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The Determinants of Stock Market Performance: Evidence from Malaysia During COVID-19

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ABSTRACT

The stock market's performance is critical in determining the direction of the current economy. Researchers have extensively documented the factors that influence the stock market for years. However, few studies focused on macroeconomic factors in Malaysia, especially during COVID-19. The study used weekly macroeconomic data during COVID-19 to assess the stock market determinants. Furthermore, the research confirms whether the determinants impacted the stock market during COVID-19. This paper used weekly data from the Malaysia Stock Exchange Composite Index, interest rates, inflation rates, and COVID-19 death cases from January 1, 2020, to December 31, 2022. The study looks at autoregressive distribution lag models (ARDL) and diagnostic tests to avoid econometric problems. The study found that COVID-19 cases had an insignificant and positive relationship towards stock market performance in the short run; however, there was a significant negative relationship in the long run. In light of this, the study contributes to broadening the current literature reviews by incorporating interest rates, inflation rates, and some control variables, COVID-19 cases, into the determination of the relationship between the Malaysia stock index during a pandemic.

INTRODUCTION

Over the last few decades, the study of the stock market has remained one of the most popular academic topics. This is because the stock market is crucial not only for investors seeking to build their wealth over time but also for a country's economy, as it may serve as one of the leading indications of a country's current and future economic conditions. As a result, this study aims to investigate the determinants of stock market performance in Malaysia during COVID-19. In brief, this study aims to identify how selective factors influence Malaysia's stock market performance. Also, the determinants (interest rate, inflation rate, and COVID-19 cases) will affect stock market performance in Malaysia in the short and long runs. Stock

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market performance in Malaysia changes in response to each determinant (interest rate, inflation rate, crude oil price, and COVID-19 cases) changes in Malaysia. To assess every factor elasticity of stock market performance, the study observes how much stock market performance changes in response to each determinant.

COVID-19 is a highly infectious virus that appeared in late 2019 and triggered a global pandemic. The SARS-CoV-2 virus causes the infection and spreads predominantly via respiratory droplets. COVID-19 symptoms range from moderate to severe, including fever, cough, and shortness of breath, with severe instances possibly leading to hospitalisation and death (Acter et al., 2020). According to Onyeaka et al. (2021), the epidemic has had far-reaching consequences, including widespread lockdowns and economic disruptions, such as job losses and company closures. Governments and health organisations worldwide have taken measures such as mass testing, contact tracing, and vaccine rollouts to restrict the virus's spread and effect.

The worldwide economy has been significantly impacted by the COVID-19 epidemic, which has caused extensive disruption and economic collapse. Among the most significant effects of the epidemic on the worldwide economy have been the closure of businesses and the loss of jobs. Particularly in the hotel, travel, and leisure sectors, the epidemic has caused extensive business closures and job losses. Aside from that, the outbreak disrupts the supply chain. As a result of the extensive disruptions to global supply chains caused by the epidemic, customers are experiencing price increases and shortages of specific products.

Moreover, consumer spending has decreased due to widespread job losses and economic uncertainty; this has caused consumer-driven industries, including retail and services, to experience a fall—moreover, COVID-19 induced market instability. Significant volatility has characterised the financial markets as a result of the epidemic throughout the past year, with stock prices plunging and recovering on numerous occasions. Governments worldwide have also expanded public debt as a result of implementing massive stimulus packages to bolster economies and alleviate the effects of the pandemic.

Before the COVID-19 pandemic, the stock market generally performed well, with many indices, including the S&P 500 and Dow Jones Industrial Average, reaching all-time highs by early 2020. However, the pandemic produced extensive economic disruption. It resulted in a significant decline in stock values, with the S&P 500 plunging by more than 30% in just a few weeks in late February and March 2020. Despite the stock market's recovery in succeeding months, the pandemic continues to influence global economies and financial markets.

According to He et al. (2020), the COVID-19 pandemic had an immediate negative influence on stock market performance, but the long-term impact differed by location and industry. Furthermore, Nadeem et al. (2022) investigated the influence of the COVID-19 pandemic on stock market performance in major sectors, particularly energy and finance. The data revealed that the pandemic negatively influenced stock values in both emerging and developed markets. However, the impact was less severe during the early stages of the outbreak. The study also discovered that the pandemic had differing effects on different industries due to the specific dynamics of each sector and the pandemic's impact on their operations.

LITERATURE REVIEW

The stock market is crucial for a country's economic progress Singh (1991). Unquestionably, it is critical for a country's economic success. As a result, many experts believe that a country's stock market may be used to gauge its economic progress. According to Comincioli (1996), a substantial decrease in the stock market index will result in a future recession, whereas a significant gain in the stock market index suggests future economic expansion. Recently, experts have focused their attention on the COVID-19 pandemic. The epidemic has caused difficulties in the supply chain. Tang et al. (2021) study demonstrates that supply

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chain disruption will impact the Taiwan and Chinese stock markets. The purpose of this study will be to explore the drivers of Malaysia's stock market performance during Covid-19.

