for the variable for this model where the result shows an insignificance level. Thus, the RM against USD exchange rate is affecting the Zoom video communication stock price in the long-term period. Therefore, in terms of policy relevance, the findings of this article indicate that the governments of these emerging markets should exercise caution when implementing exchange rate policies because they will have an impact on emerging stock markets.

***JEL classification**: B17, C58, F31.*
***Keywords:** Exchange rate, zoom video communication stock, pandemic, Covid-19.*

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1. INTRODUCTION

Exchange rate and stock price would change in everyday which can hear in news. Exchange rate which is the most important rate for everyone where they need to used it in any activity especially for investing. In the same time, exchange rate is important on the stock market whereby the depreciation could lead the investor to have a low stock return and in contrast, an appreciation of MYR against USD could lead the investor to gain a lot of stock return. This study is focus on the impact of MYR against USD exchange rate to Zoom video communication stock during pandemic of Covid-19. In many previous economic studies investigate the relationship between exchange rate and the stock price in different countries whether it is developed, underdeveloped or developing. The result shows an inconclusive result in their studies. The dollar exchange rate indicated a

significant positive effect on stock price when there have an appreciation of dollar (Oskooee & Sohrabian, 1992). An economic policies and investment decision making are important for the investors and economical traders where the stock returns would be affected due to the foreign exchange market transmitted quickly into the stock market (Pong, 2017). As the exchange rate is an impact which can affected of the stock return, the stock open price would become more liquidity as the bid and ask activities of stock increasing in the stock market. In the same time, the fluctuations of MYR against USD exchange rate would be an influencer to the stock market where it can influence the stock return to the investors.

In addition, previous research findings show that there's a relationship between exchange rate and stock price. In the study of (Tsagkanos & Siriopoulos, 2013), the result shows that there have a long-run relationship and short-run relationship in different country. The previous study also stated that the appreciation of the Ringgit Malaysia (MYR) and the stock price and exchange rate are sensitive if the observation period and exchange rate regimes changed (Pong, 2017). According to research of (Ricky & Lim, 2015), there have many macroeconomic variables could affected the stock price including the exchange rate where the exchange rate have a positive long-run coefficient to the stock price. Further, the previous study also stated that there have positive correlations between exchange rate and stock price which there have an appreciation of the exchange rate. The significance of the study is that the inconclusive result of the impact of exchange rate to stock price whether in long run or short run especially for the exchange rate to video communication application stock. In addition, the relationship between the exchange rate and stock price have been researched but only in the developed countries and the further research can be done with the variable of exchange rate and video communication stock especially in this technological world. A further significance is that the research in the underdeveloped countries' exchange rate towards stock price in relevant countries. Inspired from the previous literature, this study contributes to analyses the relationship between MYR against USD exchange rate and stock price and to prove the long run impact and short run impact of MYR against USD exchange rate to Zoom video communication stock during the pandemic of Covid-19.

2. LITERATURE REVIEW

At the end of 2019, an epidemic broke out in Wuhan, China that surprised and panicked the world which called COVID-19 (Reynolds & Weiss, 2020). It is also because of this epidemic that the world has plunged into economic difficulties and peoples panic. Not surprisingly, the global economy such as exchange rates, supply and demand shocks, tourism, and the stock market were not unexpectedly affected by the epidemic (Cheng, 2020). In order to prevent the infection of Covid-19, many countries including Malaysia have decided to implement the Movement Control Order (MCO). The probabilities of people at home have risen sharply, and the chances of using the Internet have also increased. This makes people use the Internet to communicate more and more opportunities. As a result, the usage rate of video conferencing applications has increased and its stock prices have changed accordingly.

The market is going through a turbulent period whereas the period of pandemic Covid-19, and investors need to move between various sectors to make the most of the market. They need to rebalance from overestimated industries to underestimated industries and from bleak prospects to bright industries (Nathan, 2020). Therefore, the stabilization of the market should be aware because there have many factors could affected the stock market including the MYR against USD exchange rate. According to the previous study, the exchange rate could bring a lot of effect to a country. Not just

affecting the stock market also the export and import. The appreciation and depreciation of the home currency brings the low or high returns to the firms or investors.

Based on the report of (Collins & Gagnon, 2020), the exchange rate pressure in the COVID-19 pandemic is an important signal of potential economic pressure on global policymakers. In this report, the author stated that the market commentary focuses on the strength of the U.S. dollar, but the exchange rate of the U.S. dollar against other major reserve currencies (such as the euro and the yen) has not changed much. On the contrary, the currencies of many emerging markets and energy exporting countries have fallen sharply against reserve currencies. This is the reason of the MYR against USD are recently depreciated due to the Covid-19. According to the historical data from (Trading Economics, 2020), the cases of Covid-19 are increasing day by day since January 24, 2020 until now. Although the epidemic was under control for a period of time, the epidemic has spread uncontrollably after a period of deregulation. It has been start again in Malaysia from September which at the time period of all economic activities started. Based on the report from (DG OF HEALTH, 2020), the cases in Sabah be declared 98 new cases on 29 September 2020.

According to the historical data from (Yahoo Finance, 2020) and (Trading Economics, 2020), the stock price shows an upward trend, even though the price of its stock has been fluctuating over the past few months which are shown in the Figure 1. In the September 2020, the cases of the Covid-19 had been started over again after deregulation few months ago in Malaysia as mentioned. Thus, the MYR against USD exchange rate also affected in this situation. As the epidemic break out again, the MYR against USD depreciate from 29 September 2020 to 1st October 2020 and so as the Zoom video communication stock price.

There have many previous studies indicated that the relationship between the exchange rate and stock price are long-run and short-run relationship, but the inconclusive result represent that the different countries will show a different result. Based on the study of (Muhammad & Rasheed, 2002), there have a least short run between the exchange rate and stock market which means that the country cannot use the exchange as a policy tools to manage the stock price. According to the research of (Rjoub, 2012), there have an interrelationship between the exchange rate and stock price in Turkish where a short shock in the US stock market. There have a short-run relationship between the exchange rate and stock price but in this research, there have a short-run with a dual causal relationship between these two variables (Oskooee & Sohrabian, 1992). In (Tsagkanos & Siriopoulos, 2013), this is the first research in the literature and the result shows that there have a long-run and short-run relationship between the exchange rate and stock price in EU and USA.

