Terengganu International Finance and Economics Journal
Volume 3, Issue 1: 38-49, 2013

Macroeconomic Factors as the Determinants of Stock Market Return in Malaysia: Multivariate Cointegration and Causality Analysis

[1]Noormahayu Mohd Nasir*, [1]Norsilawati Mohd Hassan,
[1]Zarul Azhar Nasir and [1]Mohd Fauzi Mohd Harun
[1]Department of Economics, Faculty of Business Management,
Universiti Teknologi MARA (Perak), 32610 Bandar Seri Iskandar, Perak, Malaysia.
*Corresponding e-mail: noorm492@perak.uitm.edu.my

Abstract

This paper investigates the factors that determine Stock Market Return (KLCI) in Malaysia for the period 1996-2011. Researcher employed KLCI to proxy for Malaysian stock market return. The determinant factors studied are based on lending rate (BLR), exchange rate (EXR), gross domestic product (GDP) and consumer price index (CPI). To analyze the relationship between all variables, the Johansen cointegration test, Vector Error Correction Model (VECM) and Granger causality test are used. The empirical result revealed that there is a long run and short run relationship between Malaysia stock market return and the determinant factors. The Granger causality test suggests that GDP and CPI have a unidirectional causality to KLCI. Meanwhile, a unidirectional causality also occurs between CPI, KLCI, and EXR towards BLR. However, only EXR has bidirectional causality to KLCI. The study also concludes that all independent variables that consist of GDP, CPI, BLR and EXR are significant in determining KLCI return in Malaysia.

Keywords: *Stock market return, Cointegration, KLCI, Granger causality, VECM*

1. INTRODUCTION

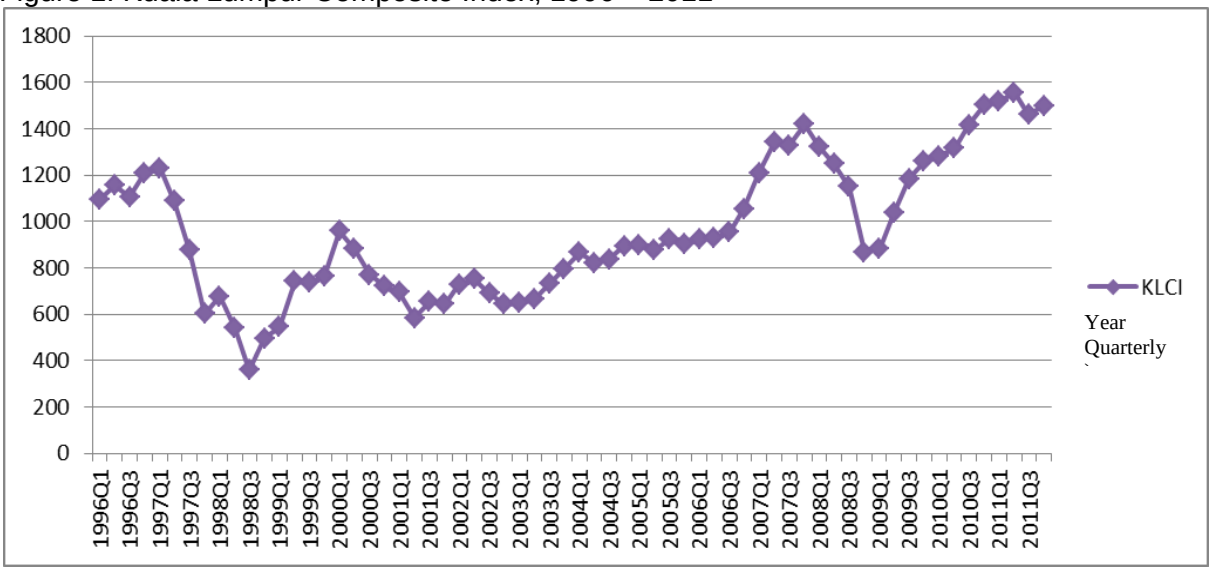
The interactions between stock market and macroeconomic variables have become the primary focus to be researched on between academics and practitioners (Kwon and Shin, 1999). Stock Market Returns are the returns that the investors generate out of the stock market. This return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time-to-time. Stock market is a suitable medium for investors to avoid the threat of inflation and at the same time is an indicator towards the development of the nation in term of economics (Khil and Lee, 2000).

Indicator, risk, return, efficiency and inter-market dependence deal with important issues pertaining to the Malaysian stock market. It addresses the major consideration in the construction of a stock market index which is used to measure the performance of the overall stock market or a sector of the market. It includes a detailed description of the construction of Kuala Lumpur stock exchange composite index (KLCI). Modern portfolio theory requires knowledge of the relationship of prices of individual stocks to movements in the market in order to allocate funds realistically among stocks. It has also proved to be of the considerable uses to be analyzed in forecasting the price movements in the future.