The FTSE Bursa Malaysia KLCI was influenced by the COVID-19 outbreak in March 2020, which shocked Malaysia and the rest of the globe. The outbreak has damaged Malaysia's economy, necessitating the closure of all domestic and international companies during the execution of the Movement Control Order (MCO) to limit the spread of the illness. The remark that the KLCI plummeted 25% from its top of 1,600 points at the start of the year to 1,200 points in March 2020. Furthermore, the interest rate Overnight Policy Rate (OPR) was reduced three times in one year to 1.75 per cent, whichever was lower. Malaysia's GDP (growth domestic product) fell 5.6 per cent in 2020. COVID-19 had a significant negative 17.1 per cent impact in the second quarter of 2020.

Theoretical Literature

Fisher Effect (Inflation vs Stock Return)

The Fisher Effect, introduced by Irving Fisher in the 1930s, was the first Western hypothesis to investigate the relationship between inflation and interest rates. Irving Fisher first proposed this idea in 1930. The Fisher effect can also be referred to as the Fisher hypothesis. The Fisher effect can be described using a simple formula: r = I - e, where r represents the real interest rate, I is the nominal interest rate, and e is the inflation rate. If the real interest rate remains stable and unaffected by inflation, the formula predicts a positive direct relationship between the nominal and inflation rates. To this end, Fisher (1930) contended that an increase in the nominal interest rate would decrease the buying power of money in the future.

The Fisher effect explains why inflation and stock returns are related in modern economics. Because shares are considered a real asset and their value is linked to future inflation, both expected and unanticipated changes in inflation affect the stock's return (Oprea, 2014). According to Bai (2014), the inflation rate and stock returns in 2011 were significantly favourable, particularly in agriculture, where the Fisher effect is relevant. The study's author concluded that stock values would rise once inflation occurred. According to Spierdijk and Umar (2015), the Fisher effect arises only in the long run when no inflation hedging is in place. Kimani and Mutuku (2013) argued that the Fisher effect proved that interest rates will increase with inflation. Borrowing costs would rise under these conditions. The increased interest payments would dissuade the borrower from investing in the stock market. On the other hand, investors would be encouraged by the higher interest rate to enter the stock market, expecting to make a more significant profit.

The factors affecting stock market performance in Malaysia during the COVID-19 pandemic

Interest Rate

Badullahewage (2018) found that countries with low interest rates have better stock markets. They also stated that the phenomenal success of stock markets in developed countries is a direct effect of low interest rates. Furthermore, Adebowale and Akosile (2018) investigated how changes in interest and exchange rates affected Nigeria's stock market growth. They concluded that the two factors are adversely associated. An increase in interest rates will have a detrimental influence on stock prices.

Even though Lucca and Leandro Chaves (2022) used network analysis to study the Brazilian stock market and the macroeconomic variables and indicators that influence it, using Pearson correlations between the logarithms of individual asset returns, they created 43 monthly complex networks based on the concept of moving networks. Tran Ngoc Huy et al. (2020) used an Ordinary Least Squares model to analyse how the variables influence one another. They examined and evaluated one of the indicators, the lending rate, which has a negative link with Vietcombank stock price.

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Inflation Rate

Inflation occurs when the overall price of goods and services rises. Inflation is classified into two types: caused by growing market prices and those caused by increased costs. Both price and wage inflation can cause ripple effects across the economy and markets. When the economy is expanding, and aggregate demand exceeds aggregate supply, demand pulls inflation usually occurs (when real GDP rises). When demand for inflation is low, investors respond positively; when it is high, the economy becomes inefficient, which reduces stock value (Tran Ngoc Huy et al., 2020).

In contrast, cost-push inflation occurs when economic output falls. The primary cause of this situation is an increase in the price of any of the four production variables—labour, capital, initiative, and land. When manufacturing expenses escalate to an unsustainable level to achieve maximum output, the firm will unavoidably pass those costs on to customers. As a result, consumer spending falls, potentially triggering a recession. This is consistent with Zhang et al. (2020) research, which found that market participants' expectations of a future economic collapse contributed to a drop in stock price.

Furthermore, the concept that equities are hedges against inflation because they represent claims on actual goods underpins the positive relationship between stock returns and inflation (Huy et al., 2021). However, most findings support an adverse relationship between stock returns and inflation. All sorts of inflation, both expected and unexpected, have a negative impact on real stock returns. Stocks are sometimes seen as an efficient inflation hedge due to their status as claims against actual assets.

