IMPACT OF INTEREST RATE AND EXCHANGE RATE ON THE STOCK MARKET INDEX IN MALAYSIA: A COINTEGRATION ANALYSIS

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I would like to dedicate this paper to my family for their love, support, and encouragement for keeping me motivated to complete this thesis. You light up my life and given me the greatest love of all. Paragraphs

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KESAN KADAR FAEDAH DAN KADAR PERTUKARAN TERHADAP INDEKS PASARANSAHAM DI MALAYSIA: ANALISIS KOINTEGRASI

ABSTRAK

Kajian ini mengkaji kesan kadar faedah dan kadar pertukaran terhadap indeks pasaran saham di Malaysia. Pasaran saham boleh digunakan sebagai pertunjuk untuk mengkaji ekonomi negara. Sebelum menjalani analisis kointegrasi, pembolehubah-pembolehubah dikaji dengan ujian Augmented Dickey Fuller (ADF). Didapati semua pembolehubah adalah pegun dalam siri masa peringkat satu, I(1). Selepas itu, analisis kointegrasi Johansen dan model vektor pembetulan ralat (VECM) akan digunakan untuk mencari hubungan jangka masa pendek dan jangka masa panjang antara pembolehubah-pembolehubah tersebut. Keputusan kajian ini menyokong jangkaan-jangkaan yang diumumkan dalam kajian lepas. Kadar faedah dan kadar pertukaran mempunyai kesan negatif terhadap indeks pasaran saham dalam jangka masa panjang dan jangka masa pendek. Keputusan kajian ini memberi pandangan yang berguna mengenai kesan-kesan kadar faedah dan kadar pertukaran terhadap indeks pasaran saham. Diharap bahawa keputusan kajian ini dapat membantu penggubal polisi disamping membantu pelabur dalam keputusan pelabruan portfolio masing-masing.

ABSTRACT

This paper examines empirically the nature of the impact of the exchange rate and interest rate on Malaysia stock market index. Stock market performance can act as the barometer of the economy as a whole. Prior to testing for cointegration, Augmented Dickey Fuller (ADF) unit root test is performed. All the variables in our study are stationary at first difference, that is I(1) variables. Johansen Juselius (JJ) cointegration test, Vector Error Correction Model (VECM) and Granger Causality test were applied to search for the long run and short-run impacts respectively. The test results conform to *a priori* expectations. The interest rate and the exchange rate have negative impact on the stock market index in the long run as well as the short run. The results provide some useful insights into the effects of interest rate and exchange rate on the stock market index in Malaysia. Our findings can help the policy makers in decision on planning as well as investors in decision on portfolio investment.

Chapter 1

INTRODUCTION

1.1 Introduction

The goal of this study is to examine the long run and the short run relationships between interest rate, exchange rate and stock market index in Malaysia. The performance of the stock market can reflect the overall performance of a country's economy. Similarly the stock index in a particular sector can reflect the performance of the particular sector, for example, the plantation index. When palm oil-related companies are making huge profits, plantation index will tend to go up. When the stock market is doing well, it may imply that the economy is experiencing high growth.

However, there is another school of thought which says otherwise. As noted by Paul Samuelson, "The stock market does not have any more of a clue about what will happen than the rest of us. It has predicted at least twelve of the last two recoveries, and nine of the last five recessions!" (Star, 6May 2009).

There are many factors that affect the performance of the stock market, for example, political factors, economic factors, external and company specific factors. The stock indices are affected by economic growth, monetary policies, political issues, fiscal policies, exchange rate and international issues. For a company's stock price, the factors that affect the price can be the company profitability, sales, balance sheet, board of directors, new product launching and so on.

Since stock market performance can be taken as barometer of the economy as a whole, it is important to understand what are some of the factors that determine the performance of the stock market. The determinants used in the study are interest rate and exchange rate. Malaysia was practicing interest rate targeting since the nineties. Malaysia is an export oriented country. If we have a competitive exchange rate, this will promote exports. This will generate economic growth and it will be reflected in stock market performance.

To find the impact of the interest rate and exchange rate on stock market index, econometric procedures of co-integration and vector error correction model are used.

1.2 Background of the Study

The stock market has always been a good instrument for investors to grow their wealth and properties. Currently, there are many major issues in the stock market, namely the subprime mortgage crisis (Started in year 2006 throughout 2007 until now) where housing loans were given to individual with poor credit history, and lead to the failure of collecting back the loans. When the interest rate begins to increase, the housing price started to drop. Furthermore, this leads to the bankruptcy of some major players in the banking sectors, for example: Lehman Brothers, a 158-year-old investment bank, was declared bankruptcy on 15 Sept 2008.

All these negative news have chain reaction toward the other sectors like manufacturing, housing and mortgage, commodities. Major indices in United States like Dow Jones, S&P 500 and Nasdaq are mostly bearish and have been decreased tremendously since then. Earnings prospect are clouded by macro-economic concerns.