Most of the researchers are stated that the macroeconomic variable such as the money supply are able to affect by the exchange rate. The exchange rate in a country would change time to time and the stock price would have a short shock in the stock market. This situation would make the stock price become more volatility which was caused by the investors doing the bid and ask activity of the stock. According to the study of (Ho, 2003), the stock price have a positive related to the exchange rate. In the study of (Ricky & Lim, 2015), there have an evidence that the exchange rate have a significance relationship which can represent that the change in exchange rate could affected the stock price. In the research of (Khalid, 2017), the research have shown a cointegrated between the exchange rate and stock price where there have a long-run relationship with a long-run coefficient in exchange rate will contribute 3.17% of market capitalizations. In the same time, an estimation lagged of ECM are applied in this model to con-tributed an

short-run coefficient where there have a significance value to prove that there have a short term relationship between exchange rate and stock price after estimation.

According to the study of (Naeem, Rasheed, & Husain, 2003), a study of exchange rate and stock price have been study where the result of the study are mix with a no long-run relationship between stock price and exchange rate for Pakistan and India and no short-run relationship between exchange rate and stock price for Pakistan, India, Bangladesh and Sri Lanka. A study have been conclude that there have an evidence of Chinese stock price have a long-term positive cointegrated with foreign exchange rate where 1% change in the exchange rate would cause a 32% change in the Shanghai stock market index (Gary & Ma, 2010). Besides, the study of (Mohamed & Wisam, 2009), a study of exchange rate and stock price have been conducted at the period of before crisis and after crisis. The result shows that a positive relationship in the short-run between exchange rate at the period of crisis and it have become a negative relationship after crisis in the long-run. Moreover, some of the study stated that there have a mix cointegration between the exchange rate and stock price which the research are using the data from G-7 countries (Habibi & Lee, 2019). The result represent that there have no long-run significance relationship between these two variables in G-7 countries and a one day short-run cointegration between these two variables in the G-7 countries. However, in this study the result shows that when they predicting the future of the United States in the short or long term, the record of stock prices and dollar values cannot be relied on.

Furthermore, there have some literature studies are study about the impact of exchange rate on stock return by using Autoregressive Regression Distributed Lag (ARDL) model. The estimated ARDL model results shows that the exchange rate have a negative impact on stock returns which indicates that the exchange rate could bring a lot of effects on stock market (Khan, 2019). The appreciation or depreciation on exchange rate could bring a positive or negative relationship with stock price and bring a positive or negative relationship between the exchange rate and stock returns. In the study of (Türsoy, 2017), a causality test between the stock price and exchange rate in Turkey where the empirical result shows that the strong long-run relationship between exchange rate and stock prices. A Granger Causality test is applied in the model which the empirical result shows that a bi-directional causality between the stock prices and exchange rate in the long run and unidirectional causality for exchange rate and stock prices in the short run. Follow by Luqman & Kouser (2018), they stated that the relationship between the exchange rate and stock price could be negative or positive where it was depend on the investors or firms who are import-oriented or import oriented.

For instance, if the investors or export-oriented firm would benefit the home currency to be depreciate and this will lead to make the export increasing and hence, the stock prices will increase when the competitiveness and earnings between the firms or investors. Therefore, it will have a positive relationship between the exchange rate and stock prices and vice versa for the negative relationship between the exchange rate and stock prices. In order to test the relationship between the exchange rate and the stock prices, many of the pervious researchers are conducted the Granger Causality test in their model. Thus, some of the research shows there is causal relation between the exchange rate and stock prices. According to research of (Alagidede & Panagiotidis, 2011), the empirical result of this research presents a causal linkage from exchange rate and stock prices in the different countries which is Canada, Switzerland and United Kingdom. In the previous study, the empirical result of the study stated that the literally of stock price and exchange rate are not able to predict the future in the market either in stock market or exchange rate (Chung & Few, 2001). In the period of the pandemic Covid-19, the exchange rate in Malaysia are depreciate against the US dollar with value of 4.2957 (Aziz,

2020). At the same time the stock price of video conferencing is expected to gain traction during the pandemic of Covid- 19 where the video conferencing can be used in the quarantine time which is MCOs. There has no previous study where study about the exchange rate and stock price of video conferencing. Although the pandemic of Covid-19 is similar with the pandemic of SARS, the research in exchange rate and stock price of video communication are not exist yet.

3. DATA

In this study, the natural logarithm of exchange rate and natural logarithm of Zoom video communication stock price are used in this model. By using the natural logarithm, the data of the variables would allow us to quickly derive the familiar properties of logarithmic and exponential the functions. Table 1 shows the data description that applied in estimating the model in this study. The LER de-notes the natural logarithm of MYR against USD exchange rate and LSP denoted the natural logarithm of Zoom video communication stock prices. Besides, the Figure 1 and Figure 2 show the graph for natural logarithm of exchange rate and natural logarithm of Zoom video communication stock price. Based on the Figure 1, the MYR against USD are shows a downwards trend after raise although there have fluctuation during the months. The Figure 2 shows a graph for natural logarithm of Zoom video communication stock price which shows an upwards trend although there are fluctuated during these months.

Table 1: Data description.

Variable	Concept	Description	Units
LER	Natural Logarithm of Exchange Rate	Official Exchange Rate	RM against USD
LSP	Natural Logarithm of Zoom Video Communication Stock Price	Zoom Video Communication Stock Price	Index, 27th January – 6th October 2020

The data for MYR against USD exchange rate would be collected through International Monetary Fund (IMF) and data of Zoom video communication stock price would be collected through the Yahoo Finance Website. In this study, the daily data from 27th January 2020 to 6th October 2020 would be used instead of monthly, quarterly, and yearly due to the data of the exchange rate and Zoom video communication stock change from time to time and especially for period before the pandemic of Covid-19 which is from January to Mid-March and during the pandemic of Covid-19 which is Mid-March until latest date of 6 October. The dependent variable in this research is RM against USD exchange rate while the independent variable in this study is Zoom video communication stock price.

