

The Impact of Inflation Rate on Malaysian Stock Market Performance During Crisis Years

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Abstract—This study examined the impact of selected macroeconomic variable on the performance of the Malaysian stock market over the study period from the year 1990 to 2020. The selected macroeconomic variables is inflation rate. This study applied Multiple Linear Regression, Diagnostic Checking (Multicollinearity), Autocorrelation (Durbin Watson Test), Descriptive Tests, and Normality Tests to determine the effect of selective variables on stock market performance by using monthly data observations for the past 30 years. The empirical results suggest that the inflation rate have a statistically significant negative effect on Malaysia's stock market performance. The findings and conclusions of this study may provide useful information and enhance insights to governments, legislators, researchers, academics and investors on this subject and area of study. Finally, new research can be undertaken by referring to the research's limitations and recommendations for future improvement. As this study has discussed how macroeconomic variables affect the stock market in this research, it is critical that future researchers monitor changes in these variables, and more significantly future researchers should use this information appropriately for their research benefit.

Keywords— Stock Market Index, Macroeconomic Variables, Inflation Rate, Malaysia.

I. INTRODUCTION

An investor can buy a fractional holding of a company by utilizing shares commonly referred to as equity. The stock market, on the other hand, provides a platform for the sale and purchase of shares. (Fontanills & Gentile, 2001). Stock market performance is measured based on the indices value and stock returns. The global economic and political changes have a profound impact on the stock indices value.

The primary objective of this study is to investigate the correlation between macroeconomic variables and stock market performance in Malaysia during crisis years. This study considers GDP growth, interest rates, unemployment rates, currency exchange rates, and inflation rates as the various variables that may impact stock market performance. This study used FTSE Bursa Malaysia KLCI index values to find out the impact of the afore mentioned variables.

The literature issue or gap that this study will address is that stock market has received relatively little attention in the developed world in recent decades about the association between macroeconomic factors and stock efficiency in developing countries. (Kh Khaled Kalam, 2020) & (Haseeb et al., 2022). A study conducted by Shubita and AL-Sharkas (2010) explores the impact of macroeconomic factors on the returns on the New York Stock Exchange, whereas

Tangjitprom (2012) investigates the impact of macroeconomic factors on the return on the Thai stock exchange. Consequently, given the insufficiency of research on emerging markets, it prompted to conduct this research in Malaysia in order to determine the macroeconomic factors that have a substantial impact on the performance of the Malaysian stock market (Qadri et al., 2021). According to (Siew et al., 2015), many studies on this issue have become obsolete as a result of contemporary occurrences. Nowadays, the conclusions of previous study are insufficient to describe contemporary economic conditions. Consider the research carried by Jones and Kaul (1996), which concluded that fluctuations in oil prices had a negative effect on actual share prices in the United States, Canada, Japan, and the United Kingdom, but their inferences were only applicable to the United Kingdom's post war period. In other words, their inferences are applicable for all the years after the World War II (Bhattacharya & Bhattacharya, 2022)

Studies have, however, been inadequately investigated in recent years due to a lack of data and information necessary to develop an accurate conclusion (Adam et al., 2022). Several recent events, like the depreciation of the Ringgit Malaysia (Malaysian currency) and Britain's referendum on Brexit, have contributed greatly to the volatility of the stock market's performance in recent years (Sathyanarayana and Gargsha, 2016). Not only that, the loss of RM 45 million in tourism industry during the first quarter of 2020, the pandemic era affected the stock market returns (Department of statistics of Malaysia, 2020). According to the recent researchers, there has been insufficient research to date that has added to the amount of evidence on these current emergent financial happenings in this industry (Md Isa et al., 2021). Sathyanarayana and Gargsha (2016) anticipated that the financial sector will become even more beneficial in the short term as a result of the Brexit crisis. They were right on the money. The general public is unable to make educated decisions in the absence of reliable economic and stock market facts and thus the reliability of the economic factors and stock market performance need to be thoroughly analysed and researched. (Dercio Fernando et al. 2018).