During the economic downturn, for example, the 1997 -1998 Asian Financial Crisis, sales and profits of any companies are expected to decrease. One of the major public policies would be the government would reduce interest rate and encourage spending to stimulate the economy. According to Roubini (2006) , months before the start of the recession, a sharp fall in the share prices can be observed, leading to poor stock market performance.

The performance of the stock market during recessionary periods is clearly reflected in Figure 1.3. During the financial crisis 1997-1998, the Kuala Lumpur Composite Index (KLCI) of Malaysia showed a down trend from January 1997 and reached its trough in September 1998.

Other than the financial crisis, the stock market is affected by many other factors as well. For example, the interest rate, gross domestic product, exchange rate, money supply, inflation, fiscal policy and so on. It is not very practical to include all possible macroeconomic variables to determine the performance of the stock market since many of these variables are closely correlated giving rise to estimation problems. For this study, we are keen to find out the relationship between the interest rate, the exchange rate and the stock market index (Kuala Lumpur Composite Index, KLCI).

The *a priori* expected relationship between stock market index and interest rate is that they are negatively correlated. When the interest rate is low, the stock market index will increase and vice versa. This is because the investors are shifting their money from their savings or fixed deposit account to the stock market in order to gain a higher return. Another investment instrument which compete with investment in the stock market.

Some companies (and even governments) issue bonds to borrow money from public. Bonds have many ratings. A good bond is rated as “AAA” or “AAB” and so on and the worst is the “DDD” which has the highest risk. Usually, bonds have lower risk if compared to the stock market. When an investor invests in less risky instrument, he will get less profit in return. Coupon or dividend that an investor receives will be lower than the return from the stock market. However, when the stock market is bullish, investors will buy more stocks instead of buying the bonds and vice versa.

There are mixed empirical results and studies regarding the relationship between stock market index and the exchange rate. They can be positively and negatively related. When the currency is depreciated, it may mean the country is not doing well. The economy is spending more than it earns, leading to a decrease in foreign reserves. Foreign investors will tend to lose their confidence to invest in the local stock market. On the other hand, there is another belief that when the currency is depreciated, economies that are export-oriented such as Malaysia, will gain in terms of increasing exports due to increased competitiveness of the products it sells in the world market.

In Malaysia, monetary policy is used to control the stability of the price level as well as to promote sustainable growth rate in the country. Tracing back the history of monetary policy in Malaysia, there are several stages. Since the seventies, the monetary policy strategy by the central bank was monetary targeting. This is because monetary aggregates are believed to be closely correlated with inflation. From the mid-1990s, the monetary policy changed from monetary targeting to interest rate targeting. The change in policy was mainly due to the increasing globalization of financial markets. This has given rise to the needs of interest rate liberalization. The liberalization has enhanced the role of interest rate in the monetary transmission mechanism.