Figure 1 indicates Bursa Malaysia Kuala Lumpur Composite Index (KLCI) from quarter one year 1996 to quarter four year 2011. A massive drop in KLCI was experienced during the third quarter 1998 because of past Asian financial crisis arises. As global financial crisis occurred during the end of 2007 until early of 2008, it caused havoc to the world financial markets. Bursa Malaysia stock market once again without exception experienced KLCI drop from the first quarter 2008 until the fourth quarter 2008 as shown in Figure 1. Both situations definitely caused the stock market return to fall seriously. Although the financial problems have been resolved, it is essential to examine the determinant factors of macroeconomic variables which influence the stock market return.

This is because the stock market represents as a leading economic indicator and a predictor of the performance of aggregate economy. The importance of such study in comprehending the idea of stock market helps us in handling financial uncertainty and risk as well as possibilities of spreading consumption over time. It has been supported by Bala and Premaratne (2003) in which an understanding of volatility in stock markets is important for determining the cost of capital and for assessing investment and leverage decisions as volatility is synonymous with risk.

Figure 1: Kuala Lumpur Composite Index, 1996 – 2011



Source: Bursa Malaysia, 2012

This paper aims to investigate the causal relationship between based lending rate (BLR), gross domestic product (GDP), consumer price index (CPI), exchange rate (EXR), and Kuala Lumpur Composite Index (KLCI) return using cointegration and Vector Error Correction Model. The outline of the paper is structured as follow: Section 2 highlights on the empirical literature; Section 3 justifies the data and methodology; Section 4 presents the results and interpretation and finally Section 5 draws a significant conclusion on the topic discussed.

2. LITERATURE REVIEW

A study that was performed on the macroeconomic determinants of Malaysian stock market was conducted by Aisyah *et al.* (2009). This study explores the interactions between selected macroeconomic variables and stock prices for the case of Malaysia in a VAR framework. The result shows negative association between KLCI and real exchange rate. In the presence of co-integration, in the long run KLCI will fall by 1 and 3% given a one percent increase in money supply and depreciation of the exchange. Their lag exclusion test shows that all six variables contribute significantly to the co-integrating relationship.

Asaolu *et al.* (2010) also proved some evidence on an econometric analysis about the impact of the macroeconomic variables on stock market movement in Nigeria. This study investigated the impact of macroeconomic variables on Average Share Price (ASP) and in depth research to determine whether changes in macroeconomic variables explain movements in stock prices in Nigeria. Various econometric analysis such as Augmented Dickey Fuller (ADF) test, Granger Causality test, Co-integration and Error Correction Method (ECM) were employed on time series data from 1986-2007. They found that only exchange rate was found to Granger cause ASP in the sample period.

In addition, Tahir *et al.* (2006) investigated the interaction between stock market returns and changes of exchange rates in Malaysia using monthly data from 1990 until 2005. They found no long run relationship between stock market return and changes of exchange rates in Malaysia using linear VAR model, but there were evidence of common regime switching behaviour between them. The estimated non-linear MS-VAR model reveals that in the first regime as the stock price index fall, the exchange rates inflate and in the second regime when the stock price indexes gain, the exchange rates deflate. Thus, they proclaim that regime one captures economic recession during which the stock market crash that lead to appreciation of the local currency exchange rate. As for regime two, it is associates with the economic boom where the rising of stock market index that lead to depreciation of the local currency exchange rate.

However, some other researchers discovered that there are positive relationship between exchange rate and stock market return. Serkan (2008) had studied the macroeconomic variables, firm characteristics and stock returns evidence from Turkey. The effects of macroeconomic variables on the portfolio returns were evaluated by using OLS. The results of the OLS estimation in the case of Turkey show a positive relationship as observed between stock returns and exchange rate. The empirical evidence regarding the exchange rate is inconclusive. Thus, a positive relationship between stock return and exchange rate need to observed. Meanwhile, Tarika *et al.* (2010) who studied macroeconomic factors and stock returns from Taiwan, found that exchange rate has a positive relationship with yield portfolio returns of big companies and exchange rates has a positive relationship with yield portfolio returns of medium companies. The probable reasons of positive relationship can be continuous expansion of foreign trade, with a pronounced Increase in Taiwan's Trade Surplus.