COVID-19 Death Cases

Several studies have provided insight into the relationship between COVID-19 and financial markets. Since the beginning of 2020, the ongoing COVID-19 epidemic has dragged on both the global and national economies. The economy and general economic activity are declining as the number of COVID-19 cases grows and the outbreak continues. This incident caused considerable drops in stock markets across Asia, Europe, and North America (Mishra & Mishra, 2020) (Zhang et al., 2020). Ashraf (2020a) uses panel data to suggest that the stock market underreacted to the increase in COVID-19 cases. However, COVID-19 brings with it several economic unknowns. Baker et al. (2020) forecast a 50% reduction in output in 2020, citing COVID-induced economic uncertainty. The financial market and its players may interpret the lack of confidence in COVID-19 instances as a signal about the pandemic's progression. A study by Jiang et al. (2021) investigates the asymmetric impact of the COVID-19 shock on stock returns and how the stock market responds to uncertainty. Using daily information, they infer that an increase in COVID-19 cases negatively influences the stock market.

METHODOLOGY

Conceptual Model

This study has built a framework based on the literature review presented in the previous chapter, as well as reviews from other studies. First, there are three independent variables: the interest rate, the inflation rate, and COVID-19 cases. Second, the dependent variable is stock market performance, using the FTSE Bursa Malaysia KLCI Index as a proxy.

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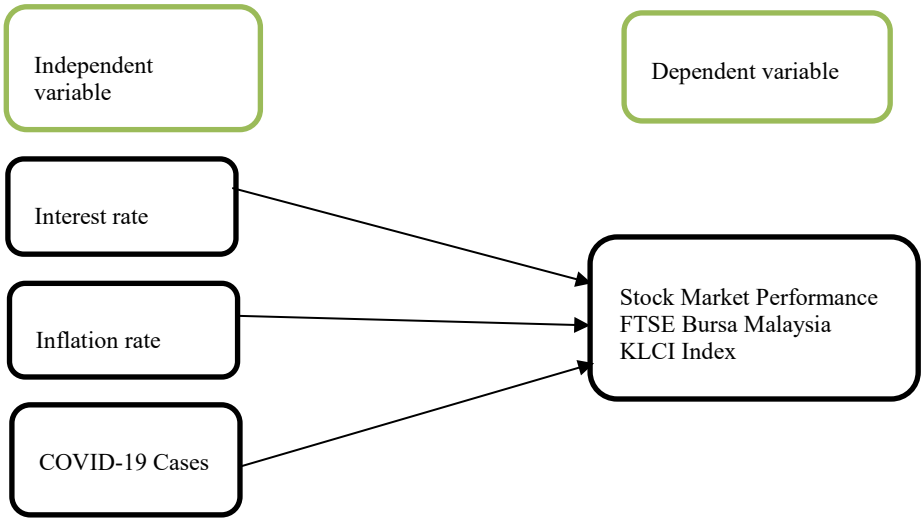

Fig. 1. Conceptual Model

The research used the FTSE Bursa Malaysia KLCI Index from 2020 to 2022. This data is obtained by compiling the index weekly, from January 2020 to December 2022. The index is tabulated monthly, consistent with the methodology used in the study by Khan et al. (2020) and Auzairy et al. (2011). The monthly tabulation of the data forms a time series every week from 2020 to 2022. The stock market performance is calculated using the following equation as recommended by Chatterjee et al. (2003).

$$Rt = \ln (It) - \ln (I(t-1)) \quad (3:1)$$

Where It and I (t-1) are the respective average stock index at time t and t-1. It is the corresponding rate of return on the stock index. The logarithmic forms are used as most economic and financial time series follow curvilinear trends. From equation (3:1), the research has replaced Rt with LNKLCI. Hence, the equation is as follows below:

$$LNKLCIt = \ln (It) - \ln (I(t-1)) \quad (3:2)$$

Interest Rate

The research uses interest rates since there was a significant declining value since the beginning of the outbreak. This study will use the overnight policy rate (OPR) to measure the Interest Rate. In a previous study from the Malaysia case, Nordin et al. (2014) and Yong et al. (2021) also choose OPR as an essential factor in measuring the interest rate. Additionally, a rise in interest rates could make the economy more volatile and make it more expensive for businesses and investors to acquire money to make stock market investments. A negative correlation between interest rates and equity market growth is expected. From the equation (3.2), the new equation (3.3) illustrates the functional equation below:

$$LNKLCIt = f (LNIRt) \quad (3:3)$$

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Inflation Rate

This study also employs the consumer price index (CPI) as it has been extensively utilised to measure inflation in prior research from Chang et al. (2019). In addition, a Malaysian study conducted by Aziz et al. (2020) employs CPI as a macroeconomic variable to measure inflation. In addition, higher inflation could cause economic volatility and reduce companies' and investors' motivation to invest in the stock market. Therefore, the relationship between inflation and stock market growth is anticipated to be negative. Finally, the following equation includes the inflation rate to show the relationship between the independent and dependent variables.