Additionally, this study also focuses on the practical issue or gap of analysing the impact of each macroeconomic factor on the share market that varies depending on the time period and geographical place in which it is measured (Prasad et al., 2022). Joseph and Eric (2010) believed that inflation has the ability to promote economic activity in the short run. Kimani

and Mutuku (2013) & (Moslehpour et al., 2022) discovered that economic growth and equity markets are adversely related to one another, suggesting that inflation and stock prices are not related to each other. Based on the statements released by the strategists from Goldman Sachs (Sraders, 2021) and Western Alliance Bancorporation (Bancorporation, 2021) stated that it is vital for policymakers in Malaysia to understand the relationship between macroeconomic variables and the performance of the Malaysian stock market in order to be able to execute appropriate monetary policy that is beneficial to both the Malaysian economy and the Malaysian stock market especially during this era of pandemic (Liew et al., 2022). As stock market performance is highly impacted by the macroeconomic variable's fluctuation.

The purpose of this study is to settle the difficulties raised above by determining whether there is any impact of macroeconomic variables on the stock market performance during crisis years.

Research Objectives

To investigate the impact on the inflation rate on FTSE Bursa Malaysia KLCI Stock index volatility during the crisis years.

Research Questions

What is the impact of the inflation rate on FTSE Bursa Malaysia KLCI Stock index volatility during the crisis years?

II. LITERATURE REVIEW

Inflation is defined as a steady increase in the price of fundamental goods and services in a certain economy over a period. Inflation can be measured in terms of percentage increases in the price of primary goods and services (Hossain, 2012) & Md Isa et al. (2021). As Kasidi and Mwanemela (2013) pointed out, rising inflation can have a negative influence on economic growth since it reduces the purchasing power of monetary units, which affects the purchasing power of common people. Furthermore, even low levels of inflation can have a negative influence on direct and indirect investment as well as on the spending decisions of an economy (Moslehpour et al., 2022)

A decrease in the level of inflation, might result in a decrease in the level of manufacturing or productivity in a country, which can result in greater unemployment rates (Musneh et al., 2021). According to Joseph and Eric (2010) concluded that while expansionary macroeconomic policies can increase economic activity in the short run, when it comes to long-term economic growth, inflation can be damaging to a country's ability to prosper. Furthermore, they pointed out that growing inflation raises the price of social welfare and the cost of foreign aid and, as a result, limiting the pace of financial growth in the country (Ali, 2021). Therefore, inflation is detrimental to the long-term growth and development of the economy of the country. (Ali et al., 2022)

As Limpanithiwat and Rungsombudpornkul (2010), pointed out, traditionally stock prices have had a very close relationship with inflation. According to the findings of the recent studies, stock prices grow back to back or in

conjunction with inflation rates as a result of a positive but indirect association between the two variables (Rahal Hassan Fatima, 2021). Generally, the rate of inflation will have a negative impact on stock values in three ways: through taxation of corporate revenue, depreciation of fixed assets, and revaluation of nominal capital gains. As the rate of inflation rises, it affects the output and earnings of a firm, which may have an indirect or direct effect on the stock price of the company (Ganhe, 2021). Furthermore, Taofik and Omosola (2013) discovered that inflation has a positive and statistically significant effect on stock indices. According to the Fisherian hypothesis, inflation encourages investment and has an impact on the trajectory of stock returns and stock prices. Researchers' conclusions provide credibility to their own research (Malik et al. 2022).

Apart from that, Chakravarty and Mitra (2013) & Kalam (2020) discovered that inflation benefits the stock market's value. A business that is a debtor benefits from unexpected inflation, whereas a business that is a creditor, suffers from monetary policy-induced deflation, which lowers stock prices as investors have less money to spend on stocks or commodities (Prasad et al. 2022). Both of these findings imply that inflation and stock prices are positively correlated. On the other side, Kimani and Mutuku (2013) discovered a negative correlation between inflation and stock prices (Bhattacharya & Bhattacharya, 2022). According to the journal (Othman & Al – Kasab, 2022), rising inflation has a harmful effect on the securities market's overall outcomes, including equity returns and stock prices. Ali (2011), stated that a high inflation rate either constrains future earnings of businesses or increases nominal discount rates, resulting in a decline in the current value of future profits in a large emerging market with high inflation. Both of these scenarios will have a detrimental impact on the company's profitability, as well as on the return on investment and share price (Malik et al. 2022).