According to Mansor (2010) who studied an empirical analysis of real activity and stock returns in an emerging market from 1978.Q1 to 2008.Q4 in Malaysia, there is preliminary correlation analysis that indicates a significant positive correlation between current and once-lagged stock price changes and subsequent GDP growth rates up to 4-quarter horizon. Despite positive, the correlations turn insignificant beyond one year-period. These statistics are thus suggestive of the potential role of the Malaysian stock market as a predictor for future real output growth which is limited only for short run forecasts. Furthermore, Serkan (2008) had studied about macroeconomic volatility and stock market volatility, worldwide. The study was done in terms of stock market and fundamental volatility using underlying annual data, 1983-2002. They had provided evidence in the result that revealed a clear positive relationship between stock return and GDP volatilities. The results also show that India and Pakistan have very low initial GDP per capita and relatively low stock market.

An economic theory suggests that short term and long term interest rate have negative impact. According to Aisyah *et al.* (2009), there was a negative relationship between interest rates and KLCI. An increase in interest rate by one point brings down KLCI by 0.009% points. Serkan (2008) also discovered the negative relationship between stock returns and interest rate. This indicates that interest rate represents alternative investment opportunities. As the interest rate rises, investors tend to invest less in stocks, causing stock prices to fall. Besides, Ologunde *et al.* (2006) observed the relationships between stock market capitalization rate and interest rate in Nigeria. They used the ordinary least-square (OLS) regression method and they found that the prevailing interest rate exerts positive influence on stock market capitalization rate. The reason for this relationship lies in the fact that investors are willing and will always commit their fund (invest) in businesses with good profit and quick turnover while taking less risk. Prior to that, that Government development stock rate also exerts negative influence on stock market capitalization rate.

The reason for this relationship is that government development stock is issued in the stock exchange and if the rate is increases, investors will patronize the stock exchange thereby increasing the size and hence economic growth and development. Prevailing interest rate exerts negative influence on government development stock rate. The reason is that investors will invest in business with good profit and quick turnover while being risk averse. Since, as interest is increased; investors will prefer to invest in the banks than to invest in the stock market. Filis (2009) empirically investigated on the relationship between stock market, CPI and industrial production in Greece and the impact of oil prices. Using a VAR, the researcher found that the Greek CPI exercises a significant negative influence in the Greek stock market. The main findings showed that stock market receives negative and significant influence from oil and CPI.

Wang (2010) had provided evidence from China on the relationship between stock market volatility and macroeconomic volatility. The finding revealed the negative relationship between the volatility in the CPI and the stock market. The researcher stated China's high rates of inflation increase the cost of living and shift consumers 'resources from investment to consumption. This leads to a fall in the demand for the domestic market and subsequently leads to a reduction in the volume of stock traded. The results also clearly indicate that there is a bilateral causal relationship between inflation volatility and stock market volatility. This result can be understood in China's high rates of inflation increasing the cost of living and shifting consumers' resources from investment to consumption. This leads to a fall in the demand for the domestic market and subsequently leads to a reduction in the volume of stock traded.

Moreover, Serkan (2008) found that inflation and stock return have positive relationship. The researcher found that there is a positive coefficient for the inflation variable in the regression models. Their rationale for this pattern is related to the inadequacy of hedging role of stocks against inflation. This rationale would be suggested for Turkish stock returns that is Turkish stocks cannot be used as hedge against inflation, since positive regression coefficient simply a higher expected return is required for higher inflation rate. Meanwhile, Siti (2003) studied on macroeconomic variables and stock prices in Malaysia by doing an analysis from the period of pre and post July in 1997.

The co-integration and causality Error Correction Model (ECM) were used in this study, to analyse the dynamic equilibrium in the short run and long-run between macroeconomic variables and the stock prices. In bivariate co-integration test, they found the evidence for the period before financial crisis that the stock market has a long run relationship with M2, RES, CPI and IP regardless of the lag length used. For the period after financial crisis, there is a long run relationship exists between the stock prices and M2, CPS, CPI and IP. This indicates that the stock price reacts to the past information for those variables. Nevertheless, there is no cointegrating relationship between RES with stock prices which imply the market is informational efficient with the RES information.

3. DATA AND METHODOLOGY

This chapter employs several econometrics methods, such as unit root test, Johansen's cointegration test, Vector Error Correction Model and Granger causality test to examine the existence of relationship between all variables. The variable of stock market return is measured by the Kuala Lumpur Composite Index (KLCI), whereas other macroeconomic variables are based on lending rate (BLR), exchange rate (EXR), gross domestic product (GDP) and consumer price index (CPI). The data that is used in this analysis is a series of quarterly period in 16 years, starting from January 1996 to December 2011.

