THE IMPACT OF MACROECONOMIC VARIABLES
ON BANKS' STOCK RETURNS: EVIDENCE FROM
MALAYSIA

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A research project submitted in partial fulfillment of
the requirement for the degree of

BACHELOR OF BUSINESS ADMINISTRATION
(HONS) BANKING AND FINANCE

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE
DEPARTMENT OF FINANCE

MAY 2012

DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our work and that due acknowledgement has been given in references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 14, 824 words.

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Date: 20 April 2012

ACKNOWLEDGEMENT

This thesis has been successfully implemented by the assistance of various authorities. Therefore, we would like to express our appreciation to those authorities.

First, we would like to express our special thanks to my our great supervisor, Mr.WilliamChooKeng Soon, who gave the golden opportunity to do this wonderful project on the topic the impact of macroeconomic variables on bank's stock return. This research project would not be completed on time without his time, effort, support, and patience. We appreciate his contribution during the meetings as he gave us lots of sincere advises as throughout the progression of the research project. We also would like to draw sincere thanks to those lecturers who shared their valuable information with us.

We also thanks to our parents assisted us in terms of morale and financial supports. Besides that, the understanding of our parents had been pleased us to carry out the dissertation in the free pressure environment. Furthermore, teamwork spirits has been form during our research.

Lastly, I offer our blessings to all of those who supported in any respect during the completion of the project.

DEDICATION

Firstly, we would like to dedicate this research project to our supervisor, Mr.WilliamChooKeng Soon, for his sincere guidance and giving us advises for helping us to complete this research project.

Secondly, we would like to dedicate this successful research project to our family members and friends for sharing our achievement in this research project and as an appreciation for their encouragement.

Lastly, we would like to dedicate this research project to the future researchers. We hope that this research will help the future researchers to carry a further research.

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LIST OF DIAGRAM

LIST OF ABBREVIATION

ADF	Augmented Dickey- Fuller
APT	Arbitrage Pricing Theory
ARCH	Autoregressive Conditional Heteroscedasticity
BNM	Bank Negara Malaysia
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
et al	And others
EXRATE	Exchange rate
EMH	Efficient Market Hypothesis
FDI	Foreign Direct Investment
GARCH	Generalized Auto Regressive Conditional Heteroscedasticity
GDP	Gross Domestic Productions
IPI	Industrial Production Index
JB	Jacque-Bera
KLSE	Kuala Lumpur Stock Exchange
KLCI	Kuala Lumpur Composite Index
MSIC	Malaysia Standard Industrial Classification
OLS	Ordinary Least Square
PP	Philip-Perron
RESET	Regression specification error test

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PREFACE

To examine the stock returns variation is very important nowadays. By employed the specific macroeconomic variables into a multi-factor model, we can knew that how the economic variables effect on the stock variation and what are the relationship they have.

This research would like to create a significant contribution to the economist to have better understanding on the environment of financial market in Malaysia.

ABSTRACT

The objective of this study is to examine the stock returns variation to specific macroeconomic variables by using a multi-factor model. This study investigates the effects of macroeconomic variables on stock return in Malaysiausing monthly data for the period from January 1th 2006 to December 31th 2010. The regression was run using six macroeconomic variables for each individual stock returns.

There are four economic variables show statistical significant relationship to the volatility of banks' stock returns. From the results, exchange rate is affecting all the banks' stock returns while money supply is giving the biggest effect on banks' stock returns.

CHAPTER 1: RESEARCH OVERVIEW

1.0   Introduction

Malaysia has started its banking sector since the 19th century. The significant importance of banks to a country had never been a question. Although it is categorized into several types to serve different purposes, they are roughly the same in term of their function. Banks play an important role in maintaining a healthy financial system and economic condition of a country. Our focus in this research will be on the commercial banks in Malaysia.

Commercial banks are organizations which normally perform certain financial transactions. As time goes by, banks have continuously increased the services it provides to the public. Operation of banks nowadays is much more complex compared to previous days. A modern bank issues credit charge cards, deals in diverse foreign exchange and money market transactions, telegraphic and electronic transfer, bills and trade finance facilities, share financing, custodian and trust businesses and provides a variety of other banking and investment services beside receiving deposits, honoring cheques and granting loans.

In addition, banks earn income from variety of ways in which they no longer focus only on interest earning from loan but seek to extend their income from various services they provide as well as investment. Today, investment in the capital market was one of the major operating activities banks do and return from stock was one of the important sources of income for banks. Therefore, any changes to the stock price will affect the total profit or performance of a bank.

The main discussion in this chapter includes the background of the research and problem statement, research objectives and questions, hypotheses of the study and

significance of the study. Last but not least, a brief outline of the whole research is followed by conclusion.

1.1   Research Background

The literature suggests that there are numbers of factor that are important in determining the return of stock even though the exact number is hard to define. The nature of stock return is commonly explained by two theories, which are capital asset pricing model (CAPM) and arbitrage pricing theory (APT). Both CAPM and APT stipulate a relationship between expected return and risk. However, the characteristic of CAPM has brought it come under a lot of arguments since market return was the only factor uses to determine the stock return fluctuations in this model. This shortcoming makes CAPM to be regarded as less efficient to explain fully the pricing of risky asset. According to Butt, Rehman, Khan, and Safwan, (2010), there are various factors potentially significant in explaining the fluctuation of stock returns besides a single market factor. Therefore, a creation of multi-factor asset pricing model such as APT has become an alternative model to generate the stock return variation. In developing the APT, Ross (1976) assumed that uncertainty in asset returns was a result of common macroeconomic factors and firm-specific factors. Based on the research of Opfer and Bessler, (2004), this model is generated by a limited number of economic variables or factors.

According to the research of Ihsan, Ahmad, Haq and Sadia (2007), it is generally believed that systematic economic and financial news will give impact on the stock returns. Butt et al. (2010) also report that stock returns were be affected directly or indirectly by a number of different economic factors and those factors could predict a notable portion of stock returns. Malaysia as one of the most open economies in the world, its economy performance is significantly sensitive to the developments within and outside its borders (Bank Negara Malaysia, 2003). When economy turns down, the performance of stock market will be affected.

Moreover, liberalization and globalization that happened all around the world have created a lot of new opportunities to individuals, business entities and governments. Liberalization means the relaxation of government policy restriction while the globalization means that increase the global culture and economic activities. This transformation has directly fostered the development of economy in Malaysia. Almost all sectors have enjoyed the benefits of liberalization and globalization, including the financial market. The more liberal of government policy, the more foreign investment will be flow to the country (Muneer, Butt, &Rehman, 2011). Besides, financial deregulation has also make the financial market to become more active than before. Meanwhile, this policy has indirectly increased the exposure of stock returns to the economic variables. Butt et al. (2010) reveal that stock market becomes more receptive to domestic and external factors due to financial deregulation.

The stock market of Malaysia has undergoing affectionate transformation, the efforts taken by the policymakers have successfully helped in rising up the confidence of domestic as well as foreign investors. Malaysia stock market has performance well and the amount of trading keeps increasing in recent years. The Kuala Lumpur Stock Exchange (KLSE) was now rename as Bursa Malaysia and a key benchmark index used for Bursa Malaysia name Kuala Lumpur Composite Index (KLCI). Bursa Malaysia today is one of the largest bourses in Asia with about 1,000 listed companies under it. In Malaysia, companies are either listed on Bursa Malaysia Securities Berhad Main Market or ACE Market. The KLCI reached more than 1000 point at the end of 2006 with 1080.66 point and achieved 1518.91 point at the end of 2010. At the same time, other economic indicators have grown up during this period due to the improvement in the economic fundamentals, relative stability in exchange rate, reduction in interest rate by banks and etc.