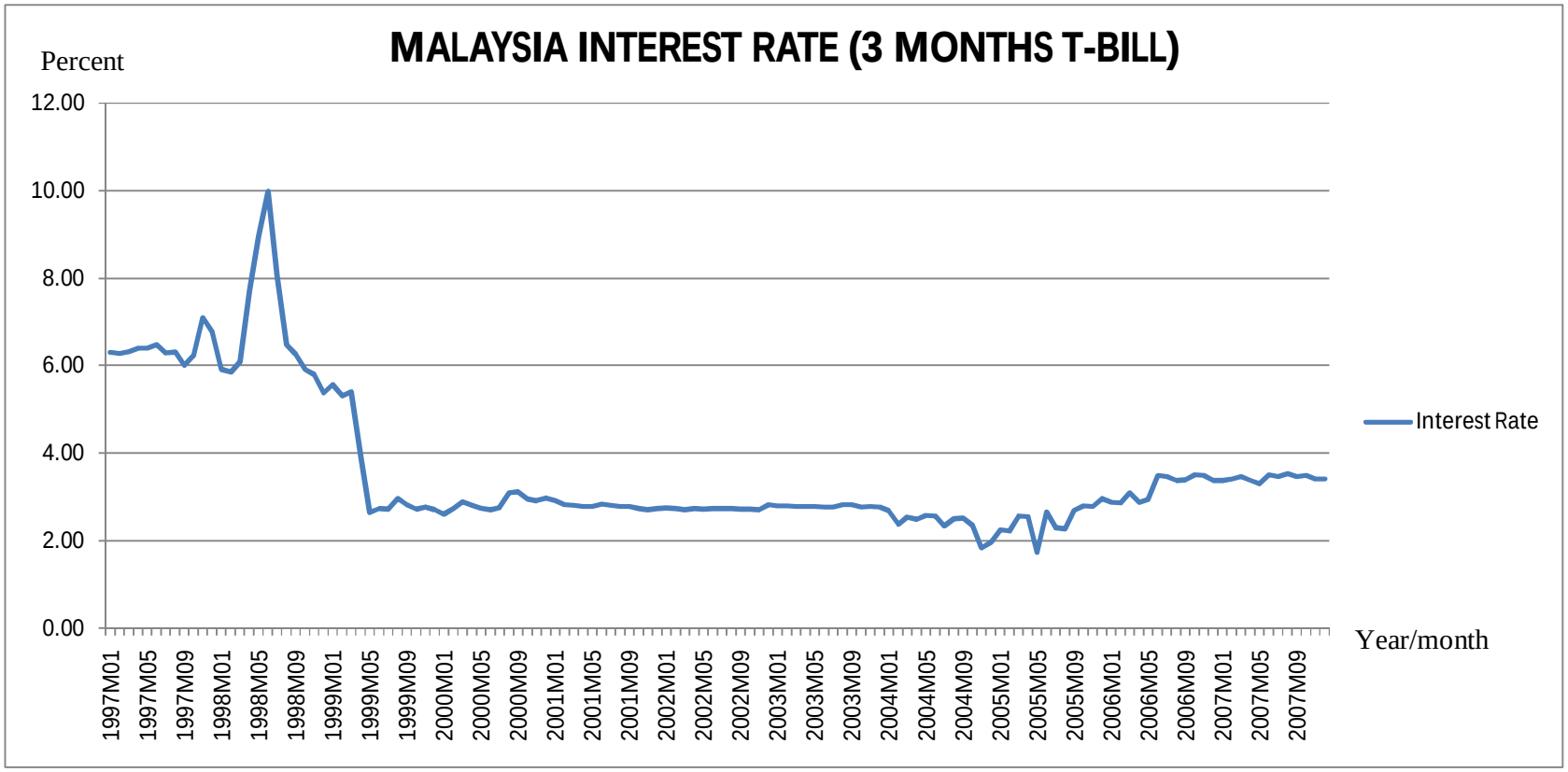
From 1997 to 2008, interest rate in Malaysia has gradually decreased from 9.65% (1998) to the sideway range between 2%-4% (from 1999-2008). In 2009, Malaysia monetary policy has stated that the overnight policy rate will be retained as 2.00. The trend of Malaysia's interest rate is shown in Figure 1.1.

In the recent economic crisis, a recession is expected to follow by the crisis. In order to stimulate the economy, government has lowered the interest rate. Overnight policy rate is fixed at 2.00 and as of 29th May 2009, interest rate is 0.0 % - 1.0% for savings and current account and 2.0 - 2.5% for fixed deposits (Public Bank). When the interest rate is low, investors are expected to shift their money to a higher risk instruments in order to gain higher return.

Malaysia practised a low interest rate regime as shown in the Figure 1.1. This is because Malaysia needs to generate economic growth with price stability. Furthermore, inflation is not really a serious problem since the early eighties. In fact, many daily consumer's products like petrol, sugar, rice and etc are under a price control system.

Prior to 1973, Malaysia fixed its exchange rate to the Pound Sterling and the Gold standard. In June 1973, Malaysia's ringgit was floated in the foreign exchange market. It was subsequently pegged to a basket of currencies, weighted on the basis of the currencies of the trading major partners of Malaysia in September 1975. The exchange rate was relatively stable till the financial crisis in 1997. For example, for the period 1980-96, the exchange rate of ringgit versus the US dollar ranged from 2.15 to 2.75.

The stability of the currency was broken when Soros attacked and speculated in several currencies in the ASEAN region. During the Asian financial crisis in 1997, the Ringgit reached its lowest at RM4.88 per US dollar on 7th January 1998. In order to boost Malaysia's competitiveness and public's confidence, Malaysia had decided to peg the Ringgit against U.S. dollar at "3.80" on 2nd September 1998. It has been for almost 7 years until the announcement in July 2005 from Malaysia Bank Negara of their decision to abandon the Ringgit and Dollar peg.