Furthermore, Eita (2012) backed up the hypothesis by proving that rising inflation could signal a potential economic slowdown, resulting in a drop in stock prices. In more depth, the interest rates due to inflation reduce the value of cash flow after it is discounted, lowering investment, asset returns, and, ultimately, stock prices. As a result, the study concluded that increasing inflation is linked to lower stock prices, contradicting the generalized Fisher hypothesis (Prasad et al., 2022).

Vivin and Victoria (2011) demonstrated that there is a negative relationship between inflation and stock prices, but only in the long run. Long-term stock prices in Malaysia are negatively affected by inflation, but short-term stock prices are not affected. Irum et al. (2014) discovered that stock price pressure has a negative impact on inflation. Following the report's findings, rising stock prices will have no effect on inflation rates, while falling stock prices will have an impact on them in a negative direction. (Othman & Al – Kasab, 2022)

According to Vanita (2014), in India and China, inflation and stock prices have a favorable relationship with one another whereas they have a negative link in Russia and Brazil. The study concluded that inflation and stock prices have only a short-term link and are insignificantly associated

in the long run, which is in opposition to the idea developed by Vivin, and Victoria in 2011. Furthermore, Tangjitprom (2012) and Bai (2014) reported on the effect of inflation on stock price indexes is very small. Inflation has a minor impact on asset prices, but it has a huge impact on the macro economy.

III. RESEARCH METHODOLOGY

The objective of this study is to determine the impact of macroeconomic factors on the Malaysian stock market, the FBMKLCI, such as GDP growth, inflation, the real interest rate, and the exchange rate, as well as the impact of crisis years on the stock market. The data for this study will be collected from 1990 to 2020. The World Bank Data & Data Stream were used to obtain all the data. For the crisis years, Investopedia and national archives serve as data sources. Each year, the following data for all variables were gathered

The methods and measures that is used to examine the relationships between the four macroeconomic variables and FBMKLCI movements with one moderating variable are explained in this chapter. This chapter will also focus on the research techniques and research models as well as the research design and progresses through data collection and analysis. The OLS method will be applied on the data. T-Test, F-Test, and Normality Test will be performed in the assessment. This study will also include diagnostics such as multicollinearity, heteroscedasticity, autocorrelation, and model definition.

IV. DATA ANALYSIS AND INTERPRETATION

Multiple Regression Model

The following are the hypothesis for the Multiple Regression Model for the relationship between inflation rate and stock market performance.

H0: There is no relationship between inflation rate and the Malaysian stock market performance

H1: There is a relationship between inflation rate and the Malaysian stock market performance

TABLE 1: Shows the results of Multiple Regression Model.

Models	Anova (Significance)	B	Standard Error	Significant	Hypothesis Result
Constant	0.000 (Less than >0.05)	3.019	0.006	0.000	H ₁ is Accepted
CPI		0.147	0.006	0.000	H ₁ is Accepted
CR		-0.017	0.006	0.002	H ₁ is Accepted
CPI_CR		-0.006	0.006	0.036	H ₁ is Accepted

Based on the table above, the Anova significance value is 0.000, which is less than 0.05, proving that there is a strong relationship between the stock market performance (dependent variable) and inflation rate (Independent variables). The “B” value, which is the unstandardized beta value shows the value indicates the slope of the line connecting the independent variables and the dependent variable. In this study, the “B” value ranges from 3.019 to -0.017, In another word, each time

the inflation increases during crisis years, the KLCI decreases but even during the during normal circumstances, when the inflation rate increases, the KLCI value decreases. Other than that, The Standard Error shows the accurate precisions of predictions, based on the results, it can be see that the value of standard error is less than 2.00, proving that all the variables have an accurate precision, and the observed values fall on the regression line. Moreover, the table also shows that the significance value is less than 0.05 for all the variables proving that there is a relationship between inflation rate and stock market performance. Based on the analysis above, it can be concluded that, the Anova significance and the overall significance shows that the inflation rate has an effect on stock market performance in the long run.