Economy indicators are the benchmark for public to seek out the current economy condition of a country and it is crucial in determining the performance of stock market. Therefore, it is important to examine the factors that are potentially affecting

the economic environment. Under this research, the casual relationship between the banks' stock returns and the macroeconomic indicators such as market return, inflation, industrial production index, interest rate, exchange rate and money supply will be analyze.

1.2 Problem Statement

In the past, various researches have been done concerning the factors affecting the bank's stock return. To date, most of the studies mainly focus on countries that had already emerged in financial markets. Additionally, even though it is proven that the changes of economic environment will significantly reflect on the stock returns, there is less agreement on which macroeconomic variables are more relevant to be regarded as elements that significantly affecting the banks' stock returns and how these elements behave in influence the banks' stock returns.

Financial market liberalization and globalization process have given banks more opportunities to involve business overseas. However, globalization of economy around the world also means that more economic variables could be affect on the stock return of a bank. Different government policy and financial system in each country may trigger a different pattern of stock price movement against the macroeconomic variables fluctuation in different banks. Consequently, the response of Malaysia local banks to the change of macroeconomic factors would be different from other country since the internalization process of most of the banks in Malaysia has not been completed. Besides, lesser financial instruments available in Malaysia compare to those countries like U.S. that have emerged financial market to hedge the risk exposure could make Malaysian local banks to be more sensitive to the changes of macroeconomic factors.

According to Kasman, Vardar, and Tunc (2011), the effect of interest rate and exchange rate volatility on bank's stock return was the major interests of public as it is the key attribute giving the adverse impact to bank and causing the failure of numerous banks. Exchange rate and interest rate changes could have negative effect on the banks' viability as this impact could only be reduced but couldn't be avoid through risk management techniques (Gilkenson & Smith, 1992). Many new banks have been setup during the economy boom but at the same time a lot of banks ran out when economy recession. However, some of the researches for example Butt et al. (2010) indicate that market risk was the major factor that affects the volatility of banks' stock returns. Besides, research has been done by Pan, Fok, and Liu, (2007) report that government of Malaysia impost more capital control as compare to other developed countries. Thus, money supply may greater impact on banks' stock returns. Furthermore, research of Butt et al. stated that industrial production, money supply and inflation do not show significant impact on the banks' stock returns whereas those variables are important in explaining the fluctuation of banks' stock returns in emerging market according to Muneer et al. (2011).

1.3   Research Objectives

In this study, there are general objective and specific objectives.

1.3.1 General Objectives

The broad objective is to examine how the macroeconomic factors would affect the stock return of local banks in Malaysia.

1.3.2 Specific Objectives

The specific objectives of the proposed study are:

1. To analyze the linear relationship between market return and banks' stock returns.

2. To analyze the linear relationship between inflation and banks' stock returns.

3. To analyze the linear relationship between interest rate and banks' stock returns.

4. To analyze the linear relationship between money supply and banks' stock returns.

5. To analyze the linear relationship between foreign exchange rate and banks' stock returns.

6. To analyze the linear relationship between industrial production index and banks' stock returns.

1.4 Research Questions

1. Does market return have significant relationship on banks' stock returns?

2. Does inflation have significant relationship on banks' stock returns?

3. Does industrial production index have significant relationship on banks' stock returns?

4. Does interest rate have significant relationship on banks' stock returns?

5. Does foreign exchange rate have significant relationship on banks' stock returns?

6. Does money supply have significant relationship on banks' stock returns?

1.5   Hypotheses of the Study

1.5.1 Market Return (KLSE)

Kuala Lumpur Stock Exchange (KLSE) is the measure of market return. According to Joseph and Vezos (2006), the results of the study suggested that the market return is the most of the variation on stock returns. KLSE is a public company limited by guarantee incorporated in 1976 under the Companies Act 1965. During 1997-98, KLSE was high volatility due to East Asian financial crisis and the empirical results indicated that KLSE had prolonged stock market volatility after Asian financial crisis (Siong, 2006). The Malaysian economy in recent years has greater financial development. Market return is the most significant and positively related variable to stock returns (Butt, Rehman, Khan, & Safwan, 2010). We predict that market return is positively contributed to stock returns.

H_0: Market return hasno significant relationship on banks' stock returns.
H_1: Market return has significant relationship on banks' stock returns.

1.5.2 Inflation (CPI)

When the stock price is change, the link between inflation and stock return will appear. Besides that, the fluctuation in the inflation rate represents proportion of risk associated with increase uncertainty in the return movement. Thus, consumer price index (CPI) is used to measure the inflation rate. Most studies show that inflation had negative impact on stock return. There is empirical evidence that high inflation and declining stock price, which represented negative relationship between inflation and stock return

(Hoguet, 2008). Naka, Mukherjee and Tufte (1998) for India indicate that inflation is the largest factors of stock prices. Lintner (1965) had negative relationship between stock return and inflation. On the contrast, Chen (2005) considered inflation had not able to predict stock return.Based on above argument, we predict that inflation has a negative impact on stock returns.

H_0: Inflation has no significant relationship on banks' stock returns.

H_1: Inflation has significant relationship on banks' stock returns.

1.5.3 Industrial Production Index (IPI)

The industrial production takes the gross domestic product (GDP) approximately 50% and it was sensitive enough to the economic. Therefore, industrial production use for forecasting future GDP and economic performance. Humper and Macmillan (2007) indicated that stock prices are positively related to industrial production. Chen et al. (1986) examined the relation between industrial productions and lagged real stock returns. Ibrahim and Aziz (2003) found that positive short run and long run relationship between the stock prices and industrial production. We predict that Industrial Production Index is positively affected on the stock return.

H_0: Industrial Production Index has no significant relationship on banks' stock returns.

H_1: Industrial Production Index has significant relationship on banks' stock returns.

1.5.4 Interest rate (IR)

Interest rate is the price a borrower needs to pay or the time value of money that bank pay for the depositors. Interest rate is used to control the investment, inflation and unemployment and to affect the performance of economy (Cheng, Tzeng, & Kang, 2011).Chiang & Kee (2009) found that interest rate was negative relationship toward Singapore stock return.According to the results of Abugri (2008), the relationship between stock returns and interest rate is negative and significant in Brazil, Argentina, and Chile. Humpe and Macmillan (2007) also found that stock price is negatively correlated to a long term interest rate in US and Japan. We predict that interest rate has a negatively relationship on stock return.

H_0: Interest rate has no significant relationship on banks' stock returns.
H_1: Interest rate has significant relationship on banks' stock returns.

1.5.5 Exchange rate (EXRATE)

The exchange rate was the changing proportion of currency between countries. Actually, changes in exchange rate affect exporter and importer firms. Traditionally, if an appreciation (depreciation) of home currency, it will reduce (enhance) the international competition, and benefit (affect) import-trade (export-trade) or affect (benefit) import-trade (export-trade) for specific industry (Cheng, Tzeng & Kang, 2011). In case of a depreciation of the domestic currency, it will lead the imported products become more expensive in terms of the home currency.