Source: International Monetary Fund (IMF)'s International Financial Statistics

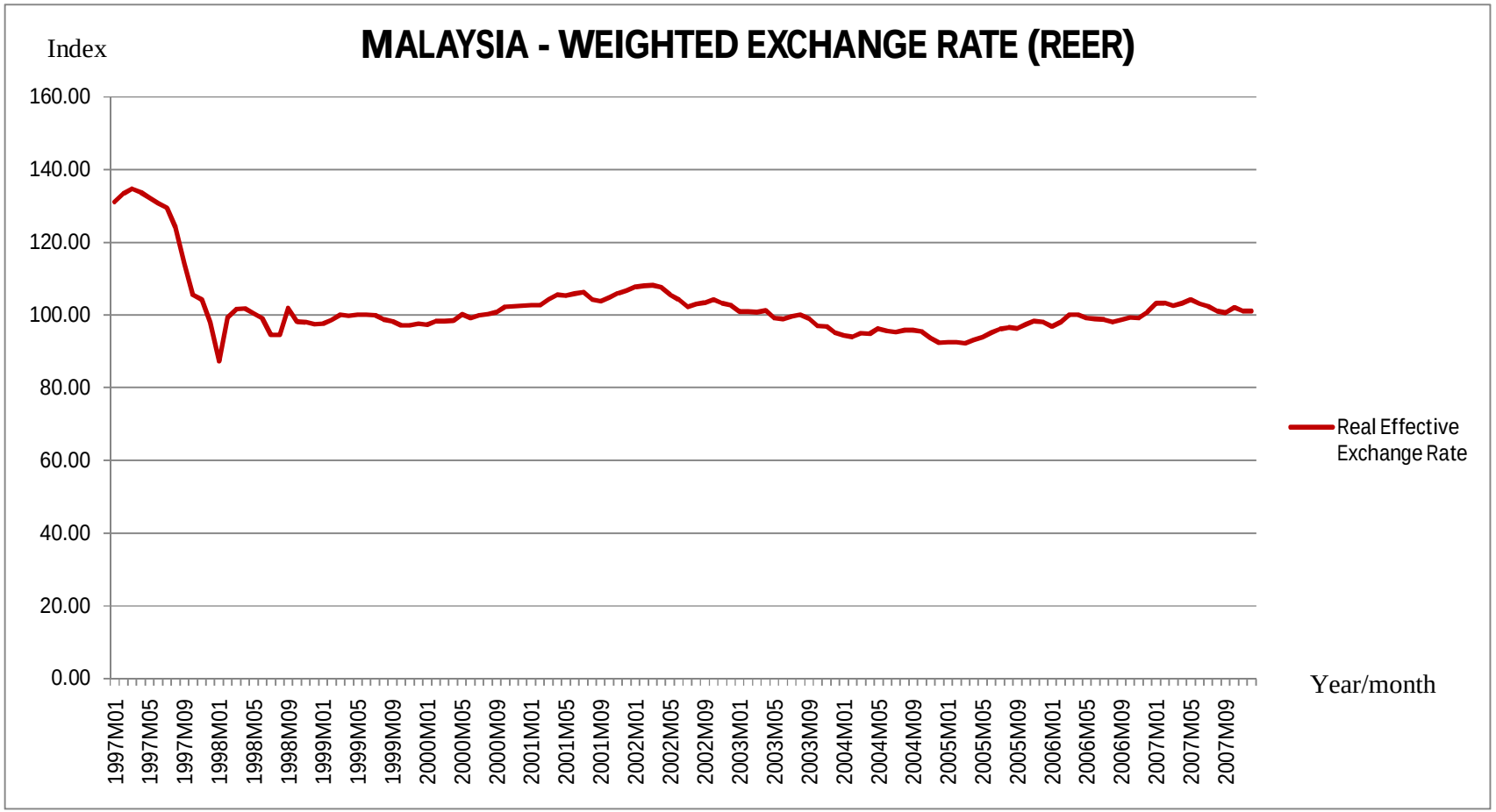
Figure 1.1. Malaysia Interest Rate (1997-2007)

The rate described above is a bilateral exchange rate between the Ringgit and US Dollar. To better reflect the movement of exchange rate and its impact on the stock market performance, the real effective exchange rate (REER) is used. REER is described in Section 3.11.2. It is defined as the weighted average of a country's currency relative to a basket of other major currencies adjusted for the effects of the inflation.

In this study, the Malaysian real effective exchange rate , provided by the International Financial Statistics from the International Monetary Fund (IMF) is used. The IMF defines the REER to reflect an increase as appreciation and a decrease as depreciation.

Thus, when the REER increases, it implies that the Ringgit has appreciated *vis-à-vis* other currencies. Conversely, when it decreases, depreciation is implied. It is always believed by policy maker that when an exchange rate appreciates, it would stimulate import and curtails export. Thus, Malaysia as an export oriented country, stimulating export (depreciate) will bring us more income and profit thus stock market index is expected to increase. REER should be negatively correlated to stock market index.

Malaysia's REER for the years, 1997 to 2007 is shown in Figure 1.3. In the graph, "2000=100" is the base year of the REER. It gradually decreased from 131.23 (1997 January) to 87.34 (1998 January). It remained quite stable within the range of 100±10 from September 1998 – 2007. The movement of REER resembled quite closely with the bilateral nominal exchange rate between the Ringgit and US Dollar during the period (Economagic). This is not surprising since the US is the largest trading partner for Malaysia and thus it has the highest weight in the computation of Malaysia's REER.