Descriptive Tests

The following are table for Descriptive Statistics’ analysis results for inflation rate and stock market performance

TABLE 2: Shows the results of Descriptive Statistics.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
KLCI	372	2.480	3.270	3.019	0.180
CPI	372	1.750	2.090	1.945	0.097
CPI_CR	372	0.000	2.090	0.327	0.733
CR	372	0	1	0.170	0.373

Based on the results of descriptive statistics, it has been concluded that the mean of KLCI is 3.019 and the values of KLCI falls between a range of 3.270 to 2.480, Thus 2.480 being the lowest value while 3.270 being the highest value. Moreover, the standard deviation falls at 0.180, which is considerably low, means it has a low volatility. In addition, inflation rate during normal circumstances has a mean of 1.945, while the inflation rate during the Crisis years falls at 0.327. Inflation rates share the same maximum value (2.090) in both the situations, but the minimum value differs largely. Inflation rate has a minimum value of 1.750 under normal circumstances while it reduces to 0.000 during crisis periods. Both the circumstances have a very high standard deviation of 0.971 and 0.7330, proving that inflation rate is a high volatility variable, concluding that it has a high risk. Other than that, the crisis years has a range of 0 to 1 and a mean of 0.170 with a standard deviation of 0.373.

Normality Tests

The following are table for normality test’ analysis results for inflation rate and stock market performance

H0: The inflation rate data is not normally distributed

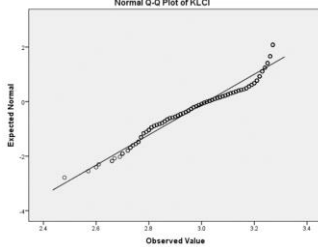
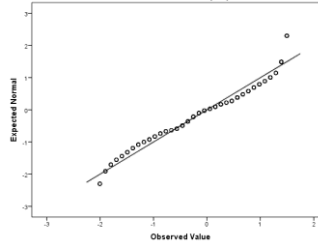
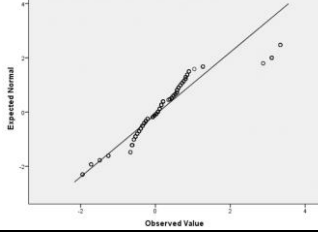
H1: The inflation rate data is normally distributed

Referring to the table below, it can be concluded that all the data are normally distributed. The normality distribution of each variable is based on the analysis of Shapiro-Wilk Significance, Skewness, Kurtosis and Q-Q Plot. The variables are considered normally distributed if it meets the criteria required for any one of the above tests. The Shapiro – Wilk tests considers data is normally distributed if the significance value is less than 0.05. Based on the results inflation rate during normal circumstances and crisis years are normally distributed as the values are 0.000. The KLCI value is also

below 0.05 proving that the data are normally distributed. The Skewness and the Kurtosis ranges falls between $-2 < X < 2$ for the data to be normally distributed. From the results table, the Skewness values for CPI, CPI_CR, and KLCI falls below 2 proving that the data is normally distributed. As for the Kurtosis results, CPI_CR are above 2, thus CPI_CR do not

meet the basic criteria and they are not normally distributed but KLCI and CPI do meet criteria thus, those two variables are normally distributed, according to Kurtosis. In conclusion, because the all the data meet criteria of one of the above tests, the null hypothesis have rejected proving that all the data is normally distributed.

TABLE 3: Shows the results of Normality Tests

Variable	Significance (Shapiro-Wilk)	Skewness	Kurtosis	Q-Q Plot	Hypothesis Result
KLCI	0.000	-0.282	-1.014		H ₁ is Accepted
CPI	0.000	-0.247	-1.012		H ₁ is Accepted
CPI_CR	0.000	1.203	4.163		H ₁ is Accepted

Autocorrelation (Durbin-Watson) Tests

H₀: There is no autocorrelation problem for this model
H₁: There is autocorrelation problem for this model

TABLE 4: Shows the results of Autocorrelation (Durbin Watson Tests)

Model Summary	
Model	Durbin-Watson
1	0.076
a. Predictors: (Constant), CPI_CR2, Zscore(CPI), Zscore(CR)	
b. Dependent Variable: KLCI	

The autocorrelation problem in a model is most likely found in time-series data. Pure serial correlation and impure serial correlation are two different forms of autocorrelation. The former is caused by a model specification bias, whereas a genuinely defined equation causes the latter. The Durbin Watson Test is often used to study the residuals of a statistical model or regression. The Durbin-Watson test is always in the range of zero to four. A value of 2 indicated that there is no autocorrelation in the regression model. Negative autocorrelation ranges value from 2 to 4, while the positive autocorrelations values fall from 0 to 2. Based on the table, the model has a positive autocorrelation value of 0.076, which is

considerably very low autocorrelation problem and can be ignored. Thus, fail to reject null hypothesis