The models assume that Malaysia Stock Market Return (KLCI) is determined by the BLR, EXR, GDP and CPI. To test this hypothesis, a simple econometric model can be expressed as,

$$KLCI_t = \alpha + \beta_1 BLRt + \beta_2 EXR_t + \beta_3 GDP_t + \beta_4 CPI_t + \varepsilon \quad (1)$$

in which KLCI is Kuala Lumpur Composite Index in the year *t*, α is a constant, β is slope coefficient and ε is error term.

In the first step of the estimation process, the study examines the stationarity properties of the data series. In stationarity time series, stocks will be temporary and over time, their effects will be eliminated as the series revert to their long run mean values. On the contrary, non-stationarity series will contain permanent components (Asteriou, 2006). In fact, most of the economic variables show a trend and therefore, most cases are non-stationary. These non-stationary time series can easily lead to Ordinary Least Square (OLS) regression to incorrect or bogus conclusions. Thus, a key way to test for non-stationarity is to test for the existence of unit root. The present study employs a standard stationarity test namely, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test. Dickey and Fuller (1981) suggested a unit root test based on the following regression,

$$\Delta y_t = \mu + \beta_{t-1} + \delta y_{t-1} + \varepsilon_t \quad (2)$$

where *t* is linear time trend, μ is intercept, β and δ are slope coefficients, and ε_t is an error term.

In those cases where the error terms are serially correlated, the method has to be modified. The simplest way to do is to add many lags of dependent variable Δy_t to equation (2) in order to ensure that ε_t appears as white noise. This test for stationary is known as the ADF test. The ADF test is based on the following regression,

$$\Delta y_t = \mu + \beta_{t-1} + \delta y_{t-1} + \sum \gamma_i \Delta y_{t-i} + \varepsilon_t \quad (3)$$

where β, δ and γ are slope coefficients, and ε_t is an error term.

The null hypothesis is that δ=0. This means that a unit root exists in y_t. If the null hypothesis is rejected, then y_t is stationary. The current analysis also uses the Phillips-Perron (PP) test to analyze the stationary (Phillips and Perron, 1988). The PP test is based on equation (3) but it uses the modified Dickey-Fuller statistics. The PP test could be more robust in the presence of autocorrelation in the data sets.

Secondly, a cointegration test is performed to determine the nature of the long run relationship. Cointegration test is employed to analyze whether the pairs of variables are cointegrated or move jointly. An important prerequisite for the existence of a cointegrating relationship between the variables is they have the same order of integration. This means that if a variable is an integrated of order *d*, the other variables should also be an integrated of order *d*. The testing of hypothesis is null for non co-integration against the alternative hypothesis, which means with the existence of co-integration. A previous study on co-integration analysis was done by Engle and Granger (1987). Subsequently, Stock and Watson (1988) and Johansen (1988) extended the research. This study tested the presence of co-integrating relationship between all variables using the Johansen (1988) Maximum Likelihood Method within a Vector Auto Regressive (VAR) framework. This procedure has

superior properties to other methods of testing co-integration (Gonzalo, 1994). A brief outline of the Johansen (1988) procedure is given below:
The notation Z_t denote a p × 1 vector of variables which are not integrated in order higher than one, then Z_t can be formulated as a VAR model of order k:

$$Z_t = \pi_1 Z_{t-1} + \pi_{2\, Zt-2} + \Lambda + \pi_k Z_{t-k} + \text{deterministic components} + \varepsilon_{1t} \quad (4)$$

where ε_{1t} is independently and normally distributed and $\pi_1, \pi_2, \Lambda, \pi_{t-k}$ are coefficient matrices.

The model can be reparameterized to yield a Vector Correction Model in the form of

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Lambda + \Gamma_{k-1} \Delta Z_{t-(k-1)} + \Gamma Z_{t-1} + \text{deterministic components} + \varepsilon_{2t.} \quad (5)$$

Where ε_{2t} is independently and normally distributed and $\Gamma_{1,} \Gamma_{2,} \Lambda, \Gamma_{1-(k-1)}$ and Γ are coefficient matrices. Let r = rank (Γ), then if 0 < r < p the matrix Γ can be portioned into p x r matrices α and β such that π = Γβ' and β' is I (0) (Johansen and Juselius, 1990). R is the number of cointegrating relationships and in each column is the cointegrating vector. In this study we used Johansen (1995) Max-Eigen and Trace Tests to determine the number of co-integrating relationships between the variables in the bi-variate model. According to Engle Granger (1987), if the variables are cointegrated, the relationship between them can be expressed via Error correction Model (ECM). The ECM detects the long run cointegration relationship in the following form:

$$\Delta\gamma_t = \alpha_0 + \beta_1 \Delta X_t - \pi\hat{e}_{t-1} + \varepsilon_t \quad (6)$$