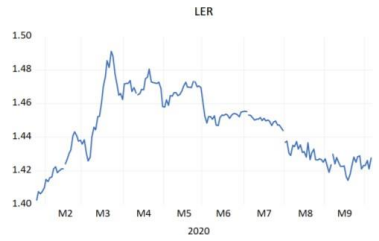

Figure 1: Graph of LER.

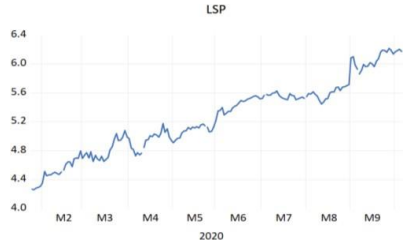

Figure 2: Graph of LSP.

In this paper, the Autoregressive Regression Distributed Lag (ARDL) approach or a bound test approach will be used to test the cointegration of these two variables. By using the ARDL, this approach would allow to check whether the relationship between exchange rate in Malaysia and stock price of video conferencing is purely I(0), I(1) or mutually cointegrated.

Table 2: Descriptive statistics.

	LER	LSP
Mean	4.247611	217.0149
Maximum	4.441800	502.4100
Minimum	4.066100	71.00000
Std.Dev	0.085587	111.2138
Skewness	0.023805	0.938564
Kurtosis	1.975198	3.163324
Jarque-Bera	7.718232	26.03543

Table 2 shows the descriptive statistics of the variables of MYR against USD and Zoom video communication stock prices. LER represent the variable of natural logarithm MYR against USD exchange rate and LSP represent the variable of natural logarithm of Zoom video communication stock prices. LER present a 7.718232 of Jarque-Bera value and LSP present a 26.03543 of Jarque-Bera value.

Figure 3: Exchange rate and Zoom video communication stock.

Figure 3 shows the relationship between the exchange rate and Zoom video communication stock. Based on the figure, the exchange rate moves fluctuated and the Zoom video communication stock moves upwards trend. Therefore, the expected relationship between MYR against USD exchange rate and Zoom video communication stock price is positive relationship when MYR against USD exchange rate move appreciate and Zoom video communication stock price moves upwards. Therefore, we can see that the MYR against USD exchange rate reached its highest point in March 2020 and began to depreciate. Since the cases Covid-19 has spread in Malaysia on March and affected the exchange rate of MYR against the US dollar, the stock of Zoom video communication has received attention from some people and its stock price has begun to rise.

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4. METHODOLOGY

4.1 Unit root test

In a study, it is important to test the stationary of the variable especially for the variable which based on time (Lyocsa, Vyrost, & Baumohl, 2011). To examine the stationarity in a time series, Unit Root Tests (Stephanie, 2016) would be used in this study. In the Unit Root Tests, there are two types of common trends which are time-trend regression and first differencing. The time-trend regression is applied to the I(0) series while first differencing is applied to the I(1) time series. If the variables are I(1). A cointegration test will be used to model long run relationship between the variables. The probability value of Unit Root Test is significance at 1% of significance level, 5% of significance level and 10% of significance level. Thus, the probability value that more than 10% as insignificance level which need to transform in to first difference in order to make the variables become stationary and significance at least at 10% of significance level. The equation used to test the stationarity of RM against USD exchange rate and Zoom video communication stock price can be written as:

$$y_t = \rho y_{t-1} + \mu_t \tag{1}$$

Where, $\boldsymbol{\mu_t}$ is a white noise disturbance terms.

According to the equation (1), is used to test the stationarity of the variable. is non-stationary if ˆis statistically significantly equal to 1 and is stationary if ˆis less than 1. Alternatively, the autoregressive (AR) model is written below:

$$y_t - y_{t-1} = \rho y_{t-1} - y_{t-1} + \mu_t$$

$$\Delta y_t = (\rho - 1) y_{t-1} + \mu_t$$

$$\Delta y_t = \gamma y_{t-1} + \mu_t \tag{2}$$

When ρ =1 and γ =0, y_t has a unit root and is non-stationary. On the other hand, if $\rho < 1$ and $\gamma < 0$, y_t has no unit root and is stationary.

4.2 Autoregressive regression distributed lag (ARDL) model

In this model, the Autoregressive Regression Distributed Lag (ARDL) model would be applied to test the variable which is dependent variable as RM against USD exchange rate and independent variable as Zoom video communication stock price. According to the previous research, the Autoregressive Regression Distributed Lag (ARDL) model is better than other cointegration tests, such as the Johansen framework. This is because the model the data appropriately and extract both the long-run and short-run relationship between the dependent and the exogenous variables. In other words, the ARDL model is tested against a single cointegration and can be applied in different integration sequences (Güler & Nalın, 2014). In Autoregressive Regression Dsitributed Lag (ARDL), if all the series are I(0), the cointegration test will be omitted which only model the data in the levels by using Ordinary Least Squares (OLS). If all the series are I(1), but the variables are not cointegrated, which the first difference of the series will be apply and estimated a standard regression using Ordinary Least Squares (OLS). Autoregressive Regression Dsitributed Lag (ARDL) by (Pesaran & Shin, 1999), and (Pesaran & Shin, 2001), the mixture of I(0) and I(1) can be used the Autoregressive Regression Distributed Lag (ARDL). Other than that, the different variables can be assigned different lag lengths as

they enter the model but need to find maximum lag length. In the same time, a small sample size (Narayan, 2005) is an advantage over conventional cointegration testing. The empirical model used to examine the impact of Malaysia's exchange rate on Zoom video communication stock after the pandemic of Covid-19 are shown in the equation below:

$$ER_t = \beta_0 + \beta_1 ER_{t-1} + \cdots + \beta_k ER_{t-p} + \alpha_0 SP_t + \alpha_1 SP_{t-1} + \alpha_2 SP_{t-2} + \ldots + \alpha_q SP_{t-q} + \varepsilon_t \quad (3)$$