Multicollinearity

H₀: There is no multicollinearity problem for this model
H₁: There is multicollinearity problem for this model

TABLE 5: Shows the results of Multicollinearity

Model	Coefficients	Correlations			Collinearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)					
	CPI	.806	.808	.802	.966	1.035
	CR	-.027	-.158	-.093	.961	1.040
	CPI_CR	-.124	.024	.014	.946	1.058
a. Dependent Variable: KLCI						

Multicollinearity tests are analysed using VIF and Tolerance. Any value of VIF below of 4 and value of tolerance above 0.25 is considered that the models have no correlation among the dependent variables. Hence the independent variables are not inflated. The VIF of CPI and CPI_CR is 1.035 and 1.058 respectively and the tolerance is higher than 0.25 with values of 0.966 and 0.946. Aside from

that, the Crisis years value of VIF and Tolerance is 1.040 and 0.946. All the values stated above clearly proves that this regression model have no multicollinearity problem. Thus, fail to reject null hypothesis

V. CONCLUSION AND RECOMMENDATION

There are previous research (Kadir Shahar, Hanita, 2016; Mohd Yahya Mohd Hussin, Fidlizan Muhammad, Salwa Amirah Awang, 2012) proving a relationship between inflation rate and KLCI Index. Researchers (S. Hosseini, Zamri Ahmad, Y. Lai, 2011; Mohamed Asmy Bin Mohd Thas Thaker, Wisam Rohilina, Aris Hassama, and Md. Fouad Bin Amin, 2009; A. Rahman, N. M. Sidek, Fauziah Hanim Tafri, 2009; A. Adam, George Tweneboah, 2009; Md Isa et al., 2021; Malik et al. 2022) proved that both the variables have a significant relationship.

Not only that, as discussed in chapter 2, The Arbitrage pricing theory suggested that the nominal interest rate will equal the sum of the real interest rate and projected inflation. Taofik and Omosola (2013), Chakravarty and Mitra (2013), Musneh et al. (2021), Ali (2021) and Limpanithiwat and Rungsombudpornkul (2010) all concluded that inflation, both directly and indirectly, had a positive relationship with stock market returns. Hossain (2012), Rahal Hassan Fatima (2021), and Malik et al (2022) went on to explain that lowering interest rates will increase unemployment rate and decrease in the stock returns.

This study’s finding reveal that there is a correlation between inflation and KLCI. The findings are similar to Kimani and Mutuku (2013), Ali (2011) and Eita (2012). Additionally, Caroline, Rosle, Vivin and Victoria (2011), Ganhe (2021), Prasad et al (2022) and Bhattacharya & Bhattacharya (2022) also proved that the long-run correlation between expected or unexpected inflation and stock prices. The findings of this study indicated that inflation in Malaysia will have an effect on the stock market (KLCI) in terms of the price and returns (Othman & Al – Kasab, 2022).

One of the main recommendation is negative shocks can influence the volatility of stock market performance. It may have direct or indirect effect on the stock market’s performance via chain reactions (Arabi, 2016). For instance, according to Hisyam (2016), the Malaysian stock market reacted badly after Donald Trump was elected President of United States in November 2016. On that day, the FTSE Bursa Malaysia KLCI closed at 1,642.45 points, a 1.28 percent decline.

In this context, Trump’s election came as a shock to Malaysia, especially to the uncertainty surrounding US trade policy changes. Trump has altered various policies in attempt to boost the US economy’s profitability. Among the changes are the withdrawal from the Trans-Pacific Partnership (TPP) and the imposition of higher import duties. When a higher tariff is applied, the cost of imported goods for the United States will increase. If this occurs, it will have a detrimental effect on Malaysian exporters, lowering the stock market index as a result of lower business performance (Surendra, 2016). Researchers can investigate the effects of negative

shocks on the stock market index by focusing on this most recent event such as the Covid-19 times or the inflation cycle that have started due to the crisis times hit during the year of 2020 where the crude oil price fell to 0.00 and also including any other significant important occurrences.

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