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The Relationship between Macroeconomic Variables, Exchange Rate and Stock Price: Malaysian Evidence

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ABSTRACT

Macroeconomic variables and exchange rate are among the most important indicators to the stock price changes and to the stock market performance. It is important to know the relationship between the macroeconomic variables, exchange rate and the stock price in order to help investors to make a right decision accordingly. Thus, this study aims to analyze the relationship between the macroeconomic variables, exchange rate and stock price in Malaysia for the period of January 1997 to December 2006. In this study, the macroeconomic variables are: money supply (M2), inflation, interest rate and exchange rate. As a proxy to the stock price, the Kuala Lumpur Composite Index and several other Sector Indices will be used in the analysis. A multiple linear regression will be applied in this study to analyze the relationship between the dependent and independent variables. This study indicates that, the Malaysian stock price seems to be driven more by the changes in the domestic sectors such as a money supply and exchange rate.

Keywords: *KLCI, macroeconomic variables, stock price*

Introduction

Macroeconomic variables are among the important factors that will influence the performance of stock markets all over the world. An analysis of these macroeconomic variables becomes more critical as the company's prospect for future growth will be influenced the movement of the stock price. According to the Efficient Market Hypothesis developed by Fama (1970), an efficient capital market is one in which stock price adjust rapidly to the arrival of new information and therefore, the current prices of stock reflects all information about the stock. This is an essential issue used to identify whether Malaysian's stock market is efficient or not compared to other markets in the world. There were many studies which focused on the relationship between stock market return and macroeconomic variables in develop markets. These studies were conducted by researchers such as Chen et al. (1986) for the US market, Hamou (1988) for the Japanese market and Clare and Thomas (1994) for the UK market. In Malaysia, there are a few studies that were done by researchers such as Clare and Priestley (1998), Yong (1995) and Cheng and Lai (2006) and these studies were done from several different approaches. The present study will attempt to provide more evidences to the existing literature by using current data for the Malaysian stock market. The data used for this study is dated from January 1997 to December 2006.

Problem Statement and Objective

Since macroeconomic variables are among the important factors that will influence the stock price movement, this study will investigate the relationships between the variables and determine which one of the macroeconomic variables are significant. If there are a significant relationship between macroeconomic variables used and the stock price, it can be said that the volatility of the Malaysian stock market is strongly correlated with the fundamental economics activities and government policies.

Significant of the Study

This study is significant to the financial analysts, policy makers, investors and other interested party to gather information about the macroeconomic variables and stock price performance in Malaysia. This study will also provide additional literature to the Malaysian stock market. The importance of this study is it will provide guidelines to investors in order to make decisions for future investment in Malaysian stock market.

A Review of Literature

Past researches have proven that many macroeconomic variables such as inflation, gross domestic product, money supply and interest rate influence the stock market. They have been analyzed to know the relationship and their actual effect on the stock market. For example the studies conducted by Chen et al. (1986) and Hamou (1988) have found similar risk factors between the US and the Japanese market. From their studies, they found that inflation, default risk and term structure of interest rate are among the important factors that will influence risk premium for both markets. On the other hand, Fitzpatrick and Brian (1994) found contradicting results, in their studies on US market from 1968 to 1987. In their studies, there was no significant relationship between the macroeconomic data and the total return on the S&P 500 Index.

There are also empirical results from the UK market which discuss on the relationship between macroeconomics variables and their effect toward the stock price. Some researchers such as Antoniou et al. (1998) found that there is a significant relationship between inflation rate, money supply and interest rate with the stock return. Poon and Taylor (1991), however, failed to identify any significant relationship between stocks return and risk factor (macroeconomic variables) in the UK market for the period dated 1965 to 1984.

In Asia, there are also few researchers who have done a lot of studies by using different model and variables for example, Maysami and Sim (2002) for the Hong Kong and Singapore markets and Maysami and Sim (2001) for Malaysian and Thailand markets. Both researches used the Error –Correction Modelling technique to examine the relationship between macroeconomic variables and stock return.

