THE INFLUENCE OF MACROECONOMIC FACTORS ON THE MALAYSIAN EQUITY MARKET

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Abstract: This study explores the influence of macroeconomic variables towards the stock market performance by utilizing the regression and correlation analyses on the movement of the indices at Kuala Lumpur Stock Exchange. The performance of the stock market will be measured based on the level of the indices stated by KLSE. This study was carried out for the period of five years from the year 1998 until 2002, a period where the Malaysian economy was experiencing various economic situations from booming economy up to the economic (financial) crisis. Now it has recovered from a recurrence of the 1997-1998 Asian economic crisis. The variables that were analyzed in this study are the macroeconomic variables as independent variables and the stock market performance as the dependent variable. There are three sub-variables under the macroeconomic factor in this analysis namely gross domestic product (GDP), interest rate and inflation rate. According to previous researches done, the gross domestic product, interest rates and the inflation rates were considered the most common elements that were taken into consideration. As compared to the previous studies on the impact of economic variables (gross domestic product, interest rate and inflation rate) on the stock market performance, there are some similarities or consistencies in terms of the findings. The results of this study suggest that the macroeconomic fundamentals in Malaysia i.e., gross domestic product (GDP), inflation rate and interest rate influence the stock market performance differently. The major findings are (1) The gross domestic product is the most important determinant of the Malaysian stock market performance (2) The inflation rate is also the predominant force on the performance of share price in the market and (3) The interest rate has least impact on stock market performance. However, this study does not indicate a clear relation on the impact of inflation rate and interest rate on the stock market performance

INTRODUCTION

The first nine months of 1998 saw heavy losses in the Malaysian Stock Market since the devaluation of Thai currency on July 2, 1997 that showed the beginning of currency crisis in Asian region. However, the year 1999 showed something different situation. By the first week of July 1999, it had shot past the 870 mark. Furthermore, the level of Malaysian stock market was becoming more stable during the year 2000 until 2002. The Base Lending Rate (BLR) was 11.7% in August 1998 and it was reduced to the level of below 7% in year 2000. Generally, when the economic condition is at the stabilized stage, the stock market will show a strong level of performance represented by the indices.

The issue concerning the relation between stock market performance in a country with the macroeconomic factors has been widely studied during the last two decades. The previous studies are mainly focused on developed markets such as the USA, Japan, UK and other developed countries. There are only a few studies concerning this issue in the Asian emerging markets. There is a strong debate among the previous researchers on the issue of macroeconomic factors and its impact on stock market performance. Most of the discussions are related to the same independent macroeconomic variables such as interest rate, inflation rate, gross domestic product, exchange rates and money supply. The result of the previous studies suggested that macroeconomic factors significantly related to stock returns in the developed markets of USA and Japan as referred to Mukherjee and Naka (1995) [3]. Most of the studies regarding this issue, however, fail to explain the same relationships in European and other developed countries. However, the roles of macroeconomic variables of other Asian stock market are relatively less explored. Chen, Roll and Ross (1986) [2] showed that macroeconomic variables have a systematic influence on stock return as a result of their effect on future dividends and discount rate. Through their study, they provided the foundation for the belief in the existence of a relationship between stock price and related macroeconomic variables. The inflation rate is an

important element in determining stock returns as mentioned by Stulz (1986) due to the fact that during the times of high inflation, people recognize that the market is in a state of economic difficulty. People are laid off work, which could cause production to decrease. When people are laid off, they tend to buy only the essential items. Thus the production is cut even further. This eats into corporate profits, which in turn makes dividend diminish. When the dividends decrease, the expected return of stocks decrease, causing stocks to depreciate in value. Furthermore, Basabbi and Mukherjee (1995) [1] studied on the same issue but using real economic activity (GDP) as one of the variables. His study showed a positive relationship between stock returns and real economic activity (GDP). Mukherjee and Naka (1995) [3] investigated the linkage between Tokyo Stock Exchange (TSE) and the Japanese macroeconomic variables. They found that TSE index was integrated with six macroeconomic factors, i.e. money supply, inflation, real economic activity (GDP), long-term government bond, exchange rate and interest rate. Exchange rate, real activity, money supply and interest rate were positively related to stock returns, while inflation and long-term government bond were in the contrary. The relation between stock price and real economic activity seem to be positive as suggested by Chen, Roll and Ross (1986) [2]. This phenomenon is fully acceptable, since the growth of real activity will affect stock process in the same direction as a result of its effect on expected future cash flows. The relation between stock returns and inflation seems to be negative as hypothesized by Chen, Roll and Ross (1986) [2]. An increasing in inflation will increase the nominal risk-free rate and rising the discount rate in the valuation model and therefore the stock prices should be decreased. The effect of money supply on stock prices as explained by Mukherjee and Naka (1995) [3] show that the inflation has a connection with the interest rate in the market. Since the rate of inflation is positively related to money growth rates, an increase in money supply may lead to an increase in discount rate. The negative effects on the stock prices, however, may be encountered by the economic stimulus or it is often called a corporate earning effect. This situation is likely to result in increased future cash flows and stock prices.