$$LNKLCIt = f(LNCPIt) \quad (3:4)$$

COVID-19 Cases

To explain the COVID-19 impact, the research also includes COVID-19 Death Cases as a proxy to measure the COVID-19 impact. Studies from Al-Awadhi et al. (2020) and Utomo and Hanggraeni (2021) consistently choose the variable to explain the impact of COVID-19 on the stock market performance. In Malaysia's scope, a study from Chia et al. (2020) measures the outbreak impact by estimating the daily new confirmed cases variable replaced by the number of daily deaths. The following equation includes COVID-19 cases showing the relationship between the independent and dependent variables.

$$LNKLCIt = f(LNCOV19t) \quad (3:5)$$

Model Specifications

This current study investigates the effects of the determinants of stock market performance in Malaysia. Thus, given a theory and previous empirical studies, one model specification can be derived. The model specifications will be presented to achieve the general objective (i.e., investigate the determinants of stock market performance in Malaysia during COVID-19). The model also illustrates Bursa Malaysia KLCI as a dependent variable and independent variables used in the first model are also included in the equation. Following the objective of this study, the following equation (3:4) has been modified to equation (3:5) as follows:

$$LNKLCIt = f(LNIRt, LNCPIt, LNCOV19t) \quad (3:5)$$

Where;

$LNKLCI_t$ = Natural Logarithm of FTSE Bursa Malaysia KLCI in period t

$LNIR_t$,= Natural Logarithm of interest rate in period t

$LNCPI_t$ = Natural Logarithm of consumer price index in period t

LNCOV19t = Natural Logarithm of the number of COVID-19 death cases in period t

Based on equation (3:5), model specifications for this research are illustrated as follows:

$$LNKLCIt = \alpha 0 + \alpha 1 LNIRt + \alpha 2 LNCPIt + \alpha 3 LNCOV19t + \varepsilon t \quad (3:6)$$

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Where the subscript t indexes the period with t= 2020,2021,2022, $LNKLCI_{it}$ is the natural log of FTSE Bursa Malaysia KLCI. For independent variables, $LNIR_{it}$ is the natural log of interest rate; $LNCPI_{it}$ is the natural log of consumer price index; and εt is the classical error term with the residuals assumed to be spherically distributed and white noise.

Table 1. The List of Variables

Variables	Specific variable	Expected Sign
Stock Market Performance	Kuala Lumpur Composite Index (KLCI)	Positive (+) or negative (-)
Interest Rate	Overnight Policy Rate (OPR)	Negative (-)
Inflation Rate	Consumer price index (CPI)	Negative (-)
COVID-19	Total number of COVID-19 Death	Negative (-)

Regression Model

This study is theoretically anchored on the working of a theory among those specified in the previous section to investigate the relationship between macroeconomic fundamentals and stock prices in Malaysia during the outbreak. This study considers the Fisher Effect Theory as the most suitable to describe the Malaysia situation where macroeconomic fundamentals dictate the tone for stock price behaviour through various channels, even though investors have limited access to relevant information about the changes in macroeconomic factors that are fully reflected in the current stock prices. Hence, investors would not have earned abnormal profits in such a market. Times series data was gathered for a study period between 2020 and 2022, and the weekly data will be taken in their natural logarithm. The data on Malaysia's stock exchange index, interest rate, and inflation rate are compiled from the Bursa Malaysia, the Central Bank of Malaysia, and the Malaysia Department of Statistics (DOSM). The preliminary analysis in this study includes unit root tests, cointegration tests, elasticities tests, and diagnostic tests.

Unit Root Test

In the early stages of time-series analysis, examining the time-series properties is critical, as most time-series data exhibit nonstationary behaviour, indicating the presence of a unit root. This study used two conventional unit root tests, the Augmented Dickey-Fuller and the Phillip Perron Unit Root test, to determine the presence of a unit root and the sequence of integration of the series. When evaluated in absolute terms, the test statistic must be more significant than the critical value to reject the null hypothesis that a series contains a unit root. The ideal lag duration for the unit root test was based on the automatic lag length selection of the Schwarz Information Criterion (SIC), with the maximum lag length set to 9. The unit root test results demonstrate that these variables meet all of the ARDL model's assumptions. Therefore, the ARDL approach of Pesaran and Shin (1999) for the cointegration test can be applied to test the cointegration between stock market performance and macroeconomic fundamentals. Tables 2 and 3 summarise the unit root test results at levels and initial differences. After determining that the variables have a heterogeneous order of integration as suggested by the ADF test developed by Dickey and Fuller (1981) and complemented by the Philip Pherron unit root test, we must consider using the ARDL model to examine the long-run relationship between monetary policy fundamentals and stock market performance

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rather than the Engle Granger cointegration or Johansen cointegration test, which should only be used when variables are co-integrated in the same order I(1). Thus, the maximum order of integration (dmax) is one.