This model will include both long run and short run information where β_1 is the impact multiplier (the short run effect) and π is the feedback effect (adjustment effect and shows number of disequilibrium being corrected). The β_2 in the equation $\hat{e}_{t-1} = \gamma_{t-1} - \beta_1 - \beta_2 X_{t-1}$ however includes the long run response. The coefficient of Error Correction Model includes information about whether the past values of variables affect the current value of the variables under study. The size and statistical significance of the co-efficients of the Error Correction Model measures the tendencies of each variable to return to equilibrium. For example π in equation (4) is statistically significant means that y_t responds to disequilibrium in its relation with erogenous variables. According to Choudry (1995), even if the co-efficients of the lagged charges of the independent variables are not statistically significant, Granger Causality can still exist as long as π is significantly different from zero. The short run dynamics are captured through individual co-efficients of the different terms. We carefully choose the appropriate lag length of each regressor based on Akaike Information Criterion (AIC).

Finally, the Granger-causality test is run in this study is to analyze the causality between all variables. Testing causality in the Granger sense, involves using F-tests to test whether lagged information on a variable Y provides any statistically significant information about a variable X in the presence of lagged X. If not, then “Y does not Granger- cause X”. The test also allows the framework to test for the presence of unidirectional and bi-directional causality.

4. EMPIRICAL RESULT

Augmented Dickey- Fuller (ADF) and Phillips Perron (PP) test are employed to test the stationary of the series. The joint use of both tests attempt to overcome the common criticisms that is unit root test have limited power in finite samples to reject the null hypothesis of non-stationarity. Table 1 reports the Augmented Dickey-Fuller and Phillips Perron test statistics for the level and first differences of the variables. Table 1 reports the Augmented Dickey-Fuller and Phillips Perron test statistics for the level and first differences of the variables. According to the results shown in Table 1, it can be seen that all variables are not stationary at level form. However, after first differencing, all variables in the same integrated order, which is I (1), permits to test for cointegration among those two variables using the Johansen's (1998) methodology.

Table 1: Augmented Dickey-Fuller and Phillips Perron Unit Root Test at levels and first differences

Variables	Level		1st Differences	
	ADF	PP	ADF	PP
LKLSECI	-2.544256	-2.686830	-6.856171	-6.853648
	(0.3067)	(0.2455)	(0.0000)***	(0.0000)***
LGDP	-1.740872	-1.740872	-7.299167	-7.284579
	(0.7212)	(0.7212)	(0.0000)***	(0.0000)***
BLR	-2.466244	-2.409749	-9.018051	-9.075206
	(0.3434)	(0.3712)	(0.0000)***	(0.0000)***
EXR	-2.227235	-2.227235	-4.355584	-3.998474
	(0.4665)	(0.4665)	(0.0050)***	(0.0137)***
CPI	-1.640663	-1.640663	-5.141482	-4.687552
	(0.7654)	(0.7654)	(0.0004)***	(0.0019)***

Note: *** denotes the rejection of the null hypothesis of non-stationary at 1% significance level.

Before Cointegration test can be performed, optimum lag length should be identified to ensure the reliability of result. 6 lag lengths will be used represented by the minimum values of AIC and SIC.

Table 2: Johansen Cointegration Test

Hypothesized Coefficient No. of CE(s)	Trace statistic	Max-Eigen statistic	Critical Trace	Values Max-Eigen	(5%)
r = 0 3.11089	151.3458**	69.4559 **		68.52	33.46
r ≤ 1 0.0150	81.8799**	44.1968**	47.21	27.07	
r ≤ 2 0.05943	37.6830**	22.5499**	29.68	20.97	_
r ≤ 3 0.24376	15.1331	11.6925	15.41	14.07	_
r ≤ 4 0.8758	3.4406	3.4406	3.76	3.76	_

Note: r is the co-integrating vector, CV is critical value at 5% level
** denotes rejection of the null hypothesis at 5% level of significant

Table 2 reports the cointegration result. Both Max-Eigen and Trace test suggest that there are three cointegrating equation emerged. This indicates that KLCI, GDP, CPI, BLR, and

EXR are cointegrated. Researcher used Vector Error Correction Model (VECM) to identify the long run relationship among variables of this study. The empirical results of the estimated error correction models are presented in the equation 2. It illustrates the relationship between stock market and the macroeconomic variables (GDP, CPI, BLR and EXR) which have influenced it.