It is widely believed that stock market price is related to macroeconomic fundamentals. According to the Dividend Growth Model (Discounted Cash flow Basis) of stock valuation analysis, it is clearly stated that most of the factors that will affect the stock price in the market are contributed by the macroeconomic factors such as interest rate, inflation rate, gross domestic product, exchange rates and money supply. The economic forces may be viewed as state variables that affect stock returns through their influence on expected dividends and the discount rate. According to the basic Discounted Cash Flow Model, the price of a financial asset is equal to the discounted value of the future cash flows to be derived from the asset:

$$P = \sum_{t=1}^{n} CF_t / (1 + RRR)^t$$

P	-	Intrinsic value (price) of the stock
CF_t	-	Expected future cash flow of the stock at t year
RRR	-	Investors' Required Rate Of Return
n	-	Number of holding years

Any change in an asset's cash flow (CF_t) should have a direct impact on its price. Thus the asset's expected growth rates that influence its predicted cash flows will affect its price in the same direction. Conversely, any change in the required rate of return (RRR) should inversely affect the asset's price. The required rate of return has two basic components – the risk-free rate and the premium commensurate with the asset's risk. The risk-free rate in addition is comprised of the real rate of interest and the anticipated inflation rate.

In addition to the Discounted Cash Flow Model, the theory in Capital asset Pricing Model (CAPM) can also be applied especially in the aspect of the investor's required rate of return determinant, risk-free interest rate in government security, beta or market return for the particular stock and the risk premium earned for every unit of risk taken by the investors. This situation will reflect the concept of additional return that would be requested by the investors in compensating the increase in risk for the particular investment.

The equation for the Capital Asset Pricing Model is stated below.

$$Kj = Krf + Bj(Km - Krf)$$

Kj	-	Required rate of return	Bj	-	Beta (market risk) for j stock
Km	-	Market return	Krf	-	Risk-free interest rate

Problem Statement

The studies on the relationship between macroeconomic variables and stock market have been the highlight of most economic literature. Although investigations have been done extensively, the precise nature of the fundamental determinants of stock prices remains ambiguous. The relationship between macroeconomic variables and stock market performance can be expressed by using the following function.

$$I = \otimes (GDP, Int, Inf, ...)$$

I	-	The Performance of The Stock Market Indices
GDP	-	Gross Domestic Product
Int	-	Interest Rate
Inf	-	Inflation Rate

Based on the above function of indices performance, the impact of each element of macroeconomic variables towards stock market performance need to be analyzed individually according to the indices. One reason for the upward trend of our stock market performance from the year 1999 to 2002 is because of the improvement in the Malaysian economic condition but how significance is the impact of the macroeconomic variables towards the stock price performance is another crucial question. The ambiguous casual relationship between inflation rate, interest rate and the GDP level in affecting the stock market performance, thus have long been the subject of ongoing discussion and debate. The question whether macroeconomic variables have significant impact on the stock market performance need to be tested since it has little empirical support. In other words, how significant is the impact of GDP, inflation and interest rate on our stock market performance?

Objectives Of The Study

To study the impact of the macroeconomic variables (inflation rate, interest rate and gross domestic product) on the Malaysian stock market performance. The stocks to be analyzed are those listed in the Main board and the Second Board.

MATERIALS AND METHODS

This study will focus on the two types of variables that function as the unit of analysis. The macroeconomic factors comprise of inflation rate, interest rate and gross domestic product. The stock market performance will be represented by the level of Stock Market Indices such as Kuala Lumpur Composite Index, Emas Index, KLSE Indices for every sector in the Main Board and the KLSE Second Board Index. The gross domestic product variable will be measured using the real gross domestic product for 5 years period on quarterly basis. Besides that, the interest rates will be measured by the base lending rate fixed by Bank Negara. Meanwhile, the inflation rate will base on the consumer price index (CPI) as the unit of measurement. The stock market indices are taken into consideration in this study due to its function in reflecting the performance of Malaysian Stock Market. Therefore, this study will use the KLSE indices to represent the level of stock market performance. All of the indices and the macroeconomic variables will be determined based on the quarterly basis for FIVE (5) years from the year 1998 until 2002.