Table 2. Augmented Dicky-Fuller (ADF)& Philips-Perron unit root test (Individual intercept without trends)

Variables	**Level**		**First Difference**	
	ADF	PP	ADF	PP
Individual intercept without trends				
LNKLCI	-3.0205**[0]	-3.0826**[2]	-12.994***[0]	-13.02406***[7]
	(0.0352)	0.0299	(0.000)	(0.000)
LNIR	-1.721862[9]	-1.072697[1]	-1.834446[8]	-12.36932***[0]
	(0.4182)	(0.7258)	(0.3627)	(0.0000)
LNCPI	-0.121116[0]	-0.103936[3]	-12.46578***[0]	-12.4661***[3]
	(0.9441)	(0.946)	(0.0000)	(0.0000)
LNCOV19	-3.04062**[4]	-2.754087*[5]	-5.06656***[3]	-6.06734***[5]
	0.0334	0.0674	(0.0000)	(0.0000)

Note: [ ] refers to lag, ( ) refers to probability, while ***, **, and * denote the significance level at 1%, 5%, and 10%, respectively. The optimal lag length is selected automatically using the Schwarz information criteria for the ADF test, and the bandwidth has been selected using the Newey–West method for the PP test.

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Table 3: Augmented Dicky-Fuller (ADF)& Philips-Perron unit root test (Individual intercept with trends)

Variables	Level		First Difference	
	ADF	PP	ADF	PP
Individual intercept with trends				
LNKLCI	-3.0085 [0]	-3.0718 [2]	-12.953*** [0]	-12.981*** [7]
	(0.1333)	(0.1168)	(0.000)	(0.000)
LNIR	-2.1788 [9]	-1.2026 [13]	-2.8357[8]	-13.741***[14]
	(0.4974)	(0.9060)	(0.1870)	(0.0000)
LNCPI	-3.2671* [0]	-3.2644* [2]	-12.580***[0]	-12.581*** [2]
	(0.0757)	(0.0761)	(0.0000)	(0.0000)
LNCOV19	-2.500701[4]	-1.782506 [5]	-5.5907*** [3]	-6.1467***[7]
	(0.3275)	(0.7087)	(0.0000)	(0.0000)

Note: [ ] refers to lag, ( ) refers to probability, while ***, **, and * denote the significance level at 1%, 5%, and 10%, respectively. The optimal lag length is selected automatically using the Schwarz information criteria for the ADF test, and the bandwidth has been selected using the Newey–West method for the PP test.

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Estimation Procedure

Cointegration Test

The unit root test results imply a heterogeneous order of integration. As a result, ARDL is the suitable method for this study, and estimating the long-run model using Ordinary Least Squares (OLS) is not appropriate because it will produce false results. The current study to observe the long-run dynamic relationship of macroeconomic fundamentals and some control variables with stock market performance employs the Auto Regressive Distributed Lag (ARDL) cointegration procedure developed by Pesaran et al. (2001). The cointegration test using the ARDL approach offers four advantages. For starters, this strategy is simpler than other known cointegration approaches. Once the lag order has been discovered, this autoregressive distributed lag cointegration process allows for examining the relationship using the OLS method. Second, unlike other approaches to the cointegration test, autoregressive distributed lag cointegration processes do not always require pre-testing, such as the unit root test. Third, the ARDL technique outperforms other approaches when the sample time is shorter. Fourth, the ARDL technique works regardless of whether the variables in the model are purely I(0), strictly I(1), or mutually co-integrated. Hence, it uses linear specification for a dynamic error correction model without losing information about the long-run relationship. The estimated Wald F-statistics are then compared to the critical value of the two asymptotic bounds summarised by Engle and Granger (1987) to test whether cointegration between the variables exists. In doing so, the hypothesis of co-integration is $B1 \neq B2 \neq B3 \neq B4 \neq B5 \neq B6 = 0$, against the hypothesis of no cointegration is, $B1 = B2 = B3 = B4 = B5 = B6 = 0$.

If the lower and upper critical bounds are less than the computed F-statistic, cointegration exists in this study; otherwise, if the calculated F-statistic is more significant than the lower and upper critical bounds, no cointegration exists between variables. If the F-statistic falls somewhere between the upper and lower critical boundaries, the decision on cointegration is unclear at that point. The stability of ARDL model estimates is verified using the CUSUM and CUSUMsq tests. Once cointegration is demonstrated, the next step is to estimate long-run coefficients and use an error-correction model to approximate short-run dynamics to long-run equilibrium for adjustment. The error-correction model may predict short-run effects with a significant F-statistic from the Wald test, indicating that there is a short-run effect (Nkoro & Uko, 2016).