First, the price increase will tend to reduce demand for these imported products. Second, locally produced goods will become more attractive than important goods, and some substitution will take place (Solnik & McLeavey,

2009). Luehrman (1991) found that the depreciation of home currency causing adverse effect on the value of both automobile and steel industries. On the other hand, Joseph (2002) studied the impact of foreign exchange rate on UK firms and the results showed that industry returns were more negatively affected by interest rate changes than by foreign exchange rate changes. Ibrahim and Aziz (2003) indicated that exchange rate was negatively associated with stock prices. We predict that exchange rate is negatively affected on stock returns.

H_0: Exchange rate has no significant relationship on banks' stock returns.

H_1: Exchange rate has significant relationship on banks' stock returns.

1.5.6 Money Supply (M2)

Money supply is the total amount of money available in an economy. Money supply is divided into M1 and M2. In case of a restrictive monetary policy, to reduce the growth rate of money supply would result in a decrease in the funds supply and expansion for all business. A restrictive monetary policy would raise market interest rate and hence firm's cost of capital. However, a decrease in money supply might cause in the lower inflation, hence the lower required rate of return though the lower interest rate. Ibrahim and Aziz (2003) indicated money supply M2 had an immediate positive liquidity effects and negative long run effects of money supply expansion on stock prices. However, Lee (1997)found that money supply had no obvious impact on stock market. Based on above argument, we predict that the variable of money supply has a positive impact on stock returns.

H_0: Money supply has no significant relationship on banks' stock returns.

H_1: Money supply has significant relationship on banks' stock returns.

1.6   Significance of the Study

In earlier, most of the researches study about the impact of macroeconomic variables always focused on the US, Europe, and the Latin America, there are fewer researchers conducted the study in Malaysia. The study contributes to existing literature by analyzing the relationship between economic variables and stock returns in Malaysia. The study investigates the effect of chosen macroeconomic variables like money supply, exchange rate, inflation rate, industrial production index and interest rate on stock prices. This study allows Malaysian to have better understanding on the environment of financial market in Malaysia.

Besides that, this finding of the research will be present to the university. So that, this research will contribute to the students and it is mainly concerned for the academic purpose. Moreover, the findings of the study may have usefulness for investors and fund managers. The outcomes of this study can be useful to understand the economic variables and stock returns variation so that we can improve the effective economic on both economic and stock market condition.

1.7   Chapter Layout

This paper is organized as follows. In the next section, chapter 2, we provide an overview of the relevant literature. This is followed by a discussion on the methodology of this study in chapter 3. Our pattern and analyses of results are presented in chapter 4, while chapter 5 presented our discussion, conclusion and implications, and suggestion for future research.

1.8   Conclusion

Overall, given the several macroeconomic factors in determining banks' stock returns of the 5 banks exited in Malaysia, which are Public Bank, Maybank, RHB Bank, Hong Leong Bank and CIMB, this study provides empirical evidence on the impact of macroeconomic factors on stock return by testing for inflation, interest rate, Industrial Production Index, foreign exchange rate, and money supply. In a short summary, according to some results from empirical papers, the stock price was deeply affected by macroeconomics variables.

Chapter 2: Literature Review

2.0   Introduction

Malaysia Banking market is formed by two types of banking systems, which are commercial banking and Islamic banking. In Malaysia, the commercial banking system is operated independently under the Banking and Financial Institutions Act (1989) which governed by Malaysia Central Bank, Bank Negara Malaysia (BNM). Since 1990, there were altogether 22 local banks and 16 foreign banks in commercial banking system. (Aisyah, 2010) However, in the latest information extracted from BNM, the commercial banking system is now consisting of 8 local banks and 16 foreign banks due to the consolidation program launched by BNM. It is reported that, four stands out as market leaders (Malayan Banking, CIMB, Public Bank and RHB Bank) and they have together captured a 70% market share in the conventional market (Conventional Banking Handbook, 2010). The other banks operating in Malaysia are Affin Bank, Alliance Bank, Ambank and Hong Leong Bank that share a relatively small portion of market share.

Here, our main concentration is to explore those commercial banks which are most significance and having the major influences to the whole banking industry in Malaysia. They are Malayan Banking Berhad (Maybank), CIMB Bank Berhad, Public Bank Berhad, Hong Leong (HL) Bank Berhad, and RHB Bank Berhad. They are the significant player in the Kuala Lumpur Stock Exchange (KLSE) among the listed banking groups, where each of them having the substantial stakes in the industry. As of end of March 2011, out of the total asset of the financial institutions, Malayan Bank Berhad holds the highest portion, which is 95.10%, or RM380, 342, CIMB Bank Berhad holds 68.10%, or RM272, 311 Public Bank Berhad holds 57.30%, or RM229, 130, Hong Leong Bank Berhad holds 36.21%, or RM144, 840, and RHB Bank Berhad holds 33.30%, RM133, 136.

This can be seen in the diagram 2.1 shown as below, which is about the total assets of the hold by each financial institutions until end of March 2011.

Diagram 2.1: Total Assets of the Financial Institutions

Total assets of the financial institutions (end-Mar 2011)
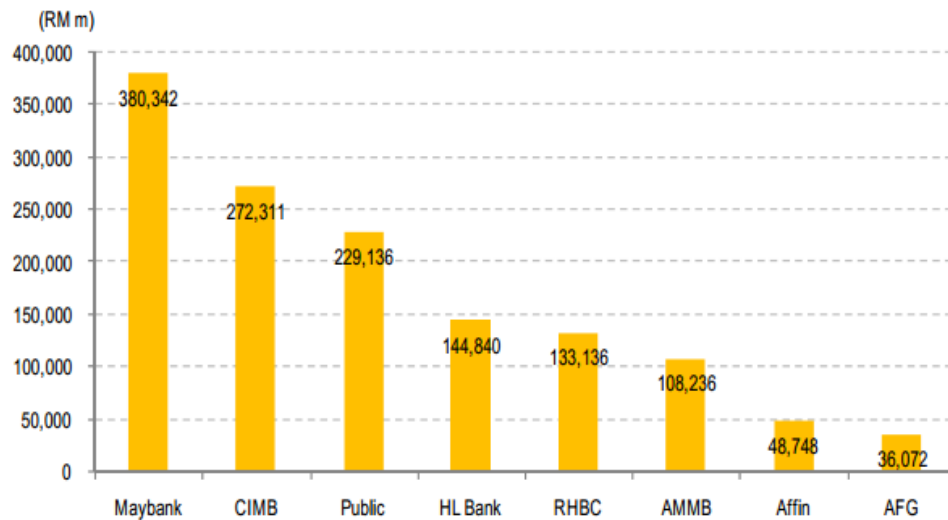
Source:Maybank IB Research

In this research, we would like to study on five macroeconomic factors, such as Money Supply, Industry Production Index, Interest Rate, Exchange Rate, and Inflation, which each of them would contribute significance impacts to the movement of bank's stock return. Next, we will talk about each of them in details on how they are going to affect bank's stock return.

2.1   Review of the Literature

2.1.1 Banks' Stock Returns

Theories of finance and economic growth suggest that the financial functions provided by banks are an essence in promoting economic growth. By the way, it is very important to firstly understand on what is a bank? In the research done by Bossone (2000) and Fama (1981) was proposed that a bank should be defined as "…financial intermediaries that issue deposits and use the proceeds to purchase securities" (p. 39) in his theory of commercial banking. This view was holds that banks are nothing more or less than financial intermediaries.