Where,

SP = Zoom video communication stock price
ER = Malaysia's Exchange Rate

Equation (3) represents the long-run relationship between time series variables. In this test, we will perform the "bound test" under Pesaran (Pesaran & Shin, 2001) which is based on the F- test. This test will provide the evidence of a long-run relationship between these three variables. Equation (3) is then expressed to incorporate the study variables as the equation is shown in the equation (4):

$$\Delta ER = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta ER_{t-i} + \sum_{t=0}^{p} \beta_2 \Delta SP_{t-i} + \beta_3 ER_{t-1} + \beta_4 \Delta SP_{t-1} + \beta_5 \Delta SP_{t-2} + \varepsilon_t \quad (4)$$

Where,

Δ = First order differences
SP = Zoom video communication stock
price ER = Malaysia's Exchange Rate

An F-test on the null hypothesis H_0: $\theta_0 = \theta_1 = \mathbf{O}$ is carried out to determine whether the variables SP_{t-1} and ER_{t-1} which have long-run coefficients are statistically significant by estimating to quation (4). An unrestricted error correction model (ECM) is used to test the long-run relationship between variables (Xuan, 2018) which the null hypothesis (H_0) and alternative hypothesis (H_1)of model are stated as follow:

$$H_0 = \lambda_1 = \lambda_2 = \lambda_3 = 0$$
$$H_1 \neq \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq 0$$

4.3 Granger causality

Granger causality is a statistical test to gain basic intuition. The basic intuition of Granger causality test is obtained from the paper of the mathematician Norbert Wiener. (Granger C. W., 1969) was the first econometrician to formally test the direction of causality, on the premise that the future will not lead to the present or the past. For example, time will not go backwards. If B appears after A, then B will not cause A. However, if A appears before B, it does not necessarily mean that A will cause B. Is A before B, or B before A, or they happen at the same time. According to (Granger C. W., 1969) and (Sims, 1972), if the prediction of *y* is improved when the variable *x* is included, *x* will lead to *y*, and vice versa. If the I(1) series is not cointegrated, VAR is used with the first difference data. If the I(1) series is accumulated, VECM is realized by adding an error correction term from

the cointegration vector. According to (Granger C. W., 1988), if a pair of I(1) series is cointegrated, there must be a causal relationship in at least one direction.

4.4 Stability test (cusum and cusumq)

CUSUM and CUSUMSQ are used to test the consistency of the coefficients in model. CUSUM test is the cumulative sum of residuals which based on the normalized version where the CUSUMSQ is the cumulative sum of square residuals based on the normalized version. Under the null hypothesis of coefficient constancy, sequence values outside the expected range indicate that the model changes over time. In the CUSUM test and CUSUMSQ test, if a set of ±2 standard error bands is usually plotted around zero and any statistic lying outside the bands is an instability parameters.

5.0 EMPIRICAL RESULT

5.1 Unit root test

Table 3: Result for unit root test.

Variables	ADF Unit Root Test at Level I(0)			ADF Unit Root Tests at First Difference I(1)		
	None	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept
LER	0.8073	0.2579	0.2588	0.0000***	0.0000***	0.0000***
	(0.43707)	(-2.0681)	(-2.6504)	(-9.4028)	(-12.7605)	(-12.9793)
LSP	0.9959	0.7763	0.0233**	0.0000***	0.0000***	0.0000***
	(2.3729)	(-0.9316)	(-3.7231)	(-13.4710)	(-13.9332)	(-13.8948)

** indicate significance at 5% of significance level

*** indicate significance at 1% of significance level

In order to analyzing the relationship between MYR against USD exchange rate and Zoom video communication stock price, the Augment Dickey Fuller (ADF) test are used to test the stationarity to ensure the variable are stationary. Under this test, the null hypothesis is a sequence containing unit roots, or it is non-stationary (Ghazali, Ooi, & Muhammad, 2008). Thus, the null hypothesis would be rejected when the variable does not contain a stationary unit root result. As shown in the Table 3, the variable of MYR against exchange rate (LER) exhibit a non-stationary at level since all of its probability value are insignificance under 10% significance level. In order to make it stationary, the data are transformed into first difference. After transformed, LER has become significant which present a probability of 0.0000 and stationary with constant and with constant and trend with significant under 1%. By referring to Figure 1, LSP present a trend of decline after rise. Therefore, MYR against USD exchange rate is an I(1) variable. In the same time, the variable of Zoom video communication stock price (LSP) is presenting a probability of 0.0233 with constant and trend which means that it is significant in 5% at level. By referring to Figure 2, LSP shows an increasing trend. Therefore, Zoom video communication stock price is an I(0) variable. Since there have a mix of I(0) and I(1) variables and none of the variables are I(2) in the model of this study, thus the Autoregressive Distributed Lag (ARDL) can be proceed to examine the relationship between the MYR against USD exchange rate and Zoom video communication stock price where it have a short-run impact or long-run impact or short-run and long-run impact would be exist between these two variables.

5.2 Bound test

Table 4: Result for bound test.

Test Statistic	Value	k
F-Statistic	5.01**	**3**
Critical Value Bounds		
Level of Significance	**I(0) Bound**	**I(1) Bound**
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

** indicate significance at 2.5% level

Based on the Autoregressive Regression Distributed Lag (ARDL), if the F-statistic value is more than the critical value bounds in the bound test, this indicates that the long run relationship between the variables is exists in the model. Based on the Table 4, the result shows that the F-statistic value for the model is 5.01 where significance in 5% level. Since the F-statistic value exceed to the both critical value of I(0) bound and I(1) bound, the null hypothesis (H_0) can be rejected where stating that there have no long run relationship between these two variables. In the other words, there is a cointegration between these two variables and a long-run relationship exist in the model in 2.5% significance level (5.01 > 4.89) which it has displayed by the result above. Thus, there has a reason that assumption will be made which there is a long run relationship in the model and the Error Correction Model (ECM) is used to examine the speed of adjustment in the model which the result of Error Correction Model (ECM) shows in the Table 5.

5.3 Error correction model (ECM)

Table 5: Result for error correction model.