Source: International Monetary Fund (IMF)'s International Financial Statistics

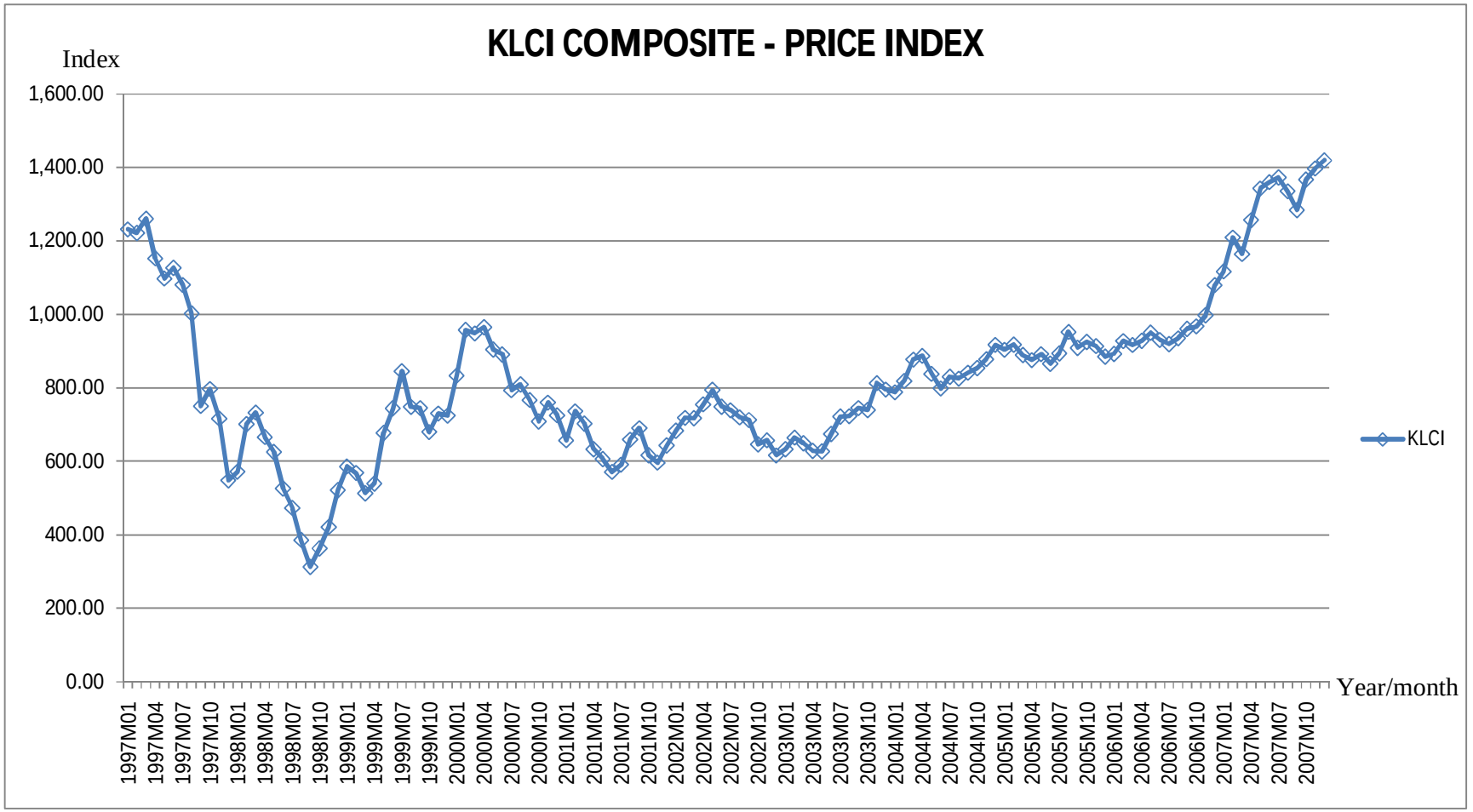
Figure 1.2. Malaysia Exchange Rate (1997-2007)

The Kuala Lumpur Composite Index (KLCI) was introduced in 1986, whereby it consists of 100 listed companies traded on Malaysia stock market main board. KLCI is a type of capitalization weighted stock market index. It is one of the three important indices in Malaysia and uses 1977 as it base value of 100. KLCI trend from 1997 – 2007 is shown in Figure 1.3.

In Feb 1997, George Soros sold short several currencies like Thai baht, Philippine peso, Indonesia rupiah and Malaysia Ringgit and caused the currencies to depreciate from 40% to 70%. This has caused a major downturn in most of the markets in the ASEAN region. KLCI fell from its peak, which was around 1200 points, to less than 400 points in July 1998. After that, it started to recover from September of 1998 until it reached 1000 around the year 2000.

Unfortunately, during March 2000, the second downturn occurred. During the dot-com bubble burst, again, the index was driven down to around 600 points. It then gradually increased after September 2002, showing a positive up-trend. The index has been recovered (and then exceeded) the peak which was around 1200 points in the year 2007.

Furthermore, the stock market performance can act as the barometer of the economy as a whole. There are similarities in both economic growth rate and KLCI. For example, in 1993, when the economic growth rate was 9.9%, the KLCI was at 1275 points. Another peak can be spotted in 1996, when economic growth rate was 10.0%, the KLCI was at 1237.96 points. In 1998, the economic growth rate decreased to -7.4%. At the same time, the KLCI was at its trough too, which was 586.13 points.