KLCI = 3.11089 + 0.0150GDP – 0.05943CPI - 0.24376BLR – 0.8758EXR
(s.e.) (0.09582) (0.00502) (0.04031) (0.12033)
(t-stat) [0.15680] [-11.8372] [-6.04794] [-7.27875]

(7)

Note: The figure in parenthesis (....) denotes as standard error and the figure in squared brackets [...] represent as t-statistic

From equation 6, only GDP shows positive relationship with KLCI in the long run. The other three variables which are CPI, BLR and EXR possess the negative relationship with KLCI. GDP have a positive relationship with KLCI. It can be interpreted when 1 % increase in GDP while the KLCI return will increase by 0.0150 %. This is because growth in GDP will attract firms to reinvest more in stock market which lead to higher future earnings.

This has been supported by Francais *et al*. (2008) who had provided evidence in the result that indicates a positive relationship between stock return and GDP volatilities. Mansor (2010) affirmed that despite positive, the correlations turn insignificant beyond one year-period. These statistics are thus suggestive of the potential role of the Malaysian stock market as a predictor for future real output growth which is limited only for short run forecasts.

CPI has negative relationship with KLCI where 1 % increases in CPI and KLCI will decrease by 0.05943 %. Wang (2010) stated China's high rates of inflation increase the cost of living and shift consumers' resources from investment to consumption. This leads to a fall in the demand for the domestic market and subsequently leads to a reduction in the volume of stock traded. Aisyah *et al.* (2009) stated under normal circumstances, a rise unexpected inflation rate tends to lead to restrictive monetary policies, which would have a negative effect upon stock prices.

Nonetheless, as price stability is one of the macroeconomic policy objectives by the Malaysian government and also an expected target of the Malaysian citizens, we believe that the relationship between inflation and stock price is insignificant. Thirdly, when 1 % increases in BLR, the KLCI will reduce by 0.24376 %. The result has been supported by Serkan (2008). The result between stock returns and interest rate is found to be negative. This indicates that interest rate represents alternative investment opportunities. As the interest rate rises, investors tend to invest less in stocks, causing stock prices to fall.

The macroeconomic variable, EXR also has a negative relationship with KLCI where an increase of 1% in EXR will reduce by 0.8758 %. The result has been supported by Aisyah *et al.* (2009) who had investigated on macroeconomic determinants of Malaysian stock market. The result shows negative association between KLCI and real exchange rate. This is because the depreciation of Malaysian Ringgit leads to the increase in stock market return as Malaysia stock market is vulnerable to the external shock. Therefore, Malaysia exporting firms will get benefit from the depreciation Malaysia currency.

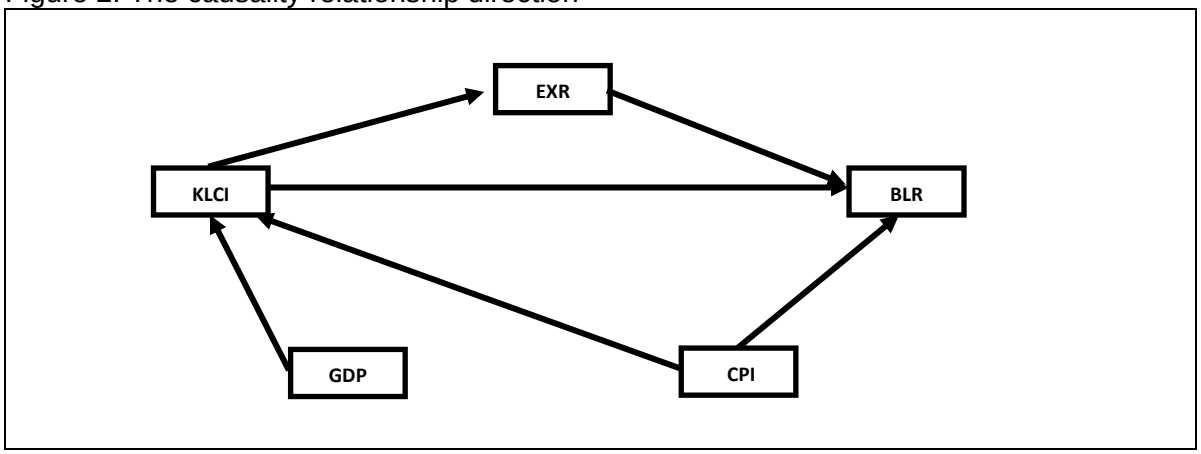
TABLE 3: Granger causality test

Dependent variable	Independent Variables				
	∆LKLSECI	∆LGDP	∆CPI	∆BLR	∆EXR
∆LKLSECI	-	19.1025***	60.7139***	40.2623	21.8495***
		[0.004]	[0.000]	[0.114]	[0.0013]
∆LGDP	7.1116	-	5.1532	2.1533	1.6455
	[0.310]		[0.5243]	[0.9051]	[0.949]
∆CPI	6.2604	2.0495	-	1.5377	8.6133
	[0.394]	[0.915]		[0.957]	[0.196]
∆BLR	14.4374**	3.7537	35.0166***	-	42.603***
	[0.025]	[0.710]	[0.000]		[0.000]
∆EXR	24.0631***	4.2054	6.6212	9.2257	-
	[0.0005]	[0.648]	[0.3573]	[0.161]	