Variable: CointEq(-1)			
Coefficient	**Std.Error**	**T-Statistic**	**Prob.**
-0.0414	0.017134	-2.017449	0.0452**

** indicate significance at 5% level

As shown in the Table 5, the result shows that the ECT is negative and significant in 5% of significance level. The ECT represents the speed of adjustment of this model as it also represent by the coefficient value of -0.0414 in the table above. Therefore, there have an evidence that the above assumptions can be proved, which have a long-term relationship in the model, and also indicate that if there is any "disequilibrium" in the stock price, it will be adjusted, which indicates that it will converge 4.14% per day of stock price to the long-run equilibrium stock price. In the same time, Error Correction Model (ECM) also can present a short term relationship of a model. In this study, the result of Error Correction Model (ECM) shows a negative coefficient and a negative T-statistic value where the speed of adjustment for these two variable are slow, this indicates that the short run relationship between the variable in the model are not exists. In order to be more certain of this result and make sure, a short run coefficient test are used and test. The result for short-run coefficient is shown in the Table 6. According to the research of

(Kwofie & Ansah, 2018), the estimation on the Error Correction Model has been used in the study, the exchange rate affected the flow of investments. The results implies that the exchange rate have the short-term effect on the stock return since the exchange rate affected the flow of investment. For instance, if the investors or export-oriented firm would benefit the home currency to be depreciate and this will lead to make the export increasing and hence, the stock prices will increase when the competitiveness and earnings between the firms or investors (Luqman & Kouser, 2018).

5.4 Short-run relationship

Based on the Table 6, the result shows that there has a short-run relationship between the MYR against USD exchange rate and Zoom video communication stock price in the previous period. As the result had shown in the table above, there have a negative relationship between these two variables in the previous period with a significance value which with a probability of 0.02 and a negative coefficient value of 0.015704. This indicates that 1% appreciate in MYR against USD exchange rate in the previous period will lead to a 1.57% of decrease of Zoom video communication stock price. In the current period, the probability of the Zoom video communication stock price is insignificance with a probability of 0.58 and coefficient value of 0.002895. This is evidence of no short-run relationship between MYR against USD and Zoom video communication stock price since the probability is insignificance in 10% level.

Table 6: Result for short-run coefficient.

Variable	Coefficient	Std.Error	T-Statistic	Prob.
D(LSP)	0.002895	0.005236	0.552841	0.5811
D(LSP_{t-1})	-0.006769	0.005247	-1.290116	0.1988
D(LSP_{t-2})	-0.005786	0.005183	-1.116328	0.2659
D(LSP_{t-3})	0.010193	0.005194	1.962244	0.0514
D(LSP_{t-4})	0.003214	0.005245	0.612796	0.5409
D(LSP_{t-5})	-0.015704	0.005253	-2.989269	0.0032***
ECT(-1)	-0.036807	0.016714	-2.202236	0.0291**

** indicate significance at 5% significance level

*** indicate significance at 1% significance level

5.5 Long-run relationship

Table 7 indicates result of restricted long run coefficient for ARDL model. LER is represent as dependent variable while LSP represent as the Zoom video communication stock prices. The estimated result demonstrates that, there has a long-run relationship between the RM against USD and Zoom video communication stock price can be show by the restricted long run coefficient. In the Table above shows the result for long-run relationship between these two variables. As shown, a significance probability with 0.0182 which significance under 1% of significance level. In Table 7, the R-squared value is 0.962955, Akaike info criterion value is -8.236709, Schwarz criterion shows a value of -8.146286, Durbin-Watson stat shows a value of 1.953967 and with a F-statistic of 1104.743. The probability of F-statistic is significance at 1% of significance level which is 0.000000. Besides, the value of Breusch-Pegan-Godfrey and Breusch-Godfrey Serial Correlation LM test is 0.5230 and 0.3567 which these test are to test the autocorrelation and heteroscedasticity for the model. The detailed result are shows in the Table 10,

diagnostic test.

Table 7: Result for restricted long-run coefficient.

Variable	Coefficient	Std.Error	T-Statistic	Prob.
LSP	-0.001433	0.000601	-2.383920	0.0182**
C	0.067634	0.022438	3.014290	0.0030***
R-squared			0.962955	
Akaike info criterion			-8.236709	
Schwarz criterion			-8.146286	
Durbin-Watson stat			1.953967	
F-statistic			1104.743	
Prob(F-statistic)			0.000000	
Breusch-Pegan-Godfrey			0.5230	
Breusch-Godfrey Serial Correlation LM test			0.3567	

*** indicate significance at 1% of significance level
** indicate significance at 5% of significance level

The estimated result of the restricted long-run coefficient which indicates that stock price decrease when the MYR against USD exchange rate depreciated. On the other hand, when the MYR against USD exchange rate depreciated by 0.14%, the stock price will increase 1% as there have many investors are desire to buy a low-cost stock when MYR against USD exchange rate depreciate. The estimated result is same as the previous researchers. According to (Mroua & Trabelsi, 2019), the findings results are showing a long-term relationship between the exchange rate and stock prices. In the literature studies, the findings also have been prove that the exchange rate only can affected the stock prices in the long term period and not in the short term period. This indicates that a significance of the long-term relationship between the MYR against USD exchange rate and Zoom video communication stock prices that have been tested in this model have been strengthened by the previous study although there still have some of the researchers are stated that there have a significance in the short run relationship between the exchange rate and stock prices in different countries and a different result for different countries.

5.6 Ordinary least squares (OLS) regression estimation results

The OLS estimation is a part of ARDL, so the satisfied of this assumption are needed in this model. The result have been shows in the Table 8 with an adjusted R-squared value of 0.05187 with a probability of F-statistic 0.0268 where significance under 5% significance level. The variable of LSP is significance under 1% of significance level which the probability value is 0.0084. For this, a residual test will be test and the results will be displayed in the diagnostic test section in Table 10. The result of OLS estimation provide an evidence that the result for ARDL model which the result shows that there have a long-run relationship between the MYR against USD exchange rate and Zoom video communication stock prices.

Table 8: OLS estimation results.

Variable	Coefficient	T-Statistic	Prob.
C	1.487710	94.87570	0.0000
LSP	-0.007920	-2.666041	0.0084
Adjusted R-Squared	0.051875		
Probability of F-statistic	0.0268 (3.1369)		

Notes: Value in parentheses indicate F-Statistic

5.7 Granger causality

Table 9 shows the result of Granger causality. Granger causality is applied to find out whether there is any causality among the variables. By referring to Table 9, we can see that the Zoom video communication stock price not affecting the MYR against USD exchange rate which the probability value is 0.0492 where it is significance with 5% of significance level. In contrast, the MYR against USD exchange rate are affecting the Zoom video communication which it presents an insignificance value with 0.7227 which insignificance under 5% of significance level.