Nowadays, a bank offers a wide range of financial services and products, than what a bank previously did. Vaz, Ariff and Brooks (2008) surveyed that, the banking industry is marked out by a large concentration of market share, in which either measured by deposits, loans, or market capitalization. This was a good prospective to a bank for further growth. Historically, bank had a comparative advantage in several functions since they are providing liquidity and payment services and supplying credit and information, in which competition, technological change, institutional development have increasingly break up (Bossone, 2000). He further emphasized that banks were to be so unique was due to they lend claims on their own debt, at the same publics would accept the debt claims as money. The debt here could refer as bonds, debenture, shares, and/or liabilities. Cole et al. (2007) were stated the banking industry is special due to it is the major source of credit to both public and private firms in all industries.

Nevertheless, this expansion of banking sector would eventually expose a bank to be more unfavorable conditions, which would then lead them to encounter various uncertainties. (Al-Abadi et al., 2006)

Therefore, as mentioned Al-Abadi et al. (2006), any variations of the proposed factors may contribute their impacts on the movement of banks' stock returns. Cole et al. (2007) observed that, banks' stock returns reflect the expected future cash flows of banks which in turn, reflect the future performance of bank credits to both public and private firms in an efficient market. They argued that bank's stock returns in banking industry are a complimentary measure of financial development, as they reflect the quality of bank credits, which is just as important as the size of bank credits. Hence, banks' stock returns should act as good indicator of the overall performance of bank credits activities, especially where financial market that involved both equity and debt are not well developed.

Ozbay (2009) was claimed that, theoretically, macroeconomic factors are considered as the sources of volatility of stock market. These variables such as money supply, industry production index, interest rate, exchange rate, and inflation, would regarded as the leading indicator of banks' stock returns.

2.1.2 Banks' Stock Returns and Market Return

Stock market return is a statistically significant variable that would affect banks' stock returns, claimed by Goldberg and Kabir (2002). Butt et. al (2010) stated that the result generated from the study showed that market return is mainly accounts variation in stock return. Kandir (2008) suggest that, result from the empirical findings showed market return seem to affect the banks' stock returns. Cole et al. (2007) found that previous researchers who are Bruner and Simms (1987) as well as Cornell and Sharpiro (1987) have verified that the market for actively traded bank securities is efficient.

Al-Abadi et al. (2006) was obtained an empirical result which indicates that market risk which comes along with market return has had positive and

significant association with stock return. He further explained that, the raised of this risk may caused by the changing market value of bank assets, liabilities, and equity which would lead to a loss for bank. Changing in market value might result from the unpredictable variations of market interest rate, currency prices, and sudden changes in monetary policy.

2.1.3 Banks' Stock Returns and Inflation

Al-Albadi and Al-Sabbagh (2006) indicates that expected inflation has a negative and significant impact, while unexpected inflation has a negative but insignificant impact in their relationship with banks' stock returns. From the findings carried by Li, Narayan, and Zheng (2010), they found that an unexpected raises in the inflation rate is would be bad for the stock market which this would leads to a reduction in the stock prices, as well as stock return. Unexpected inflation would be happen when there is economy downturn, such as recession, that may occur out of our expectations. While, expected inflation would be happen whereby the movement of current or future economy could be predicted by us, such as the increase or decrease of price of goods.

In most of the research done by previous researchers, they have found a positive relationship between expected inflation and stock returns, while a negative relationship between unexpected inflation and stock returns also exist. It means that, the impact between expected inflation and stock returns would be significant, rather than unexpected inflation versus stock returns.

Al-Abadi et al. (2006) were state that there is linkage between inflation and stock return appear through the changes on the stock prices and the profits on stock portfolio. Thus, consumer price index (CPI) could use as the measurement of inflation rate. Kandir (2008) was mentioned that one of the

research studies done by Flannery and Protopapadakis (2002), come out the result that consumer price index (CPI) seem to affect stock returns.

2.1.4 Banks' Stock Returns and Industry Production Index

As mentioned by the article of Poon and Tong (2009) they argued that one of the researchers, Peiro (1996) states the stock returns are influenced by future variations in production. At the same time, McQueen and Roley (1993) argued that there is a positive relation between future economic activity and stock returns. This positive linkage between the future economic activity and stock returns can be seen through a channel mechanism, where higher stock returns have a bi-directional effect on higher consumption and investment levels that would ultimately stimulate economic activity. There are several researchers, Muneer et al. (2011), Sill (1995), Chen, Roll and Ross (1986) found several evidence on the significance impact between industry production and stock return.

On the other hand, there is empirical evidence showed negative linkage between stock returns and past economic activity in U.S., as mentioned in the article of Poon and Tong (2009) by Balvers et al. (1990). Schwert (1989a) and Kandir (2008), found a weak evidence of industrial productions growth rates in predicting the stock market volatility. There is also empirical evidence indicated negative relationship between current economic activity and stock returns found by Tsouma (2008). Schwert (1989a), who studied the relation of economic activity, found a weak evidence of industrial productions growth rates in predicting the stock market volatility.

However, a reevaluation conducted by Flannery and Protopapadakis (2002) in the article of Kandir (2008) were claimed that the one of the two main famous measures of aggregate economic activity, which is industry production does

not seems to be having a relation with stock return, in some particular countries. In the research done by Kandir (2008) was showed that industrial production does not appear to have any significant effect on stock returns. Hassapis and Kalyvitis (2002) found that it does not always show a negative significant relationship in the G-7 countries. This result same as what did by Lee (1992) and Binswanger (2000), which economic activity does not significantly explain the variability in the stock returns in the U.S. economy. In the research done by Kandir (2008) was showed that industrial production does not appear to have any significant effect on stock returns.

2.1.5 Banks' Stock Returns and Interest rate

From the article of Poon and Tong (2009), they found that previous researchers, who are Fama & Schwert (1977), Geskeand Roll (1983), and Peiro (1996) argued that stock returns are affected by the latest changes in the interest rate. There are also empirical findings reveal that interest rate seems to affect the stock returns (Kandir, 2008). The changes in interest rate seem to be higher than other factors. Stock return volatility is found to be correlated with interest rate (Schwert, 1989a).

Al-Albadi and Al-Sabbagh (2006) examining the relationship between interest rate risk and banks' stock returns. From the result they found, showed that interest rate factor has a significant and negative effect on stock return. Empirical studies provided that there is substantial evidence for banks' stock returns exhibiting statistically significant inverse relationship with interest rate variations (Flannery & James, 1984; Brewer & Lee, 1985; Scott & Peterson, 1986; Kane & Unal, 1988; Saunders & Yourougou, 1990; Kwan, 1991; Akella & Greenbaum, 1992; Choi et al., 1992). In the research done by John, Guglielmo and Nicola (2008), also shows that interest rates have a significant effect only in a few cases, respectively negative and without a clear sign

pattern, neither positive nor negative. However, in the article did by Poon and Tong (2009), they did mentioned that Titman and Warga (1989) found direct relationship between stock return and future interest rate changes. To be more significant resulting the sensitivity of interest rate and bank return, interest rate effects seem to be most prevalent in the banking and financial services sectors, with a much more limited effect on the insurance sector. Susan and Andrew (2002) had examined the interest rate risk in Australian Bank portfolio stock returns; they divided interest rate into three levels which are short, medium and long-term interest rate. The results suggest that interest rate risk is an important determinant of banks' stock returns, along with short and medium term interest rate levels and their volatility. However, long-term interest rates do not appear to be significant to the Australian bank return generating process over the period considered.