Source: Data Stream

Figure 1.3. Malaysia Kuala Lumpur Composite Index rate (1997-2007)

1.3 Problem statement

This study tries to identify the short run or long run impact of the interest rate and exchange rate on Malaysia stock market index. The stock market index can give us the idea of the overall health of economy. There are many factors that determine the stock market index's performance, including monetary and exchange rate policies. However, interest rate and exchange rate have been chosen in this study. Malaysia was practicing monetary policy targeting since the nineties, thus, the local investors are sensitive to the interest rate changes. Furthermore, Malaysia is an export oriented country. Changes in the exchange rate will stimulate the export and might have significant impact on the foreign investors as well as the local investors.

Interest rate is expected to have negative impact on stock market index. Thus decreasing the interest rate due to expansionary monetary policy may stimulate the stock market index because of increased economic activities. Similarly, slow economic growth which may be due to a tight monetary policy via a relatively high interest rate regime can lead to a bearish stock market.

If our findings are in conformity with the general perception, then Malaysia policy maker can carefully plan and implement an appropriate interest rate policy to attract the foreign investors to invest in the stock market.

Although exchange rate may not have a direct influence on the stock market performance, it nevertheless, can be positively or negatively impact on the stock market index via other factors. Exchange rate depreciation will allow us to sell more goods or services to other countries, enabling exports to exceed imports. As an export-oriented country, more exports

can bring wealth and investment opportunities to Malaysia. Investors will come and invest in the country and indirectly it will spur the stock market and the economy of the country.

On the other hand, when the currency is depreciated, it may mean the country is not doing well. The economy is spending more than it earns, leading to a decrease in foreign reserves. Foreign investors will tend to lose their confidence to invest in the local stock market.

1.4 Research Objectives

Our study aims to address the following objectives:

a) To identify the short run impact of interest rate on stock market index.

b) To determine the long run impact of interest rate on stock market index.

c) To identify the short run impact of exchange rate on stock market index.

d) To determine the long run impact of exchange rate on stock market index.

e) To establish the causal relationship of the interest rate, exchange rate and stock market index.

1.5 Research Questions

In order to achieve the above-mentioned research objectives, some answers are required for the following:

a) Is there any short run impact of the changes of interest rate on stock market index?

b) Is there any long run impact of the changes of interest rate on stock market index?

c) Is there any short run impact of the changes of exchange rate on stock market index?

d) Is there any long run impact of the changes of exchange rate on stock market index?

1.6 Significance of the study

During this turbulence of the stock market, amidst the financial market crisis, we would like to study and if possible try to find out the relationship of the interest rate, exchange rate and stock market.

Most countries attempt to stimulate economies by having low interest rate regimes. In some cases, the nominal interest rates are close to zero. For example: Japan, Canada, United States, Sweden and Switzerland. For export oriented economies, it is believed that having an undervalued or low exchange rate will help to increase the export. Hence, that helps to stimulate economic growth as well.

Hyde (2007) shows that changes of the exchange rate can affect an oversea investor holding local securities or local investor holding portfolio consisting securities from other countries. Ologunde *et. al.* (2006) also proposed some recommendations to achieve optimal financial flow. For example: public enlightenment is needed to educate the public who reside outside of the major cities of Nigeria. The Nigeria government should reduce the personal taxation to encourage the supply of investment fund. Furthermore, the government can also control the interest rate to help the growth of the stock market.

Therefore, understanding the behavior of the exchange rate and interest rate towards the stock market in Malaysia can help the foreign as well as the local investors to carefully plan their investment and building their portfolio management.

On the other hand, understanding the impact of the exchange rate and interest rate on the stock market index can aid the Malaysian policy makers to carefully plan and forecast the impact of the policies with a view to attract investors to invest in the stock market. If the policy made is effective, economic growth will increase and this will be reflected in an active stock market with its index trending upwards.

1.7 Organization of the Thesis

This study consists of five chapters. Chapter 1 covers the background of the study, the problem statement, research objectives, research questions and the significance of the study. Chapter 2 covers the literature review on the existing relevant empirical studies. The methodology and analytical framework are discussed in Chapter 3. This chapter also lists out the hypotheses to be tested in this study. The empirical results of the research will be presented in Chapter 4. Finally, the conclusions and recommendations will be covered in Chapter 5.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The literature review consists of three parts. The first section studies the literature of the empirical results of the impact of interest rate on the stock market index. The second part covers studies of the impact of exchange rate on the stock market index. The final part focuses on the literature review of the integration of the three variables, stock market index, exchange rate and interest rate.

2.2 Relationship between Stock Market Index and Interest Rate

According to conventional economic reasoning, interest rate has negative impact on stock market index. When the interest rate is high, investors will shift their money from higher risk instrument which is the stock market to savings or fixed deposit accounts. On the other hand, when the interest rate is too low, investors will move the money out to invest in stock market in the hope of getting a higher return.