RESULTS AND DISCUSSION

Table 1 is a summary on correlation coefficient (r) and Significant Level (P) according to the types of indices involved in the analysis. Generally, all of the indices being analyzed had shown a significant positive relationship towards the changing in Gross Domestic Product for the year 1998 until 2002. All of the KLSE Indices are having strong positive relationship with the movement of the gross domestic product during the five years period of the study. In addition, the relationships between the two identified variables are always significant. Therefore the researchers believe that the gross domestic product is one of the main determinants in affecting the performance of Malaysian stock market. However, based on the regression analysis, the values of r-Square for all indices are relatively low. Most of the indices had the value of r-Square less than 50 percent. It indicates that the regression model that being developed is not really fit enough to explain the movement in stock market performance when there are changes in gross domestic product. By referring to Table 2, it is clearly indicates that gross domestic product had a positive impact on the movement in the stock market performance since the significant values of the indices are less than 0.05. Therefore, there is significant impact of gross domestic product on the stock market performance represented by the KLSE indices. However, this conclusion is just based on the preemptive analysis using the regression analysis. It needs to be tested by using another advance technique (Vector Autoregressive Model or Vector Error Correction Model) in order to determine the level of impact and the relationship between the variables.

Table 1: Summary of The Correlation Analysis (KLSE Indices and Malaysian GDP)

												Total			
												Significant		*Insignificant*	
Economic Variables/ Indices		A	B	C	D	E	F	G	H	I	J	K	No	%	No	%
GDP	r	.702	.725	.486	.673	.605	.643	.671	.556	.440	.627	.739	11	100	-	
	Sig	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000				

Table 2 : Regression Analysis Between Gross Domestic Product and The KLSE Indices

Economic Variables	A	B	C	D	E	F	G	H	I	J	K
r	*.702*	*.725*	*.486*	*.673*	*.605*	*.643*	*.671*	*.556*	*.440*	*.627*	*.739*
r-Square	*.493*	*.526*	*.238*	*.453*	*.366*	*.414*	*.450*	*.309*	*.193*	*.394*	*.546*
Adjusted r-Square	*.508*	*.519*	*.218*	*.438*	*.348*	*.398*	*.434*	*.289*	*.171*	*.377*	*.533*
Sig. Value	*.000*	*.000*	*.002*	*.000*	*.000*	*.000*	*.000*	*.000*	*.005*	*.000*	*.000*

A: Composite
B: Emas
C: Second Board
D: Construction
E: Consumer Product
F: Finance
G: Industrial Product
H: Mining
I: Plantation
J: Property
K Trading and Services:

On the other hand, there are only SEVEN (7) or 64% of the indices at KLSE indicate positive significant relationship towards the changes in the inflation rates in the market (refer to Table 3). However, the levels of the relationship are not strong as compared to the changes in gross domestic product. Theoretically, there is an overlapping impact contributed by the two variables towards the stock market performance. Due to that factor, the results in this analysis are also being explained in the

GDP analysis. In other words, there is cointegration effect between the gross domestic product and the inflation rate. There are no significant relationships between the stock market performance and the other FOUR (4) or 36% of the indices for the respective sectors in this study. Table 4 shows that the fitness levels of the regression models are low. The r-Square values are less than 50 percent. These levels are also considered weak as compared to the results for gross domestic product. As a general conclusion, there is a positive relationship between the two variables as referred to the results in correlation analysis. However, the impacts of changes in inflation rate were weak due to the lower r-Square for each of KLSE indices.

Table 3: Summary of The Correlation Analysis (KLSE Indices and Inflation Rate)

												Total			
												Significant		*Insignificant*	
Economic Variables/ Indices		A	B	C	D	E	F	G	H	I	J	K	No	%	No	%
Inflation	r	.206	.366	.262	.367	.119	.028	.532	.453	.349	.551	.390	7	64	4	36
	Sig	.209	.022	.106	.026	.482	.864	.001	.005	.030	.000	.017				

Table 4: Regression Analysis Between Inflation Rate and The KLSE Indices (1998-2002)

Economic Variables	A	B	C	D	E	F	G	H	I	J	K
r	.206	.366	.262	..367	.119	.028	.533	.453	.349	.559	.390
r-Square	.042	.134	.069	.134	.014	.001	.284	.205	.122	.303	.152
Adjusted r-Square	.016	.110	.044	.110	.008	.026	.264	.182	.098	.284	.128
Sig. Value	.209	.022	.106	.026	.482	.864	.001	.005	.030	.000	.017

The findings also show that most of the KLSE indices have no significant relationship with the interest rate. This findings are supported by the lower correlation coefficient (r value), the weak level of regression fitness model (r-Square) and the significant value (P) which were greater than 0.05. Although none of the indices at KLSE had shown any positive significant relationship between the two variables, the Second Board Index has significant relationship with the movement in interest rates. It seems that the counters listed at the Second Board of Kuala Lumpur stock Exchange have a sensitive condition and give reaction towards the changes in the level of interest rate in the market. In other words, the counters listed at The Second Board of Kuala Lumpur Stock Exchange are more sensitive and react positively towards the fluctuation in interest rate as compared to the other counters in the main board. Therefore, the interest rate does affect the stock market performance especially those counters listed at the Second Board of KLSE and less evidences from this study to support the relationship or impact of interest rate towards the other KLSE indices. There must be some other factors that are not being considered in this analysis contribute to the findings. All of the information regarding this situation is summarized in the Table 5 and Table 6.