RESULTS AND FINDINGS

ARDL short-run and long-run elasticities

The ARDL technique employs the short-run result that the OLS technique aims to present. The selection of optimal lag length is based on the minimum values of the SBC criterion. This study adopted the Schwarz Information Criterion (SIC) for the selection of the ARDL (9,4,0,9) model. The F-Statistics of the model must be greater than the upper bound of the test result at a 5% significant level for a co-integrating relationship to exist. Hence, when the F-Statistics is greater than the upper bound at a 5% significant level, the alternative hypothesis, which assumes that there exists cointegration among variables, is accepted, which shows that there is a long-run relationship among variables, and if otherwise, the null hypothesis is accepted. The cointegration result is summarised in Table 3. The results in Table 4 suggest that there exists a stable co-integrating relationship among variables specified in the model, hence the alternative hypothesis is accepted because the F-Statistics was found to be greater than the upper bound at 5% critical value and is denoted with *** in the table.

The next step is to estimate the short- and long-run estimates of the ARDL test. Hence, the long and short-run results are indicated in Table 5 respectively. From the long-run equation specified in Table 5, the coefficient of the constant parameter was found to be 0.355449 which means that if all explanatory variables are held at zero level, the explained variable (LNKLCI) will increase by 0.355449 percent. Interest rate

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(LNIR) and COVID-19 Cases (LNCOV19) coefficients are significantly negative with values obtained as 0.393025 and 0.018666 respectively, this implies that there exists an indirect relationship between these both features interest rate and COVID-19 case and stock market performance in the long run, hence 1 percent increase in the interest rate and COVID-19 case will decrease stock market performance by 0.393025 and 0.018666 per cents respectively. On the other hand, the inflation rate (LNCPI) showed significant positive coefficient values of 1.462858. These imply that a 1 percent increase in the inflation rate (LNCPI) will increase stock market performance in the long run by 1.462858 percent respectively. The long-run results of the model obtained through the use of the ARDL technique are summarised in Table 5.

Table 5 also presents the short-run relationship between stock market performance and macroeconomic fundamentals. As can be seen from the table, the relationship between some of the variables does not seem to deviate from what was obtained in the long run. Interest rates (LNIR) have a significant and negative impact on stock market performance, while COVID-19 Cases (LNCOV19) which also hurt stock market performance are insignificant and positive in the short run. Same findings from the long run, inflation rate (LNCPI) has a positive impact on stock market performance, however insignificant in the short run. The adjustment process in the short run is examined from the ECM coefficient. The coefficient should lie between 0 and -1, the equilibrium converges to the long-run equilibrium path and is responsive to any external shocks. However, if the value is positive, the equilibrium will be divergent from the reported values of the ECM test. The negative coefficient of the lagged error-correction term (-0.579093) is significant at the 1% level of significance. The coefficient implies that a deviation from the equilibrium level of the all-share index in the current period will be corrected by 58 percent in the next period to restore equilibrium.

The interaction between each of the macroeconomic fundamentals used in this study and the performance of the Malaysia stock market has the following policy implications; The negative relationship between interest rate and stock market performance, which aligns with the theoretical expectation implies that increasing interest rate as the most crucial economic fundamental in this study will boost investors' confidence in the stock market, thereby increasing stock prices as expected lower interest rate. The significance of interest rate implies that it plays a major role in ensuring the development of the capital market; this is possible in the country's economy to encourage investment and improve the activities within the stock market. When interest rates rise, stock market participants would rather preserve money in the bank and receive an interest income than participate in the stock market. On the other hand, when interest rates are falling, stock market players are more willing to incur risks to gain a better rate of return than to save in the bank. Central Bank of Malaysia, Bank Negara Malaysia would generally choose to reduce the overnight policy rate, lowering a financial institution's borrowing costs. Because of the decreased borrowing costs, the financial institution does not need to raise its interest rate to cover the additional discount loan. As a result, banks will lend their money at cheaper interest rates, and more loans will be issued to fund projects. The publicly listed company will have a good advantage in profitability terms and drive the market participants to join the stock market. Finally, it will have an indirect positive impact on Malaysian stock returns. The negative relationship of this feature is consistent with the findings by Rahman et al. (2009) and Nordin et al. (2014).

During the pandemic, the Malaysian government has imposed a lot of stimulus packages to ease the burden for all parties. The stimulus package of RM530 billion was allocated by the government under eight economic stimulus and aid packages. As a result of the stimulus package, large sums of money were spent, leading to inflationary pressures, particularly if the supply of goods and services did not increase in tandem with increased demand. The inflation rate was found to be positively correlated with stock market performance. This indicates that if inflation rises in the long run, the stock market will strengthen. This is also justified by the notion that a certain level of inflation is required to stimulate economic activity in the country and hence economic growth. This result is consistent with the findings of Jamaludin et al. (2017) and Ilahi et al. (2015), but contrary to that found in Mutuku and Ng'eny (2014) and Jelilov et al. (2020). The majority of these studies claimed that higher expected inflation, in general, would lead to economic tightening policies, which would hurt stock prices.