Islam (2003) in his study concluded that there are statistically significant relationship among the macroeconomic variables and the KLSE stock return. Ibrahim (1999) also examined the dynamic interaction between the KLSE Composite Index and seven macroeconomic variables which are: industrial production index, money supply (M1 and M2), consumers' price index, exchange rate, foreign reserves and credit aggregates. He found that the Malaysian stock market was informationally inefficient or in other word, a change in the macroeconomic variables has no significant relationship with stock market.

Maysami et al. (2004) in their study concluded that the Singapore stock market and the SES All-A Equities hotel Index, formed significant relationships with all macroeconomic variables identified such as money supply and real economic activity.

Research Methodology

Sample and Data

This study aims to identify the relationship between macroeconomic variables, exchange rate and stock price in the Malaysian market. A sample of four indices is used to analyze data from the year 1997 to 2006.The four indices are Kuala Lumpur Composite Index, Finance Index, Consumer Product Index and Property Index. The main data sources are from Bloomberg Financial Databank, Worlscope Datastream database compiled from Thomson and Bank Negara Report for the year 1997 to 2006.

Method

A multiple linear regression analysis is employed to analyze the relationship between the macroeconomic variables, exchange rate and stock price. The four indices were used as a proxy to the stock price and four economic variables. T-Statistic has been used to test the significant relationship between the four dependent variables and four independent variables. Below is the basic equation for the relationship.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Variables

To identify the relationship between the macroeconomic variables and stock price, the dependent variable is the stock price and the independent variables are the macroeconomics factors. Four indices were used as a proxy to the stock price. The four indices are Kuala Lumpur Composite Index, Finance Index, Consumer Product Index and Property Index. The figure for the study is an end of the month values for the four indices taken from Bursa Malaysia. The macroeconomic variables that were used are: money supply (M2), consumer price index, three month Treasury Bills' rate and exchange rate. The exchange rate used is represented by the bilateral Ringgit exchange rate *Vis a Vis* the US dollar. All the data used is a monthly data starting from January 1997 to December 2006.

Findings

This study used four different indices as dependent variables. Four tests were done using four different dependent variables, which are Kuala Lumpur Composite Index, Finance Index, Consumer product index and property index. Each dependent variable was tested with four macroeconomic factors that were used as the independent variables. Table one (1) below, summarized the result of the first test between the dependent variable which is Kuala Lumpur Composite Index (KLCI) and the four independent variables used in this study. The adjusted R-Square for the first dependent variable is 0.739. This means that, 73.9 % of the variations in the Kuala Lumpur Composite index can be explained by the four economic variables used. The result shows three out of four of the independent variables are significant with the KLCI performance. The variables are money supply (M2), exchange rate and Treasury Bills' rate. Money supply (M2) has positive and significant relationship with the KLCI performance. This means that any increase in money supply, will also increase the stock price. While the other two independent variables, exchange rate and Treasury Bills' rate have an inverse and significant relationship with the KLCI. This result is the same to the findings of past researches such as Cheng and Lai (2006) which studied on Malaysian data from January 1992 to December 2003. The researchers also found a negative relationship between exchange rate and interest rate with the stock price and a positive relationship between money supply and stock price.

Table 1: Relationship between Macroeconomics Variables and KLCI

Macroeconomic Variables	Beta	T-Value	Significant Value
CPI	-0.059	-0.036	0.972
T-bills	-28.942	-4.265	0.000*
M2	0.001	8.352	0.000*
Exc. Rate	-416.35	-15.519	0.000*

*Significant level of 5%
Adjusted R^2 = 0.739

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Table 2 summarized the regression result for the second dependent variable used in this study, which is Finance Index with four macroeconomic variables. The adjusted R-Square is 0.767 and this shows that 76.7% of the variations in dependent variables can be explained by the independent variables. From four macroeconomic factors, there are only three that are significant with the Finance Index. This result is similar to the first test between KLCI and macroeconomic variables. Treasury Bills' that is a proxy for interest rate and exchange rate have a negative relationship with the stock price. This result is consistent with the theory explained by Reilly and Brown (2000). This means that, if the Bank Negara increased the interest rate, it will give a negative impact towards the stock price, and most of the investors will shift their investment from stock market to an alternative interest rate product.