Many studies supported this theory, for example, Mahmudul and Gazi (2009) performed a study on 15 developed and developing countries and showed that interest rate has significant negative relationship with share price. Mukherjee and Naka (1995) found that for the long-run, interest rate has negative impact on the stock market index in Japan.

Using daily data, Joseph and Vezos (2006) showed that the stock returns are highly sensitive to interest rate and exchange rate changes.

In the property stocks research, Liow and Huang (2004) found that in the pre Asian financial crisis period from December 1987 to July 1997, a highly significant negative long run relationship exists between interest rate and the monthly excess return of the property stocks for United Kingdom, Hong Kong and Japan. They suggested that this negative relationship between the interest rate and return of the property stock should be carefully considered by the investors in their portfolio construction and management to reduce the interest rate exposure.

There is a cointegrating relationship between macroeconomic variables in a study by Adam and Tweneboah (2008) in Ghana. Using Johansen's cointegration and innovation accounting techniques, they have shown that a long run relationship exists between the variables studied. Interest rate has negative impact on the stock market in Ghana. On the other hand, Kyereboah-Coleman and Agyire-Tettey (2008) showed that lending rates charged by the banks have negative impact on stock market performance in Ghana, which prevents the business growth.

Cointegration can be tested for a pair of variables from period to period. Nikiforos (2006) found that there were varying degrees of relationship between interest rate and stock market from decade to decade in the United States. During the 1970s and the 1980s, no cointegrating relationship was found between the fed rate and the stock market index. However, the short-run relationship existed in the 1970s. In the 1990s, there was a significant negative cointegrating relationship between those two variables.

On the other hand, Kurihara and Nezu (2006) study showed that there is insignificant relationship between Japanese stock prices and interest rate, especially the domestic interest rate. This is because the interest rate in Japan has implemented unprecedented monetary easing, reducing the interest rate to almost zero, thus interest rate can hardly impact the stock market at all. In March 2001, the Bank of Japan introduced the quantitative easing scheme to end the deflation in Japan. The policy leads to the increasing of stock price in Japan.

Ologunde *et. al.* (2006) studied the stock market capitalization and interest rate in Nigeria using an ordinary linear regression model. Their results showed that prevailing interest rate has positive influence on stock market capitalization rate. When interest rate is increased, stock market capitalization will increase as well. Economic growth and development is retarded. Government can therefore plan and control the interest rate to help the growth of the stock market.

Interest rate can only affect, but not determine the stock market (Mueller, 2006). When the interest rate is increased, borrowing will become difficult. Company will have less money to expand the business and the profit will be affected. Bonuses and dividends will be cut and the investors will be affected eventually. Stock market will then become a less attractive instrument for investment. However, interest rate is not the only factor that affect the stock market. Stock market index might be trending upward due to other factors like economic growth, political issues and monetary policies even when the interest rate is high.

Since interest rate is determined by monetary policy of a country, policy makers should carefully plan and focus on it to attract investors to invest in the market (Zafar *et. al.* , 2008)

2.3 Relationship between Stock Market and Exchange Rate

According to the portfolio approach, stock market index leads the foreign exchange market with negative correlation. Kim and Choi (2006) performed their study on the Korean stock index futures and the foreign exchange markets. Their results supported the portfolio approach hypothesis.

Currency depreciation will lead to stock market depression in United States and United Kingdom (Dimitrova, 2005). His study showed that when exchange rate declines by one percent, the stock market will react with less than one percent decline. Dimitrova proposed that US should implement policy to strengthen the US dollar. Since there is a negative relationship between exchange rate and stock market index, the policy will help the stock market.

However, Dimitrova also found insignificant results in his attempt to show that exchange rate will depreciate during the booming of the stock market. Thus, multinational companies which use exchange rate forecasting can consider to use stock market as a forecasting indicator as a proxy. The currency is expected to depreciate during periods of bullish sentiments in the stock market.

Kyereboah-Coleman and Agyire-Tettey (2008) showed that exchange rate has negative impact on the stock market index in Ghana. Investors in Ghana benefit from the exchange rate losses as the domestic currency depreciated.

Exchange rate is not always expected to have negative impact on the stock market. Mukherjee and Naka (1995) show that exchange rate has positive impact on stock prices in Japan. Japan as an export-oriented country, depreciation of the domestic currency should promote exports and increase the stock prices. However, Kurihara and Nezu (2006) found that exchange rate has negative impact on stock market. They concluded that there is a possibility that the industrial and economic structure have changed in Japan. Stock prices in the United States (U.S.) do have significant impact on the stock prices in Japan, as U.S. is the largest trading partner of Japan.

The appreciation of exchange rate has positive impact on the United Kingdom non-financial firms' stocks return (Ahmed and Omneya, 2007). Two reasons were given. First, U.K. international trade is greatly involved in trading with Europe and U.S. and Japan. Second, the basket of foreign currencies is used in the portfolio. Thus, the exposure of the exchange rate risk in the portfolio is lower.