A few studies examined risk exposures of banks using models from the GARCH family. The first attempt in this area is a study by Elyasiani and Mansur (1998) on interest risk exposures of the US banks. They found that both interest rate and interest rate volatility influence mean as well as the conditional volatility of banks' stock returns. There is an investigation was made by Chen and Chan (1989) on whether interest rate sensitivity of a financial institution stock return during various interest rate cycles are asymmetrical, as they assured that there is some asymmetrical interest rate sensitivity during various interest rate cycle. Although there are researches state that the sensitivity of interest rate affect the stock return of banks, there are some of the banks had immune from it. Shamsuddin (2009) says that stock returns of large banks are highly sensitive to interest rate changes, while most small banks are almost immune to both interest and exchange rate changes which would determining the movement of bank's stock returns.

2.1.6 Banks' Stock Returns and Exchange rate

Cheung and Ng (1998) hold firm that exchange rate was the most significant variable in the article of Kandir (2008). There are empirical findings reveal that exchange rate seem to affect the stock returns (Kandir, 2008). In the article written by John, Guglielmo and Nicola (2008), it shows that exchange rates have a significant effect only in a few cases, respectively negative and without a clear sign pattern. Yau and Nieh (2009) investigate the exchange rate effects of the New Taiwan dollar against the Japanese Yen (NTD/JPY) on stock prices in Japan and Taiwan as well as the long-term equilibrium and asymmetric causal relationships.

Choi, et al. (1992) considered the joint interaction of market, interest rate and foreign exchange rates on US banks' stock returns. Using a multi-factor model with the inclusion of a third variable proxying foreign exchange risk, Choi et al. (1992) found that the monthly return on 48 US banks was sensitive to the percentage change on a short-term interest rate index and a trade-weighted multilateral foreign exchange index during the period 1975-1987. He also found that were some differences in foreign exchange rate sensitivity through time and across bank type, and that foreign exchange rate exposure is tied to un-hedged foreign loan exposure. They concluded that foreign exchange rate risk was positively and significantly related to foreign or less developed country loan exposure and negatively and significantly related to off-balance sheet exposure.

Iorio and Faff (2000) examined the potential asymmetric response of industrystock index returnsto the foreign exchange rate. They considered 24 Australian industries, including the banking industry but ignored the interest rate risk factor. Using monthly data for the period 1988 to 1996, they found that the foreign exchange risk was irrelevant in pricing bank stocks. In daily data, however, the foreign exchange risk was relevant only when daily

appreciation of the Australian dollar was at least 1 percent. Thus, their results indicate that the banking industry as a whole manage the foreign exchange risk effectively, making expected cash flows insensitive to exchange rate fluctuations at least in the medium- to long-term. Studies of specific U.S. industries would sometimes display a particularly significant impact of exchange rates on stock returns (Jorion, 1990 & 1991).

2.1.7 Banks' Stock Returns and Money supply

Ali (2011), Keran (1971), Homa and Jaffee (1971), as well as Hamburger and Kochin (1972) have found that money supply plays a substantial role in determine the stock prices.That is, when money supply increases, the available stock prices in the stock market will be increase, vice versa. From the research done by Badaruddin and Ariff (n.d.), changes in the amount of loans demanded will affect deposits deposited by customers, then the movement of money supply might become slower, thus this will have an effect on its profit generated and in turns its share prices. This is same goes to stock returns of a bank. There is a positive relationship between money supply and banks' stock returns.

While, Ozbay (2009) was found insignificant relationship between banks' stock returns and money supply from the result of his study. This means that money supply does not give any effect to the performance of banks' stock returns. Kandir (2008) also claimed that money supply does not appear to have any significant effect on banks' stock returns.

2.2   Review of Relevant Theoretical Models

Fisherian theory of interest, which was proposed by Li, Narayan and Zheng (2010), recommend that the nominal expected return on any asset, is composed of the expected real interest rate and the expected inflation rate. This was then extended on the Fisher hypothesis, which perceives actual nominal return to be a function of expected nominal returns and unexpected returns, and both expected and unexpected inflation rates. Fisher (1930) asserted that, in the Fisher Hypothesis, it was stated that expected real rate of the economy is determined by the real factors such as productivity of capital and time preference of savers and is independent of the expected inflation rate. If Fisher effect does holds, there would be no change in inflation and nominal stock returns since stock returns are allowed to hedge for inflation.

Capital Asset Pricing Model (CAPM)was recommended by Muneeret. al (2011) that it is basic method used to determine the related risk and return of a particular security. From the study conducted by Al-Albadi and Al-Sabbagh (2006), implied that CAPM model which using the single index model to test on the impact of market risk, as well as the two-factor model which can be used to involved the effect interest rate risk. The two-factor model is then extended to a multi-factor model in order to carry out the test for additional add-in macroeconomic factors. This model was had been employed by Sharpe (1964), Lintner (1965), and Neuberger (1991) in their research done. One of the researched in the article ofVaz, Ariffand Brooks (2008), Stone (1974) made an adaptation on the existing CAPM, and suggest that the impacts of interest rate on stock return may be either positive or negative based on the nature of interest rates sensitivity. Nevertheless, CAPM has its constraint due to unable to explain in full the pricing of risky assets (Muneer et. al, 2011).

Arbitrage Pricing Theory (APT) was being used by Mossin (1966) and Ross (1976) as a theoretical foundation to determine the value of trade-off relationship between risk and excess return, provided for multifactor dependencies that involved interest

rates though it was not particularly targeted in considering banks' stock returns. APT was appeared as an alternate to CAPM, in which it depends much lesser assumptions on the stock market character, unlike what used to CAPM. This theory was being documented by previous research, and suggests that stock market returns would predict future economic growth (Fama, 1981 & 1990; Schwert, 1990).

Generally, capital markets are considered efficient. In the research of Pandrey (n.d), the Efficient Market Hypothesis (EMH) states that it is not possible to predict stock prices and returns movement using past price information.

2.3 Proposed Theoretical/ Conceptual Framework

In our research, we would to make assumptions on how all these variables are going to contribute their effect on the banks' stock returns.

Diagram 2.2: The Expect Relationship BetweenMacroeconomic VariablesandBanks'Stock Returns.
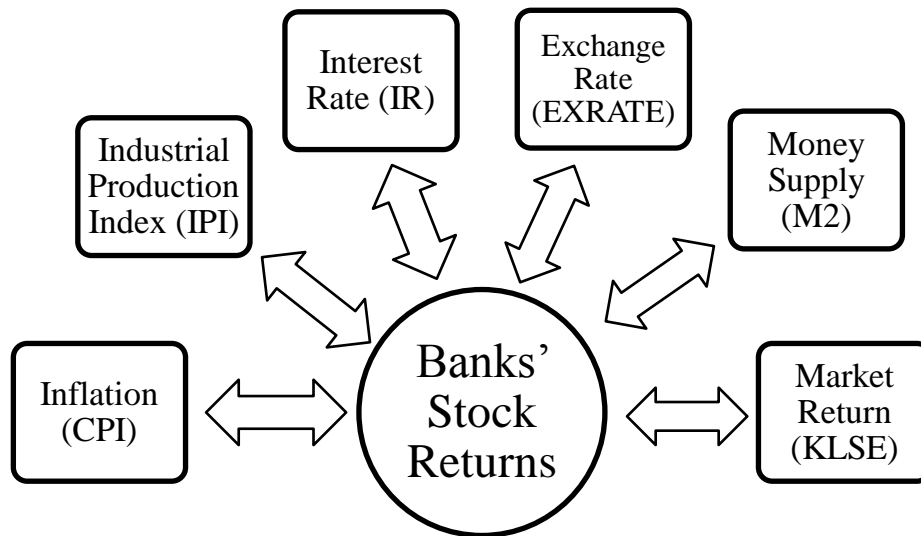
2.3.1 Market Return

Market return is the indices included each of every sector that has registered themselves in the share markets. The stock market in Malaysia, namely Bursa Malaysia, which formerly known as the Kuala Lumpur Stock Exchange (KLSE) that established in year 1973, have now become a significance and strategic place for domestic and foreign investors in order to boost their investment, as it is move ahead rapidly in recent years. Recently, Kuala Lumpur Stock Exchange (KLSE) has begin to merge in order to form a single Malaysian exchange got the capital market.