Table 9: Result for Granger causality

Null Hypothesis	Probability	Granger causality
LSP does not Granger Cause LER	0.0492	YES
LER does not Granger Cause LSP	0.7227	NO

The result indicates that the appreciation or depreciation of the MYR against USD exchange rate in the long term will affected the investment activities thus, affected the Zoom video communication stock prices in the long term since the short run coefficient are showing an insignificance of probability value.

5.8 Diagnostic test

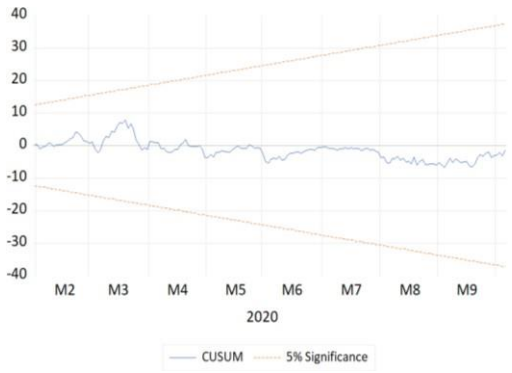
A test on residual have been conducted after the OLS estimation which this result are tested by using the Breush-Godfrey Serial Correlation LM test to test the autocorrelation and a Heteroscadasticity Test of ARCH has been used in this model to test whether this model are free from autocorrelation and heteroscedasticity. Based on the result in the Table 10 above, the model is free from autocorrelation problem due to the result shows that the probability value of 0.3567 which is insignificance under 10% of significance level with a F-statistic value of 1.037088. For the result of heteroscedasticity test, the model in this study is free from heteroscedasticity where it is insignificance under 10% of significance level. The result that shows in the Table 10 the model is significance with a probability value of 0.1673 and F-statistic value of 1.922829.

Table 10: Residual diagnostic.

Breusch-Godfrey Serial Correlation LM Test: Serial Autocorrelation			
F-Statistics	1.037088	Probability	0.3567
Heteroscedasticity Test: ARCH			
F-Statistics	1.922829	Probability	0.1673

5.9 Stability test: cusum and cusumsq test

The result for Breusch-Godfrey Serial Correlation LM test and Heteroscedasticity test which the model are free from the autocorrelation and heteroscedasticity. Apart from that, to ensure the model in this study is stable in order to use ARDL model, the stability test are required in every model. This is because a stable model is needed to ensure that the predicted results obtained are reliable and will not differ much from the actual data. Therefore, in order to test the stability of the model, CUSUM and CUSUMSQ tests are used. The results of these tests are shown in the figure below:



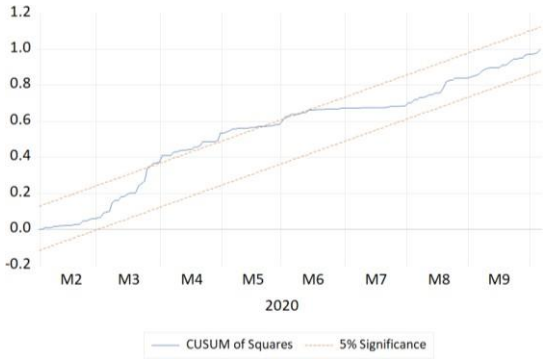


Figure 4(a): CUSUM before dummy. **Figure 4(b): CUSUMSQ before dummy.**

Figure 4 (a) shows the graph for CUSUM before dummy and Figure 4(b) shows the graph for CUSUMSQ before dummy. From the figure above, the graph for CUSUM is stable where the blue line is stay within the red line. This indicated that the CUSUM test is significance in 5% of significance level. Otherwise, the result for CUSUMSQ shows a result of insignificance which represent by the blue line exceeds the red line. In the same time, it is not stable under 5% of significant level. As we can see that the CUSUMSQ are not stable and there have outlier exists in the model, the dummy variable are added in the dataset in order to stabilized the CUSUMSQ test with a result of significance under the 5% of significance level. The unstable result of CUSUMSQ test is due to there have outlier exists in the model, some of the research of this problem are conducted. According to (Witkowski, 2020), the Zoom video communication stock price has been fall 15% started from April 1, 2020 until April 6, 2020 where it recorded the worst week in it nearly year-long history. This is the reason of outlier exists in the datasets. However, even the Zoom video communication stock price has fell, it still growing up 81% for this year. This is the reason that the Zoom video communication stock prices is showing a upwards trend in the Figure 2 above. The second outlier exists is because of the stock price has

raise on 5th August 2020 and fell again from 6th August to 11st August 2020 which according to report of (Kilgore, 2020).

Table 11: Dummy variable.

Dummy	Coefficient	Probability
Dummy 1st April 2020	0.009292	0.0184
Dummy 5th August 2020	-0.007101	0.0703

The coefficient and probability value are shown in the Table 11 which the dummy variable on 1st April 2020 shows a significance probability value, 0.0184, which significance under 5% of significant level with a 0.009292 coefficient value. The dummy variable on 5th August 2020 also shows a significant value which is 0.0703 where it is significant under 10% of significant level with a 0.007101 coefficient value.