Notes: *** and ** denotes significant at 1% and 5% significance level, respectively.
The figure in the parenthesis (....) denotes as t-statistic and the figure in the squared brackets[....] represent p-value.

The results of the Granger-causality test are reported in Table 3. It indicates that numerous variables has unidirectional Granger causality where GDP and CPI are Granger cause to stock market return and KLCI, EXR, and CPI are Granger cause to BLR. EXR and KLCI have bidirectional Granger causality. This indicates that EXR is Granger causes KLCI and vice versa. This result is supported by Aisyah *et al.* (2009) that had found one-way causality between interest rate and KLCI with regards to Granger causality test in VECM. Wang (2010), who provides evidence about China stock market, stated in the studied that there is a bilateral causal relationship between inflation and stock market volatility. This shows that inflation also can influence stock market. The summary of causality relationship for all variables direction is shown as in figure 2.

Figure 2: The causality relationship direction



Note: ⟶ implies one way causality
⟷ Implies bi-directional causality relationship

5. CONCLUSION

This paper used information from the period 1996 – 2011 in order to examine the relationship between GDP, CPI, BLR and EXR and stock market return (KLCI) in Malaysia. Numerous econometrics tests were employed to determine whether there are meaningful relationships between independent variables and dependent variable in the short run and long run. Johansen cointegration test analysis was used to lead to a long run equilibrium

relationship among these variables. Then, the methodology of Error Correction model was applied to estimate the short run and long run relationship. The selected cointegrated vector gave the appropriate error correction term, which proved the significant t-statistics that shows the existence of long run and short run relationship between these two variables.

Granger causality test found that GDP and CPI have a unidirectional causality with KLCI. Meanwhile, there are also a unidirectional causality occur between CPI, KLCI, and EXR towards BLR. However only EXR has bidirectional causality to KLCI which means these two variables can affect one and another in the short run. Consequently, all macroeconomic variables that are employed in this study had an impact to Malaysia stock market return. This shows that Malaysia stock market is sensitive to the changes in the macroeconomic variables. So, the study concludes that GDP, CPI, BLR and EXR had an impact to Malaysia stock market return (KLCI).

References

Angabini, A., & Wasiuzzaman, S. (2010). Modeling the effects of the global financial crisis on the Malaysian market. *International Journal of Trade, Economics and Finance,* 1(4), 387-391.

Asaolu, T.O., & Ogunmuyiw, M.S. (2010). An econometric analysis of the impact of macroeconomic variables on stock market movement in Nigeria. *Asian Journal of Business Management,* 3(1), 72-78.

Auzairy, N.A., Ahmad, R., & Ho, C.S.F. (2011). Stock market deregulation, macroeconomic variables and stock market perfomances. *International Journal of Trade, Economics and Finance,* 2(6), 495-500.

Azizan, N.A., & Sulong, H. (2011). The preparations towards Asean exchange link between Malaysia stock market and Asia countries macroeconomics variables interdependency. *International Journal of Business and Social Science,* 2(5), 127-134.

Barba, F.G., & Ceretta, P.S. (2011). Risk transmission between Latin America stock markets and the US: Impacts of the 2007/2008 crisis. *Economics Bulletin*, 31(2), 1025-1037.

Chioma, N.J. (2009). Causal relationship between gross domestic product and personal consumption expenditure of Nigeria. *African Journal of Mathematics and Computer Science Research,* 2(8), 179-183.

Daud, S.N.M. (2003). An empirical analysis from the pre- and post July 1997 period. (Unpublished Master Thesis). Universiti Utara Malaysia.

Diebold, F.X., & Yilmaz, K. (2008). *Macroeconomic volatility and stock market volatility, worlwide.* Retrieved from http://www.nber.org/papers/w14269

Duca, G. (2007). The relationship between the stock market and the economy: Experience from international financial markets*, Bank of Valetta* Review, 36(Autumn), 1-12.

Engle, R.T.F. (2008). The Global Financial Crisis and Implications on Malaysia.

Fama, E.F. (2008). The behavior of stock market prices. *The Journal of Business,* 38(1), 34-105.