The KLSE index which was merely 900 points recorded five years ago, and now has jumped over 1500 points in year 2011. This improvement of indices has shown that the economic in Malaysia experienced a positive growth as economic indicators have grown up steadily in pass few years. Muneeret.al (2011) stated that policies on privatization, liberalization and deregulations by the regulators have encouraged private or domestic investment which would have a significance effect on the economic in the country, will then contribute the effect to the performance of banks' stock returns. Poon and Tong (2009) emphasized, high market volatility will increases unfavorable market risk premium. Al-Abadiet.al (2006) also said that, within the Jordanian context, a widespread perception about market risk is the major influential factor that will affecting the overall banking businesses. Thus, market return is expected to have a positive relationship with banks' stock returns.

2.3.2 Inflation

Inflation is an unpredictable factor in determining its variations on bank's stock returns. Sometimes, we can expect how the movement of inflation is going to be, but sometimes we cannot expect it will move in-line with our

expectations. Since it is unpredictable, automatically there is risk exist, which the risk itself would be raise from the unexpected increase in the price level for goods and services, and it will then leads to affect purchasing power of bank earning such as interest income, and its return to shareholders.

As what being proposed by Al-Abadiet el. (2006), was that the fluctuation in the inflation rate represents proportion of risk associated with increase of uncertainty in the movement of return.

Therefore, we assume there are expected and unexpected inflation would be taking part in determining the performance of banks' stock returns, and there is negative relationship between inflation and banks' stock returns.

2.3.3 Industry Production Index

Here, we assume banks' stock returns could be positively affected by the other macroeconomic variable such as industry production. Industry production is actually a measure of the output produced by industrial sector throughout the economy in a country. By taking on an industry-based perspective, that is, to examine the key industries within the economic sector separately. In Malaysia, the industrial sector involved mining, electric, manufacturing, domestic-oriented industry and export-oriented industry. From the data provided by Bank Negara Malaysia (BNM), we could search for the growing of the significance industrial sectors in Malaysia. Since January 2007, the Index of Industrial Production has been revised where year 2005 would be the based year, as previously year 2000 act as the based year. This index covering the mining, industrial and electric, which are defining by the Malaysia Standard Industrial Classification (MSIC) in 2000. Based on this new index, the mining sector covers the production of crude oil and natural gas, which accounted for 99.5% of the value of gross

product and 99.8% of gross value added in the 2005 census.While, the electricity sector covers the generation of electricity by plants licensed to generateand sell electricity, which accounted for98.0%of the total electricity generated in 2005.Based on this new index, the manufacturing sector involved 102 industries out of 194 industries, which accounted for 89.7% of the value of gross production and 86.1% of gross value added in the 2005 census.

The industry production growth rate can be contributing its effect to the movement of stock returns, as all of them are inter-related. This means that, if there is anything occurs to the industry production growth rate of any of the main industrial sectorwho would be the main player in the economy market, which is mining industry, and then the entire economy market would be affected, even banking system. Ball and Brown (1980) was found that mining stocks registered by mining sector in the Australian equity market was exhibited an abnormal stock return behavior. Particularly, findings showed that mining companies are considered in a riskier than other industrial companies without earning an equal risk premium. Thus, the performance of banks stock return would become unstable due to the disturbance posted by the growth rate of industry production.

From the research done by Cole, Rebel, Moshirian, Fari and Wu (2007), claimed that there is empirical research which strongly supports the view that banks do promote economic growth at the industry level. They argued that the banking industry is special due to it is the essential source of credit to both public and private firms in all industries, particularly mining industry which has the major percentage among others. This industry also covers the production of crude oil and natural gas, which these two productions would be the essential sources of income for Malaysia. In case, if there is any unexpected events incur to mining industry, the growth of this industry will impact on the bank performance, and thus banks' stock returns.

2.3.4 Interest Rate

We assume that a bank would always deals with interest rate risk in their operation, as interest rate was a tool that would act as a source of income to bank. Interest rate risk would consider as the risk that causes a decline in earnings or market value of a bank due to the fluctuation of the interest rates. It shall give a significance effects to the banks performance, and in turn their stock return would be affected too. Normally, banks face such risk in different circumstances.

As we found from the work done by John, Ariff and Brooks (2008), Stiglitz and Weiss (1981) was recommended that when U.S. Federal Reserve increase the discount rates, bank stocks will lose its value. This revealed that changes on interest rate would resulting in higher interest rates which then attract more risky borrowers, in turns existing customers would switch to a bank with low interest rate, since not all banks will make changes on their interest rates according to the plan of Federal. This suggested that as a consequence of operating impacts of changed interest rates, and thus their net interest margins, banks would undergo income variations, and then affecting stock return.

Furthermore, an increase of interest rate will leads to introduce of lower stock prices, then higher stock returns are expected to achieve which implied by higher interest rates.

Hence, we expect that there is negatively relationship between interest rate and banks' stock returns. When interest rate increases, banks' stock returns will decrease, and vice versa.

2.3.5 Exchange Rate

Worldwide stock market always deals with the exchange of currency. For this factor, we expect that exchange rate would negatively relate to banks' stock returns. Thus, we make assumption that, when currency in a country becomes higher, it will affect the movement of currency in other country to be change. The movement of exchange rate on either domestic or foreign currency will cause the value of currency to be appreciated or depreciated.

U.S. is the worldwide largest country which is the main player in the whole economy throughout the world. How the economy in U.S. move around would affect the economy of the world, and when worldwide economy being disturbed by U.S., the stock market would be disturbed at the same time too. Joseph andVezos (2006) were examined that there is impact of exchange rates changes on U.S. banks' stock returns. We assume Malaysian ringgit (RM) against the U.S. dollar (USD), RM/USD, as Malaysia would be one of the countries that shall being influenced, in case there is anything occurs to U.S. economy and stock market. For instance, during the period 1971-1982, UK inflation rate was rated at an average of 13.23% per annum, which was relatively high. Then, it is decline sharply over the period January 1955 to December 1970, as it was only 3.65%, and 3.82% over the period January 1983 to December 2007 (L. Li et al., 2010).

Japan has the strongest power on the economy with the advanced technology that they have. This would be the advantage to Japan, as they could manipulate the worldwide economy with the advanced technology. Whereas, this would be a threat to Malaysia economy market, in case Japan is to face economy crisis. Here, we assume Malaysian ringgit (RM) against the Japanese yen (JY), RM/JY.

Whereas, Singapore would be the country located the most nearer to Malaysia, and many of the Malaysia citizen would always visit to this country perhaps for the purpose of working or entertainment. Hence, the movement of Singapore currency to Malaysia, of course would be more than to other country. This will be taking into our consideration that movement of Singapore currency will give an impact to Malaysia banks stock return. This gives us an expression to make an assumption on Malaysian ringgit (RM) against the Singapore dollar (SD), RM/SD.