While studying the Canadian charted banks' stock returns and exchange rate risk, Atindehou and Gueyie (2001) showed that there are positive and negative exchange rate impacts on the banking stock return. However, investor reacts more during a decrease in the exchange rate losses than an increase in the exchange rate profits.

Chong and Tan (2007) applied Kwaiatkowski Philips, Shmidt and Shin (KPSS) cointergration test on the macroeconomic factors against the volatility of exchange rate on 4 countries, Malaysia, Indonesia, Thailand and Singapore. Their study showed that the macroeconomic factors which are interest rate, money supply, consumer price index, trade balance and composite indices move in the same direction with exchange rate in the long run.

Authorities and market players should smooth the exchange rate variability and pursue economic policies that will give greater exchange rate stability.

On the other hand, Li and Huang (2008) study shows that in China, both stock returns and Renminbi (RMB) nominal exchange rate are integrated of order one I(1). However, Engle-Granger test shows that there is no long run relationship between the two at 5 percent significance level. Exchange rate does not Granger-cause the stock returned.

Aydemir and Demirhan (2009) found that there is a bi-directional relationship between exchange rate and all the stock market indices in Turkey. There are mixed, positive and negative, causality results from some of the stock market indices to the exchange rate. However, there is only negative causal relationship from exchange rate to all stock market indices.

In United Stated, there is a bi-directional relationship between effective exchange rate and the S&P 500 index in the short-run. However, there is no long-run relationship between these two variables (Bahmani-Oskooee and Sohrabian, 1992).

2.4 Relationship between Stock Market, Interest Rate and Exchange Rate

Liu and Shrestha (2008) examine the long term relationship between some macro-economic variables and stock market indices in China. Their study shows that industrial production and money supply are positively related to the stock market indices. However, interest rate and exchange rate have negative impact on the stock market indices in China. They suggested that investor should be prepared to invest for long term since in the short-run, China stock market is volatile and risky.

Ramin, *et. al.* (2004) have performed a cointegration analysis towards some macroeconomic variables and the stock market indices of Singapore. They study showed that Singapore's stock market form cointegrating relationships with changes of interest rate, exchange rate, industrial production, price levels and money supply both in the long-run and short-run.

The same empirical results were found by Bhattacharya and Mukherjee (2001). They have performed similar test using unit-root test, cointegration and Granger causality test between the stock market index BSE Sensitive Index and exchange rate, foreign exchange reserves and value of trade balance in India. Their study showed no causal linkage between the BSD Sensitive Index, interest rate and exchange rate.

Vardar *et. al.* (2008) performed a similar study to examine the impact of interest rate and exchange rate on the composite and sector price indices in Istanbul. Their results showed that not all the indices react in the same way toward the changes of interest rate and exchange rate. However, most of the market indices' volatilities in Istanbul are sensitive to changes in

exchange rates and interest rate especially financial sector related. They suggested that investors should follow closely the monetary policies and revisit their investment portfolio strategy whenever there are changes in both interest rate and exchange rate.

However, other than interest rate and exchange rate, there are many factors that might have impact towards the stock market. One good example is the cointegration with stock market indices in other countries. Subramanian (2008) performed a study on the cointegration of stock markets in East Asia. The author concluded that the stock market indices are perfectly correlated in the long-run. Thus, international investors who are looking for diversification of their portfolio in the indices of these countries would not gain much in the long run.

Stock market indices can be affected by other variables, such as the trading volume and the volatility. Deo *et. al*.(2008) studies the relationship between stock market returns, the trading volume and volatility for some of the Asian Pacific stock markets. They found bi-directional results, that is stock returns are influenced by volume and volume is influenced by returns for most of the markets. On the other hand, Mohamed *et. al.* (2008) showed that stock returns in the main Latin American markets have positive relationship with the major world market indices both in the long-run and short-run.

In the study of Hong Kong stock market, Leong and Li (1998) found that the Hong Kong stock market was affected by the overreaction effect of the investors. They found significant results that an investor can sell the winner stocks and buy the losers stocks to gain profit

during the reversal of the stock market which was in fact caused by the overreaction of the investors.

Stock market can be influenced by seasonal effects too. However, Raj and Kumari (2006) found no evidence of market anomalies like “negative Monday effect” and “positive January effect” on Bombay Stock Exchange Index and the National Stock Exchange Index in India. According to the authors, this could be related to the deregulation of the Indian economy from 1991.

2.5 Summary

As a summary, many studies found that interest rate has negative impact on stock market index. When the interest rate is high, investors will move their money from the equity market to savings, fixed deposits and bond market. On the other hands, when the interest rate is low, investors will shift their money into the stock market in order to gain higher profits.

However, there are mixed empirical results showing positive and negative effect of the exchange rate towards the stock market index. An export-oriented country with a competitive exchange rate will tend to export more and hence generating more income. Indirectly, more investors will come and invest in the county and stimulate the stock market.