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This study also found that the COVID-19 death had an insignificant and positive relationship towards stock market performance in the short run however significant negative relationship in the long run. Contrary to the study from Erdem (2020) and Ashraf (2020b) mentioned the implication of the COVID-19 cases. The COVID-19 cases negatively impacted on the stock market performance. The findings from the study aligned with past research about how COVID-19 can influence the stock market performance in the long run. On the other hand, a study from Abu et al. (2021) stated that the number of deaths has a positive and significant impact on the stock market in the long-run is differed from this study. Since the country, Malaysia is one of the largest producers of healthcare products, especially rubber glove manufacturers, it brought more revenues to the healthcare public listed company and attracted more market participants to invest in the related company. As a result, the stock market performance was influenced by the increase of COVID-19 in the short run.

Table 4. Bound test for cointegration

Test statistic	Model: LNKLCI	
F-statistic	10.40993***	
K	3	
Narayan (2005) critical values (k = 3, n = 157)		
Critical value	Lower bound	Upper bound
10%	3.470	4.450
5%	4.010	5.070
1%	5.170	6.360

Notes: The critical values for the lower I(0) and upper I(1) bounds are taken from Narayan (2005). *** indicates the significance at a 1% significance level.

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Table 5. The Results of Short-and Long-Run Coefficients for Stock Market Performance

Stock Market Performance (LNKLCI); ARDL (9,4,0,9)			
Long-run Estimates			
Independent Variables	Coefficient	t-statistic	Prob.
LNIR	-0.393025***	-7.759329	0.0000
LNCPI	1.462858***	2.688674	0.0082
LNCOV19	-0.018666***	-2.455733	0.0155
Short-run Estimates			
Independent Variables	Coefficient	t-statistic	Prob.
LNIR	-0.256833***	-3.193179	0.0018
LNCPI	0.847130***	2.503396	0.0136
LNCOV19	0.012759	0.901164	0.3693
ECT (-1)	-0.579093	-6.081484	0.0000
R-squared		0.872	
Adjusted R-squared		0.845	

Notes: ***,**, and* indicate the significance at 1%, 5% and 10% respectively.

Notes: Market Performance (LNKLCI), interest Rate (LNIR), inflation rate (LNCPI, number of COVID-19 death cases

Diagnostic Tests

Several tests, as recommended by Pesaran et al. (2001) , have been conducted to check the validity and robustness of the model. These tests include the serial correlation test, which is used to test for the correlation or correspondence of residuals in the model; the normality test, which is used to determine the normal distribution of the model residuals; the heteroskedasticity test, which is used to determine the presence of variance of errors across observations; and the normality test, which is used to As shown in Tables 6, 7, 8, 9, and Figure 1, the ARDL model passed the diagnostic test for functional misspecification and serial correlation at the 5% significance level. It also passed the test for heteroskedasticity and non-normal error at the ten percent significance level. At the 5% level of significance, the model's cumulative sum of recursive residual (CUSUM) and cumulative sum of squares of recursive residual (CUSUMQ) plots fall between crucial bounds. Findings indicate that the null hypothesis is accepted. This is because p-value is greater than any significant level value (10%, 5% and 1%). The null hypothesis states that the error estimation model is normally distributed. Therefore, both models are found to be reliable. This confirms the structural stability of the long-run parameters that have an impact on the stock market performance in

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Malaysia during the outbreak of COVID-19, implying that the model appears to be stable and adequately defined during the estimating period.

Table 6. Serial correlation LM Test

Breusch-Godfrey Serial Correlation LM Test

Indicator	Test statistic	p-value	Result
LNKLCI	1.319866	0.2286	Accept H0. No autocorrelation

Notes: **,* indicate the significance at 5% and 10% significance level.

Table 7. Heteroskedasticity Test

Heteroskedasticity Test Result

Indicator	Test statistic	p-value	Result
LNKLCI	0.872646	0.5606	Do not reject H0.

Notes: **,* indicate the significance at 5% and 10% significance level.

Table 8: Normality Test

Jarque-Bera Test

Indicator	Test statistic	p-value	Result
LNKLCI	342.6587	0.0000	Accept H0. Normal

Notes: **,* indicate the significance at 5% and 10% significance level.

Table 9: Ramsey RESET Test

Ramsey Reset Test

Indicator	Test statistic	p-value	Result
LNKLCI	0.015	0.9026	Accept H0. Correct model specification

Notes: **,* indicate the significance at 5% and 10% significance level.