2.3.6 Money supply

Firstly, we assume that money supply would actually give a positive impact in determine the banks performance on stocks return. Money supply could be determined by the main monetary policy tool which implemented by government. It will change accordingly when there is any change to the reserves. Reserves are assets for banks but liabilities for the Federal Reserve or Central bank. This is because the banks can demand payment on Fed at any time as it is their obligations to satisfy banks by paying Federal Reserve notes. A central bank of a country can manipulate the flows of money supply in the market. If central bank tighten or reduce the flows of money supply into the market, for example, through tools of monetary policy, which is reserves requirement (Badaruddin&Ariff, n.d.), it will lead the commercial banks to either increase or decrease their interest rate to be higher or lower.

The changes in reserves requirement is very potent, although it is little-used tool. For instance, the increase of interest rate leads to a decrease of amount of loan demanded, which will give its effect to the deposits, in turn changes in deposits will affect the movement of money supply by slowing down, vice versa. As the main or core products or incomes for a bank are the loans and deposits from the depositor, this condition will cause consumers to reduce

their demand on bank loans. An increase in reserve leads to an increase in the level of deposits and hence in the level of money supply. Any changes to the loan demanded will contributes to the changes on deposits which deposited by customers, then money supply will tends to be declining. Hence, the financial performance on banks would be influenced due to these variations, and this will lead to the share prices of stocks being unstable. This would reflect how the stock returns would go to be.

Besides, money supply can also be affected when the central bank intervene in the open market operations. An open market operation is the primary determinant of changes in reserves in the banking system. When the Fed is purchasing securities, the additional demand for the securities in the markets tends to increase their prices and lower their yields. The securities here refer to bank stocks, as well as the changes mentioned. Fed's action will increase the reserves of the banking system and expands its ability to makes loans and creates deposits, thereby increasing the growth of money and credit.

2.4   Conclusion

Previous literature done by previous researchers has providing us a space to be more understand on the performance of stock returns in Malaysia banking and financial industry, examining how the impact of macroeconomic variables are going to be affecting banks' stock returns by using the Ordinary Least Square (OLS) model. Hence, it is important to find out whether banks' stock returns in an emerging market, Malaysia is acting in favorable way, as expected by bankers and government.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter describes the different approaches that have been applied to gather necessary information in order to perform a successful research study, contributing to the development of a valid and critical thesis. All main elements of the research paper, theory, empirical findings and analysis were structured in order to address and evaluate the research questions and objective.

3.1 Research Design

This thesis rounds up quantitative data in the form of secondary. Secondary data has been collected through numerous types of documents providing the theoretical background.

3.2 Data Collection Methods

The empirical analysis is carried out by using monthly data. The sample period from January 2006 to December 2010 and the study uses stock prices which were collected from the Bank Negara Malaysia.

3.2.1 Secondary Data

This study is to examine the impact of macroeconomic variables on Malaysia bank industry's stock returns. This study measures the variation of

banks'stock returns to economic variables like Consumer Price Index (CPI), Exchange rate (Ex Rate), Interest rate, Money supply and KLSE index. CPI is a measure of inflation, Exchange rate is the measurement of Ringgit Malaysia (RM) towards the foreign currencies like USD, SGD and JPY, interest rate is the country's bank interest rate, money supply to the economic is measured by M2 and the KLSE index is the measure of market returns.

The data collection of the study is based on the secondary data. The data for the variables (CPI, Exchange rate, Interest rate, Money supply) were obtained from Bank Negara Malaysia. The data for each monthly KLSE index and the 5 bank share prices (Maybank, Public Bank, RHB Bank, CIMB Bank and Hong Leong Bank) were obtained from the Yahoo websites.

The data for the study was taken for period of 60 months, which are the most recent 5 years data from 1st January 2006 to 31st December 2010 because the Malaysia's interest rate was launching the fixed interest rate policy before the June of 2005. However, the interest rate is then changed to floating interest rate until today. So including data before June 2005 would not been feasible and therefore, the whole research was reduced to a maximum period of 60 months. The data for all variables was monthly. The studies like Ibrahim (1999), Patra and Poshakwale (2006) and Liow et al. (2006) capture long-term movements in volatility by used monthly returns to avoid spurious correlation problem.

Moreover, the choice of monthly data was constrained by the fact that the most of the economic variables under study were available at monthly intervals. Although secondary data has been collected for a specific purpose differing from the research questions of this thesis, or being not up to date as the data had been collected a few years earlier, it was chosen to make use of secondary data, because larger data sets could have been analyzed (Saunders, Lewis, and Thornhill. 2007)

3.3   Statistical Tests

The analytical framework of the study was theoretically by a multifactor model under Arbitrage Pricing Theory (APT). We have implied APT because it was less assumption compare to CAPM and the model were based on the assumption that the stock return were affect directly or indirectly by economic variables. The analytical framework consisted of three steps. In the first step, descriptive analyses are carried to perform to find out the temporal properties of the data. We analyzed the mean, standard deviation, skewness and kurtosis of each variable.

In the second step, Augmented Dickey Fuller (ADF) Statistics developed by Dickey and Fuller (1979) was applied on the returns of all variables. The PP test (Philips & Perron, 1988) preferred over ADF Statistics because it was considered superior problem for time series with autoregressive structure and it was more reliable, since it ensured white noise error term in the regression.

Once the data was tested for unit root, the next step was to evaluate the relationship between stock returns and economic variables by using OLS method.

Lastly, we had performed the diagnostic checking which includes covariance analysis, Breusch-Godfrey Serial Correlation LM test, (ARCH) test, Ramsey RESET test and Jacque-Bera (JB) test.

3.3.1   Ordinary Least Squares (OLS)

The analytical framework was theoretically by the multi- factor model implied under OLS and APT. OLS is used to predict the changing over time from present to future condition. Kasman, Vardar and Tunc employed OLS method to estimate the relationship between interest rate and foreign exchange rate on banks' stock returns. A multi-factor model is designed to test the effect of six macroeconomic factors on the stock portfolio returns.

Thus, following model is estimated with OLS:

$$R_t = \beta_0 + \beta_1 IR_{t1} + \beta_2 EXRATE_{t2} + \beta_3 M2_{t3} + \beta_4 IPI_{t\,4} + \beta_5 CPI_{t\,5} + \beta_6 KLSE_{t\,6} + \mu_t ----- (1)$$

R_t = the return on the bank stock at time t

β_0 = the intercept term

INT_t = the interest rate at time t

$EXRATE_t$ = the exchange rate at time t

$M2_t$ = the money supply at time t

IPI_t = the industrial production index at time t

CPI_t = the consumer price index at time t

$KLSE_t$ = the market return at time t

μ_t = the residual error of the regression

After creating a model, OLS technique was used to determine which of the independent variables had a significant impact on the dependent variable. Analyses were carried out separately by using bank's stock returns of Malaysia bank industry as the dependent variable.

To incorporate the data series into standardized form, which is all in the percentage, we have log Money supply (M2).

$$R_t = \beta_0 + \beta_1 IR_{t1} + \beta_2 EXRATE_{t2} + \beta_3 \log (M2)_{t3} + \beta_4 IPI_{t\,4} + \beta_5 CPI_{t5} + \beta_6 KLSE_{t6} + \mu_t --- (2)$$

The suitability of the OLS estimation is tested with the ARCH test.