Table 2: Relationship between Macroeconomics Variables and Finance Index

Macroeconomic Variables	Beta	T-Value	Significant Value
CPI	-2.904	-0.179	0.858
T-bills	-439.34	-6.582	0.000*
M2	0.005	7.326	0.000*
Exc. Rate	-4480.26	-16.976	0.000*

*Significant level of 5%
Adjusted R^2 = 0.767

Table 3: Relationship between Macroeconomics Variables and Consumer Product Index

Macroeconomic Variables	Beta	T-Value	Significant Value
CPI	-0.336	-0.045	0.339
T-bills	-3.988	-2.771	0.007*
M2	0.000	14.665	0.000
Exc. Rate	-90.741	-15.948	0.000*

*Significant level of 5%
Adjusted R^2 = 0.813

The third regression is between Consumer Product Index as the dependent variable and the four macroeconomic variables. From the above table three (3), the result is different with the first and second regression. There are only two out of four variables which are significant to explain the variation in the dependent variable which is the Consumer Product Index. The adjusted R-Square is 0.813 which means that 81.3% of the variation in the Consumer Price Index can be explained by two significant variables which are treasury bills' and exchange rate. On the other hand, money supply (M2) has zero beta. This means that any change in government policy regarding money supply does not affect the stock price of consumer product or in the other words money supply do not have any relationship with the Consumer Price Index.

Table 4: Relationship between Macroeconomics Variables and Property Index

Macroeconomic Variables	Beta	T-Value	Significant Value
CPI	7.063	-2.132	0.035*
T-bills	-19.979	-1.465	0.146
M2	-0.001	-6.961	0.000*
Exc. Rate	-1179.67	-21.878	0.000*

*Significant level of 5%
Adjusted $R^2 = 0.849$

The last regression is Property Index which acts as the dependent variable with the four independent variables. The above table four (4) summarized the regression result between Property Index and macroeconomic variables. The adjusted R-Square is 0.849. The results indicated that 84.9% variation in the Property Index can be explained by three significant variables. Money supply and exchange rate are the first two significant variables. These two significant variables have an inverse relationship with the Property Index, which means, if the money supply (M2) and exchange rate increase, the stock price under property sector will decrease accordingly. Only consumer price index has a positive and significant relationship with the Property Index.

Conclusion and Recommendation

The overall study shows that the stock index in Malaysia is quiet sensitive to the changes in the local macroeconomic variables and is also sensitive to the global market where it is significant with the changes in the exchange rate.

From the four regression, two out of four indicate a significant relationship between the money supply (M2), exchange rate and interest rate where this study used three month Treasury Bills' rate as a proxy to the interest rate. These macroeconomic variables are significant with the Kuala Lumpur Composite Index (KLCI) and Finance Index.

For the Consumer Product Index, only two of the independent variables are significant. The significant variables are interest rate and exchanges rate. These two variables have negative relationship with the index performance.

There are only three out of four macroeconomic variables test having significant relationship with property index. The variables are consumer price index, money supply (M2) and exchange rate. Consumer price index (CPI) was used to measure the inflation rate and this was the only variable which has significant relationship with the Property Index. The positive relationship means that any increase in CPI would also increase the Property Index. Money supply and exchange rate are the other two variables which have negative and significant relationship with the Property Index.

All the results in this study are consistent with other past studies. It was found that for certain markets, all the macroeconomic variables tested were significant with the stock price, while some of them were not. For example, Cheng and Lai (2006), Chen et al. (1986) and Hamou (1988) found that all the macroeconomic variables have significant relationship with the stock price and index.