Filis, G. (2009). The relationship between stock market, CPI and industrial production in Greece and the impact of oil prices. *Proceeding of International Conference on Applied Economics - ICOAE.* Greece: Technological Education Institute of Western Macedonia. 163-176.

Ibrahim, M.H. (2010). An empirical analysis of real activity and stock returns in an emerging market. *Economic Analysis and Policy,* 40(2), 263-271.

Islam, M. (2003). *The Kuala Lumpur stock market and economic factors: A general to specific error correction modelling test.* Retrieved from http: // www.findarticles.com/ p / articles/ mi_moOGT? is_1_1/ai113563578

Ismail M.T., & Isa, Z. (2006). The interactions of stock price and exchange rate in Malaysia. *Proceedings of the 2nd IMT-GT Regional Conference on Mathematics, Statistics and Application.* Penang: University Sains Malaysia.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with application to the demand for money. *Oxford Bulletin on Economics & Statistics ,* 52(2), 169-210.

Kandir, S.Y. (2008). Macroeconomic variables, firm characteristics and stock returns: Evidence from Turkey. *International Research Journal of Finance and Economics,* 16, 35-45.

Kok, K.L., & Goh, K.L. (1997). *Malaysian securities market*. In G. C. Chuan, Handbook on KLSE 2nd Board, Kuala Lumpur: Malaysia, 61-75.

Kosnandi, S.N. (2011). The impact of macroeconomic forces on stock returns in Malaysia. (Unpublished Master Thesis). Universiti Utara Malaysia.

Lau, E., & Lee, K.P. (2008). Interdependence of income between China and ASEAN-5 countries. *Journal of Chinese Economic and Foreign Trade Studies,* 1(2), 148-161.

Liews, K.S., Khong, W.L.R., Lim, K.P., & Evan, L. (2003) . Performances of time series forecasting models . *Proceeding of MFA 5th Annual Symposium*, 569- 576.

Mahmood, W.M.W., & Dinniah, N.M. (2009). Stock returns and macroeconomic variables: Evidence from the six Asian - Pacific countries. *International Research Journal of Finance and Economics,* (30), 154. doi:org/10.2139/ssrn.995108

Masih, A.M.M., & Masih, R. (1999). Are Asian stock market fluctuations due mainly to intra-regional contagion effects? Evidence based on Asian emerging stock markets. *Pacific-Basin Finance Journal,* 7(3-4), 251-282.

Masih, A.M.M, & Masih R. (2002). Propagative causal price transmission among international stock markets: pre-post globalization period. *Global Finance Journal,* 13(1), 64-91.

Maysami, R.C., Lee, C.H., & Hamzah, M.A. (2004). Relationship between macroeconomic variables and stock market indices: Stock market indices. *Journal Management*, 4, 47-77.

Mishkin, F.S. (2009). *The economic of money, banking and financial markets* (9th ed.). Boston: Addison Wesley Longman Ltd: Pearson International.

Muhammad, N.M.N., & Abd.Rahman, N.M.N. (2010). Efficient market hypothesis and market anomaly: Evidence from day-of-the week effect of Malaysian exchange. *International Journal of Economics and Finance,* 2(2), 35-42.

Neoh, S.K. (1989). *Stock market investment in Malaysia & Singapore*. Kuala Lumpur: Berita Publishing.

Rahman, A.A., Sidek, N.Z.M., & Tafri, F.H. (2009). Macroeconomic determinants of Malaysian stock market. *African Journal of Business Management,* 3(3), 95-106.

Olugunde A.O, Elumilade D.O & Asaolu T.O. (2006). Stock market capitalization and interest rate in Nigeria: A time series analysis. *International Research Journal of Finance and Economics,* 4, 154-167.

Siam, W. Z., Khrawish, H. A., & Jaradat, M. (2010). The relationships between stock market capitalization rate and interest rate: Evidence from Jordan. *Business and Economic Horizons*, 2(2), 60-66.

Singh. T., Mehta, S., & Varsha, M.S. (2011). Macroeconomic factors and stock returns: Evidence from Taiwan. *Journal of Economics and International Finance,* 2(4), 217-227.

Studentmund, A.H. (2006). *Using econometrics: A practical guide* (5th ed.). United States: Pearson International Edition.

Wang, X. (2010). The relationship between stock market volatility and macroeconomic volatility: Evidence from China. *International Research Journal of Finance and Economics,* 49, 149-160.

Zivengwa, T., Mashika, J., Bokosi, F.K., & Makova. T. (2011). Stock market development and economic growth in Zimbabwe. *International Journal of Economics and Finance,* 3(5), 141-150.