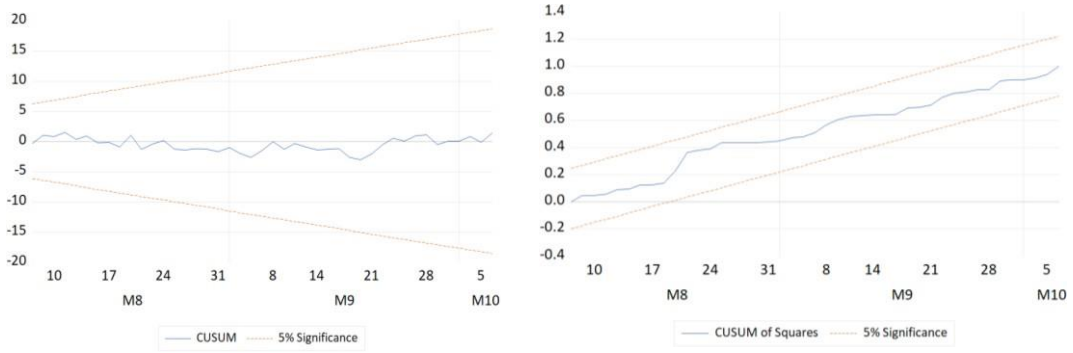


Figure 5: (c) CUSUM After Dummy (d) CUSUMSQ After Dummy

The Figure 5 above shows the result for CUSUM and CUSUMSQ after adding the two dummy variables where the Figure 5 (c) shows the graph for CUSUM after dummy and Figure 5 (d) shows the graph for CUSUMSQ after dummy. After adding the dummy variables, the CUSUM and CUSUMSQ are stable which the blue line are stay within the red line. This indicates that the CUSUM and CUSUMSQ test are significant at 5% of significance level. Thus, the model can be used for forecasting.

6.0 CONCLUSION

This study is aims to investigate the relationship between Malaysia's exchange rate and Zoom video communication stock and the impact of Malaysia exchange rate to Zoom video communication stock after the pandemic of Covid-19. In this study, the ADF unit root test and ARDL approaches are used to test the model. By using the ADF unit root test, the variables are present an I(1) variable for RM against USD exchange rate which significance after using first difference and an I(0) variable for Zoom video communication stock price which significance in the level and with a stable result for CUSUM test and CUSUMSQ test. A mix variable of I(0) and I(1), ARDL approach are applied in this study.

By using the ARDL approach to modeling the data, the result shows that there have no short-run relationship between the MYR against USD exchange rate and Zoom video communication stock price. This indicates that there has an insignificance result for the short-run coefficient with a 0.5811 significance level which insignificance under 10% of

significance level. In the same time, the ECM result also represent that there have no short-run coefficient between the MYR against USD exchange rate and Zoom video communication stock price during the period of Covid-19 pandemic. Therefore, in the short term, the exchange rate are not causing the stock price to change either lower the stock price or higher the stock price. Moreover, there have a long-run relationship between these two variables which the results shows that there have a significance of a long-run coefficient of the variable of MYR against USD exchange rate and the variable of Zoom video communication stock price. According to the research of (Ricky & Lim, 2015), there have some macroeconomic variables such as money supply and interest rate would affected the stock price in the long term. The research results of (Ricky & Lim, 2015) support the results of this study which the exchange rate could bring an effect to the stock price where there have a long run coefficient between these two variables. Next, we carry on with the result of granger causality for these two variables. The Table 9 above shows that the Zoom video communication stock price is not affecting the MYR against USD exchange rate.

In contrast, the result shows that the MYR against USD exchange rate is affecting the Zoom video communication stock price which the probability value is insignificance under 5% of significance level. Thus, the result for the LER does not Granger Cause LSP can be rejected. Therefore, the MYR against USD exchange rate is affecting the Zoom Video Communication stock price in the long-term period. Form the previous research found out that there have some empirical findings show that there has no causal-relation between the exchange rate and stock prices, or a positive causal relation between these two variables. Therefore, some of the empirical findings in the previous studies can be sure that the result will present a different result in different countries with different currency.

This study are aim to investigate the relationship between the MYR against USD exchange rate and Zoom video communication stock price. Based on the study result, it can be sure that the MYR against USD exchange rate is affecting the stock prices in the long run. Therefore, the Government needs to ensure that the MYR against USD exchange rate can be a tool which can used to stabilize the stock market. This study is helpful for empirical research. At the same time, policymakers can make decisions in similar epidemic to formulate policies to stimulate Malaysia's economic growth and evaluate the impact of exchange rate fluctuations on stock market performance. Researchers and investors would be able to manage these variables and interested in understanding these variables that will affect economic growth and thus affecting the stock market. Based on the report of (Collins & Gagnon, 2020), they also stated some recommendations for the policymakers who can help the country to avoid the depreciation of the currency.

The recommendations is provide the channels for obtaining central bank swap loans and enhance the loan capacity of international financial institutions. According to the (IMF, 2020), Malaysia has implemented the RMCO which is Recovery Movement Control Order, implement the fiscal policies and monetary and macro-financial policies this have effectively controlled Malaysia's economic situation and received a lot of help during this period to help Malaysia tide over the difficulties. Last but not least, as recommendations, the further research can be conduct by using the different period of database to conduct and more variables such as import, export and money supply could be conduct in the future study. Second, the further research on the relationship between the exchange rate, balance of payment, current account and stock

prices could be conduct in the future since the exchange rate can affect the export and import, balance of payment and thus affecting the stock prices. This may help the researcher to have a better capture the dynamics of the relationship between stocks and currency markets (Naeem, Rasheed, & Husain, 2003).

REFERENCES

Alagidede, P., & Panagiotidis, T. (2011). Causal relationship between stock prices and exchange rates. *The Journal of International Trade & Economic Development*, 67-86.

Aziz, A. (2020, March 13). *Ringgit weakens near 4.30 against US dollar as Covid-19 spurs haven currency demand*. Retrieved from theedgemarkets.com: https://www.theedgemarkets.com/article/ringgit-weakens-near-430-against-us-dollar-covid19- spurs-haven-currency-demand

Cheng, C. (2020, March 26). *COVID-19 in Malaysia: Economic Impacts & Fiscal Responses.* Retrieved from ISIS Malaysia: https://www.isis.org.my/2020/03/26/covid-19-in-malaysia- economic-impacts-fiscal-responses/

Chung, N. C., & Few, L. C. (2001). Dynamic relationship between stock prices and exchange rates for G-7 countries. *The Quarterly Review of Economics and Finance*, 477–490.

Collins, C. G., & Gagnon, J. E. (2020). Exchange rate policy in the COVID-19 pandemic. *Peterson Institute for International Economics*.

Gary, G. T., & Ma, S. (2010). The Relationship between Stock Returns and the Foreign Exchange Rate: the ARDL Approach. *School of Accounting and Finance*, 490-508.