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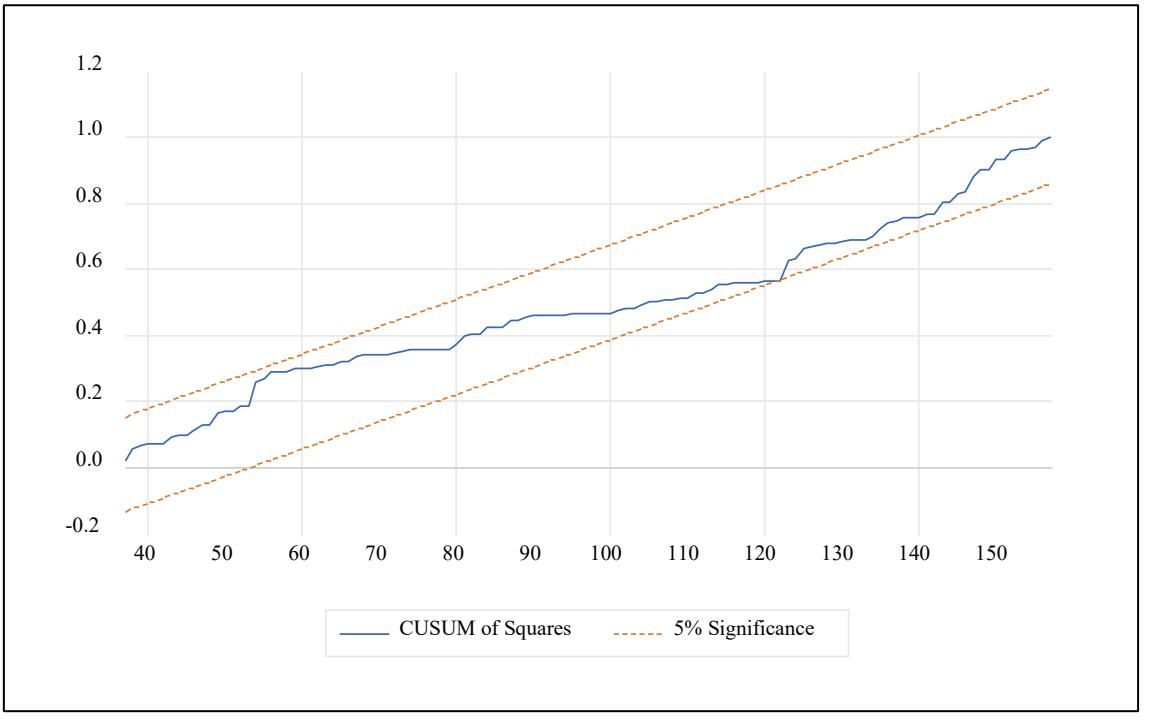

Fig. 2 CUSUMSQ Test for Market Performance (LNKLCI)

CONCLUSION AND RECOMMENDATION

This study used the Auto Regressive Distributed Lag (ARDL) approach to examine the effects of macroeconomic factors on Malaysian stock market performance, with a focus on the COVID-19 pandemic from 2020 to 2022. Studies have found a consistent long-term association between macroeconomic fundamentals and the Malaysian stock market after conducting comprehensive examination. The results show that different macroeconomic factors and aspects linked to COVID-19, like government monetary policies and the number of COVID-19 deaths, have different effects on the stock market. However, the importance of these effects is still up for discussion. The robustness of the results is validated by comprehensive post-estimation tests, including the Breusch-Godfrey Serial Correlation LM test, Ramsey Reset test, ARCH LM test, Jarque-Bera statistics, and CUSUM test. The tests have verified that there is no serial correlation, heteroskedasticity, breaches of linearity assumptions, divergence from normal distribution, or structural instability among the variables. Hence, the results are dependable for guiding policy formulation and decision-making procedures.

Several policy proposals are given based on the empirical data to improve the performance and stability of the Malaysian capital market. First and foremost, it is crucial to prioritize policies that are designed to stimulate economic growth. These policies should focus on reducing poverty and unemployment rates, as well as raising gross capital formation. These measures are essential as they have been identified to have a favourable impact on the performance of the Malaysian stock market. Therefore, it is imperative for the government to strengthen regulatory frameworks through the participation of the Central Bank of Malaysia

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(BNM) and other regulatory agencies, such as the Securities Commission (SC). To ensure successful macroeconomic management through policy interventions, it is crucial to enhance collaborations. Furthermore, it is crucial to strengthen regulatory frameworks to address unethical practices and market manipulations that have the potential to disrupt stock values. The BNM is tasked with diligently overseeing the interest rate channel to ensure the ongoing stability of the stock market. The market's reliance on information makes it susceptible to even minor distortions in this communication channel, which can have an impact on the market. Ultimately, it is the duty of the monetary authorities to oversee the execution of policies that have been developed in the economy.

The limitations of this investigation must be acknowledged. Further research could investigate additional macroeconomic variables or utilise alternative econometric approaches to gain a deeper understanding of the intricate connection between macroeconomic factors, COVID-19 dynamics, and stock market performance in Malaysia. Furthermore, longitudinal studies have the potential to offer valuable insights into the changing dynamics of these interactions over lengthy time periods that go beyond the duration of any study. Ultimately, this analysis provides significant understanding of how macroeconomic factors, pandemic-related influences, and stock market dynamics interact in Malaysia. Policymakers and stakeholders have the ability to strengthen the resilience and efficiency of the Malaysian capital market by implementing the recommendations indicated below, especially in the face of persistent economic concerns.

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