As a conclusion, the investors, financial analysts and all interested party should not ignore any changes in the government and Bank Negara policy, since all the policy will give some impact to the performance of stock price. Based on the theory of Efficient Market Hypothesis developed by Fama (1970), the Malaysian stock market can be classified in the semi-strong form efficiency, where the stock prices must contain all relevant information including publicly available information. This information has important implications for policy makers and the

stock broking industry. Other researchers such as Fama and Schwert (1977), Nelson (1977) and Jaffe and Mandelker (1976), affirmed that macroeconomic variables will influence stock price movement and the stock return.

Further studies should test on more macroeconomic variables such as growth domestic product and industrial production index and these studies should be sub-divide into certain economic cycle. This is to know the real relationship for all macroeconomic variables for different economic condition such as inflation and recession.

References

Antoniou, A., Garrett, I., & Priestley, R. (1998). Macroeconomic variables as common pervasive risk factors and empirical content of the arbitrage pricing theory. *Journal of Empirical Finance, 5*, 221-240.

Cheng, M.M., & Lai, M.M. (2006). An empirical investigation of the influences of macroeconomics variables on the Malaysian stock market. *Multimedia Cyberscape Journal, 4* (2), 47-55.

Chen, N.F, Roll., & Ross, S. (1986). Economic forces and the stock market. *Journal of Business, 59*(3), 383-403.

Clare, A.C., & Thomas. (1994). Maceconomic factors, the APT and the UK stock market. *Journal of Business Finnace and Accounting, 21*, 309-330.

Clare, A.D., & Priestley, R. (1998). Risk factors in the Malaysian stock market. *Pacific Basin Finance Journal, 6*, 103-114.

Fama.(1970). Efficient capital market:a review of theory and empirical work. *Journal of Finance, 25*, 383-417.

Fama, E.F., & Shcwert, W.G. (1977). Asset return and inflation. *Journal of Financial Economic, 5*, 115-146.

Fitzpatrick, M., & Brian, D. (1994). Stock prices and macroeconomics data. *Journal of Applied Business Finance & Accounting, 10*(4), 69-77.

Hamou, Y. (1988). An empirical investigation of the arbitrage pricing theory. *Japan and World Economy, 1*, 45-61.

Ibrahim M.H. (1999). Macroeconomics variables and stock price in Malaysia:An empirical analysis. *Asian Economic Journal, 13*(2), 291-231.

Islam, M. (2003). The Kuala Lumpur stock market and economic factors: A general to specific error correction modeling test. Journal of the Academy of Business and Economics. Retrieved January 14, 2008, from http://www.findarticales.com/p/articles/mi_m0OGT/is_1_1/ai_113563578.

Jaffe, J., & Mandelker, G. (1976). The Fisher effect for risky assets: An empirical investigation. *Journal of Finance, 31*, 447-456.

Maysami, R.C., Howe, L.C., & Hamzah, M.A. (2004). Relationship between macroeconomic variables and stock market indices: Cointegration evidence from stock exchange of Singapore's All-S sector indices. *Journal Pengurusan, 24*, 47-77.

Maysami, R.C., & Sim.H.H (2002). Macroeconomics variables and their relationship with stock return:error correction evidence from Hong Kong and Singapore. *The Asian Economic Review, 44*(1), 69-85.

Maysami, R.C., & Sim.H.H. (2001). An empirical investigation of dynamic relationbetween macroeconomics variables and the stock markets of Malaysia and Thailand. *Journal Pengurusan, 20*, 1-20

Poon , S., & Taylor, S.J. (1991) Macroeconomic factors and the UK Stock Market. *Journal of Business Finance & Accounting, 18*(5), 619-636.

Reily,F.K., & Brown.K.C. (2000) *Investment Analysis and Portfolio Management.* Orlando, USA: the Dryden Press.

Yong, O. (1995) Influence of the end beginning of –the-week performance of the KLSE. *Capital Market Review, 3*(1), 49-72.

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