Ghazali, M. F., Ooi, A. Y., & Muhammad, M. Z. (2008). Do Producer Prices Cause Consumer Prices? Some Empirical Evidence. *International Journal of Business and Management*, 78-82.

Granger, C. W. (1969). Investigating Causal Relations by Econometric Models and CrossSpectral Methods. *Econometrica*, 424-438.

Granger, C. W. (1988). Some Recent Developments in a Concept of Causality. *Journal of Econometrics*, 199-211.

Güler, S., & Nalın, H. T. (2014). The Determinants of Stock Market Returns: An ARDL Investigation on Borsa Istanbul. *The Romanian Economic Journal*, 3-24.

Habibi, A., & Lee, C. (2019). Asymmetric Effects of Exchange Rates on Stock Prices in G7 Countries. *Capital Market Review*, 19-32.

Ho, K. K. (2003). Dollar exchange rate and stock price: evidence from multivariate cointegration and error correction model. *Review of Financial Economics*, 301–313.

Khalid, W. (2017). Effects of Interest Rate and Exchange Rate on the Stock Market Performance of Pakistan: A Cointegration Approach. *Journal of Finance and Economics*, 219-232.

Khan, M. K. (2019). Impact of Exchange Rate on Stock Returns in Shenzhen Stock Exchange: Analysis Through ARDL Approach. *International Journal of Economics and Management*, 15-26.

Kilgore, T. (2020, August 12). *Zoom Video's stock sinks below 50-day moving average after Salesforce unloads stake*. Retrieved from MarketWatch: https://www.marketwatch.com/story/zoom-videos-stock-sinks-below-50-day-moving-average- after-salesforce-unloads-stake-2020-08-11

Kwofie, C., & Ansah, R. K. (2018). A Study of the Effect of Inflation and Exchange Rate on Stock Market Returns in Ghana. *International Journal of Mathematics and*

Mathematical Sciences, 8.

Luqman, R., & Kouser, R. (2018). Asymmetrical Linkages between Foreign Exchange and Stock Markets: Empirical Evidence through Linear and Non-Linear ARDL. *Journal of Risk Financial Management*, 11-51.

Lyocsa, S., Vyrost, T., & Baumohl, E. (2011). Unit-root and Stationarity Testing with Emprical Application on Industrial Productions of CEE-4 Countries. *Munich Personal RePEc Archive*.

Mohamed, A., & Wisam, R. (2009). Effects of Macroeconomic Variables onStock Prices in Malaysia: An Approachof Error Correction Model. *Munich Personal RePEc Archive*.

Mroua, M., & Trabelsi, L. (2019). Causality and dynamic relationships between exchange rate and stock market indices in BRICS countries. *Journal of Economics, Finance and Administrative Science*.

Muhammad, N., & Rasheed, A. (2002). Stock Prices and Exchange Rates: Are they Related? Evidence from South Asian Countries. *The Pakistan Development Review*, 535-550.

Naeem, M., Rasheed, A., & Husain, F. (2003). Stock Prices and Exchange Rates: Are they Related? Evidence from South Asian Countries. *Pakistan Institute of Development Economics*, 535-550.

Narayan, K. P. (2005). The saving and investment nexus for China: evidance from cointegration tests. *Journal of Applied Economics*, 1979-1990.

Nathan, N. (2020). Stock market hit by coronavirus: Reasons for turmoil, what equity investors should do now. *The Economic Times*.

NCSS, S. (2020). *Normality Tests.* Retrieved from NCSS: https://ncss-wpengine.netdna-ssl.com/wp- content/themes/ncss/pdf/Procedures/NCSS/Normality_Tests.pdf

Oskooee, M. B., & Sohrabian, A. (1992). Stock prices and the efective exchange rate of the dollar. *Applied Economics*, 459-464.

Pesaran, H. M., & Shin, Y. (1999). Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, 621-634.

Pesaran, M. H., & Shin, Y. (2001). Bounds testing approaches to the analysis of level relationships. *Journal Of Applied Econometrics*, 289–326.

Pong, C. S. (2017). A nonlinear ARDL analysis on the relation between stock price and exchange rate in Malaysia. *Economic Bulletins*, 336-346.

Reynolds, M., & Weiss, S. (2020, May 27). How coronavirus started and what happens next, explained. *More than 5,595,091 people have been infected with the novel virus, with significant outbreaks in the US, Brazil and Russia and 37,048 deaths in the UK*.

Ricky, C. C., & Lim, S. Y. (2015). Malaysian Stock Price And Macroeconomic Variables:Autoregressive Distributed Lag (Ardl) Bounds Test. *Kajian Malaysia*, 85-103.

Rjoub, H. (2012). Stock prices and exchange rates dynamics: Evidence from emerging markets. *Business Management*, 4728-4733.

Sims, C. A. (1972). Money, Income, and Causality. *The American Economic Review*, 540-552.

Suriani, S., & Kumar, M. D. (2015). Impact of Exchange Rate on Stock Market. *International Journal of Economics and Financial Issues*, 385-388.

Trading Economics. (2020). *Malaysia Ringgit*. Retrieved from Trading Economics: https://tradingeconomics.com/malaysia/currency

Tsagkanos, A., & Siriopoulos, C. (2013). A long-run relationship between stock price

index and exchange rate: A structural nonparametric cointegrating regression approach. *Journal of International Financial Markets, Institutions & Money*, 106-118.

Türsoy, T. (2017). Causality between Stock Prices and Exchange Rates in Turkey: Empirical Evidence from the ARDL Bounds Test and a Combined Cointegration Approach. *International Journal of Financial Studies*, 1-10.

Witkowski, W. (2020, April 6). *Zoom Video stock slides as much as 15% after analyst joins in backlash on valuation fears*. Retrieved from MarketWatch: https://www.marketwatch.com/story/zoom-video-stock-slides-as-much-as-15-after-analyst- joins-in-backlash-on-valuation-fears-2020-04-06

Xuan, L. (2018). The Dynamics of Inflation, Money Growth, Exchange Rates and Interest Rates in Ghana. *Journal of Business Management and Economic Research*, 21-32.

Yahoo Finance. (2020). *Zoom Video Communications, Inc. (ZM)*. Retrieved from yahoofianace: https://finance.yahoo.com/quote/ZM/history?p=ZM