Table 5: Correlation Analysis Between Interest Rate and The KLSE Indices (1998- 2002)

												Total			
												Significant		*Insignificant*	
Economic Variables/ Indices		A	B	C	D	E	F	G	H	I	J	K	No	%	No	%
Interest	r	.093	.285	.436	.266	.257	.033	.192	.126	.219	.177	.125	1	9	10	91
	Sig	.573	.081	.005	.111	.124	.844	.256	.456	.181	.280	.463				

Table 6: Regression Analysis Between Interest Rate and The KLSE Indices (1998 – 2002)

Indices	r	r Square	Sig. Value
Composite	.093	.009	.573
Emas	.285	.081	.079
Construction	.266	.071	.111
Finance	.033	.001	.844
Industrial Product	.192	.037	.256
Property	.177	.031	.280
Trading & Services	.125	.016	.463
Consumer Product	.257	.066	.124
Mining	.126	.016	.456
Plantation	.219	.048	.181
Second Board	.436	.190	.005

Refer to table 7 for the summary of the Correlation Analysis.

Table 7: Summary Of The Correlation Analysis (Significant findings)

												Total			
												Significant		Insignificant	
Economic Variables	A	B	C	D	E	F	G	H	I	J	K	No	%	No	%
GDP	/	/	/	/	/	/	/	/	/	/	/	11	100	0	0
Inflation		/		/			/	/	/	/	/	7	64	4	36
Interest		/										1	9	10	91
Total	1	3	1	2	1	1	2	2	2	2	2	19		14	

CONCLUSION

The stock market has often been considered as a major indicator and predictor of future economy. An increase in the stock market performance is an indication of a healthy economic status. This crucial role is also played by the Malaysian stock market. In relation to that matter, the researcher attempts to

disclose the major determinants of the stock market performance. The three economic fundamentals (GDP, inflation and interest rate) were studied as the primary determinant of stock market. The investigation that has been accomplished indicates some consequences; the three economic variables possess definite strength of outcome on the stock market performance. The linear regression model illustrates that the stock market performance relations with the three macroeconomic variables namely GDP, inflation and interest rate are generally consistent with the results gathered by previous researchers. From the study it was proved by the regression analysis that the relationship between Gross Domestic Product and stock market performance is more significant as compared to other variables. A higher gross domestic product indicates that it will have a greater positive impact on the stock market performance. The question of whether or not gross domestic product, inflation and interest rate influence the performance of the stock market is not thoroughly answered by just looking at the correlation coefficient, coefficient of determinant and significance level of the relationship between the two variables. On the other hand, some other analysis such as Augmented Dickey-Fuller Test and Johansen Maximum Likelihood Estimation Procedure should be considered by scrutinizing the movement of the stock market indices in term of its magnitude and the causality direction among the variables. In fact, the general analysis reveals that the movement of gross domestic product and the indices of Kuala Lumpur Stock Exchange appear to be more identical and coincident except during the year 2001 where the stock market performance was greatly affected by global political and economic factors such as September 11 tragedy, monetary strategy and other external and internal factors.

In conclusion, the results from this study reveals that Gross Domestic Product is the greatest economic variable that influences the stock market performance. To be more precise, gross domestic product is significant to the stock market in that it serves as an indicator of the health of the economy circumstances. An increase in gross domestic product would also increase the stock market performance because the consumers have more purchasing power. In other words, GDP would contribute more income towards stock market investing which should lead to higher future earnings and stock prices. An important point can be noted here is that the resolution of this study gives investors guideline to make wise portfolio decisions. If they are optimistic about rises in GDP, they should invest in the stock market. This is followed closely by interest rate although in certain circumstances it looks like surpasses Gross Domestic Product. For example high interest rate in the first quarter of 1999 influence the stock and the Kuala Lumpur Stock Exchange Composite Index closed at 505.82 points. The reason is that a high interest rate will make the cost of borrowing higher. This will affect the number of investors borrowed fund to invest. As a result, company's ability to borrow money from the economy will lead a slower companies growth and degenerate the performance of the companies. Consequently, the share prices will be reduced. Based on the finding, the inflation rate plays only a little influence on the stock market performance. The possibility is that the influence of inflation on the stock market may take a longer period of time instead of five years period as described in this study.

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