3.3.2   Unit Root Test

Unit root test has become widely popular over past few years to test whether the data are stationary or not. If the time series is not stationary, the result will have no economic meaning.

There are important areas which are concern in the stationary. First, a crucial question in the ARIMA modeling of a single time series is the number of time the series needs to be first differenced before an ARMA model is fit. Each unit root should need a differencing operation. Secondly, stationary of regressor is assumed in the derivation of standard inference procedures for regression models. Non- stationary regressors will make the result meaningless or invalid and requires special treatment.

On the other hand, in order to avoid the regression problem which will violate the assumption of the Classical Regression Model, stationary test is play an important role in the time series data. If the assumption is violated, the results may cause high t- statistics and coefficient of determination, which shown the bias results.

Blough (1992) had pointed out that unit root test with high power against any stationary alternative will false rejection of the unit root when applied to near stationary process. These problem will occur when have limit samples.

Cheng, Tzeng and Kang employed unit root test of Augmented Dickey- Fuller (ADF) and Philip-Perron (PP) to test whether the time serial is stationary.

3.3.2.1 Augmented Dickey- Fuller (ADF) Test

Augmented Dickey-Fuller (ADF) test developed by Dickey and Fuller (1979) is employed to determine whether there is a unit root in economic variables. By checking the existence of stationary of each variable, we are testing the data series in term of levels and first difference. It is requires examinations for stationary before proceeding further to investigate the relationship between the multi variables (the OLS regression analysis).The null hypothesis tested that the variables under investigation have a unit root, which the alternative hypothesis do not have a unit root.

The equation for ADF test is given below:

$$\Delta Y_{t=} \beta_1 + \beta_2\ t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i\ \Delta Y_{t-i} + \varepsilon_t \text{ ----- (3)}$$

3.3.2.2 Philip-Perron (PP) Test

Philip and Perron (PP) test (Philip &Perron, 1988) use nonparametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms. One advantage of the PP tests over the ADF tests is that the PP tests are strengthen to general forms of heteroskedasticity in the error term. Another advantage is that the user does notrequire specifying a lag length for the test regression.

For PP test, estimate the equation as below:

$$\Delta Y_t =\ \alpha + \pi_{2xt-1} + \varphi\left(t - \frac{T}{2}\right) + \sum_{i=1}^{m} \varphi i \Delta Y_{t-i} + \varepsilon_{2t} \text{ ----- (4)}$$

In both equation (3) and (4), ε_t and ε_{2t} are the covariance stationary error terms. The lag length is determined by Akaike's Information Criteria (AIC) (Akaike, 1973) to ensure serially uncorrelated residuals and for PP test is decided according to Newley-West's (Newley and West, 1987) suggestions. The null hypothesis for PP test is that the series is non-stationary.

3.3.3   Diagnostic Test

We have run the diagnostic checking to make sure the estimated results are reliable. The tests are covariance analysis, Breusch-Godfrey Serial Correlation LM test, (ARCH) test, Ramsey RESET test and Jacque-Bera (JB) test. There are five econometric problems that maybe occur in our model namely multicollinearity, autocorrelation, heteroscedasticity, model specification error and normality distribution.

First, covariance analysis is used to test the multicollinearity problem.

$$VIF = \frac{1}{1 - R2}$$

If the VIF < 5 for all variables, it indicates that there is no colinearity among independent variables.

Breusch-Godfrey Serial Correlation LM Test used to test the autocorrelation problem. The null hypothesis (H_0) states that there is no autocorrelation problem up to certain number of lags while the alternative hypothesis (H_1) state that there is autocorrelation problem. Reject H_0 if probability of Chi-Square is smaller than 0.05; otherwise do not reject H_0.

Autoregressive Conditional heteroscedasticity (ARCH) test is used to test the heteroscedasticity problem. The null hypothesis (H_0) states that there is no heteroscedasticity problem while alternative hypothesis (H_1) state that there is heteroscedasticity problem. Reject H_0 if probability of F-statistic is smaller than 0.05; otherwise do not reject H_0.

Ramsey has proposed a test of specification error named as RESET (Regression specification error test). The null hypothesis (H_0) states that there is no model specification error while alternative hypothesis (H_1) state that there is model specification error problem. Reject H_0 if probability of F-statistic is smaller than 0.05; otherwise do not reject H_0.

The normality of a model is test by using the Normality Test andJacque-Bera (JB) statistic will be analyzed. This test first computes the skewness and kurtosis measures of the OLS residual and uses the following test statistic:

$$JB = n\left[\frac{S^2}{6} + \frac{(K-3)^2}{24}\right]$$

Where n= Sample size, S= Skewness coefficient, and K= Kurtosis coefficient. For a normally distributed variables, S=0 and K=3. Therefore, the JB test of normality is a test of the joint hypothesis that S and K are 0 and 3, respectively. In that case the value of the JB statistic is expected to be 0.

Under the null hypothesis (H_0), the residuals are normally distributed, JB showed that asymptotically the JB statistic given in equation follows the chi-square distribution with 2 degree of freedom. If the computed p value is low, which will happen if the value of the statistic is very different from 0, once can rejected the null hypothesis that the residual are normally distributed. In contrast, if the p value is high, which will happen if the value of the statics is close to 0, we do not reject the normally distributed (Gujarati, 2009).

3.4 Conclusion

In the chapter three, we have running the statistic test and we performed to run the diagnostic checking. For the following chapter, we are discussing the results of the above statistical test.

CHAPTER 4: DATA ANALYSIS

4.0   Introduction

This chapter presents the results and interpretation of the study. The first section of this chapter performed the descriptive analysis for the stock returns of five major banks in Malaysia and the macroeconomic variables that found to be potentially affecting the stock return. In this section, the mean, standard deviation, skewness, kurtosis and Jarque-Berra of each variable will be analyzed. The second section is testing on the unit root of the variables by employing ADF and PP test. The third section is to evaluate the impact of macroeconomic variables on individual bank's stock returns and the suitability of using OLS method in running our model through diagnostic checking. Discussion on the result will be the last section in this chapter.

4.1   Descriptive Analysis

The descriptive analysis has been performed to find out the temporal properties of the data. Besides, the hypothesis regarding the normality of individual banks' stock returns and each of the macroeconomic variables are allows to be investigated. All data is analyzed in term of its mean, standard deviation, skewness, kurtosis and Jarque-Berra and the result is reported in Table 4.1.

The descriptive statistics of the banks data series indicate that only Maybank's data seriesis negatively skewed whereas the other bank variables are positively skewed. All data series for banks are leptokurtic with lower than normal kurtosis (K<3) except for RHB bank. On the other hand, the descriptive statistics of macroeconomic variables reveal that the market return (KLSE), industrial production index (IPI), interest rate (IR), exchange rate (EXRATE) and money supply (M2) variables are

negatively skewed except for Consumer Price Index (CPI) series. Among all data series of independent variables, KLSE, CPI and IPI show higher than normal kurtosis while interest rate, exchange rate and money supply show low kurtosis (K<3). In overall, as the values of skewness and kurtosis for all series are not significantly different from zero and 3, therefore, all data series are not seriously departing from normality.

The Jarque-Berra test statistics allows a joint test of skewness and kurtosis' characteristics. From the results, the Jarque-Berra statistics indicate that the null hypothesis that all individual banks' stock returns are normally distributed have been accepted at 5% level of significance except for Hong Leong bank. At the same time, the results for macroeconomic variables reveal that the data series of CPI, IR, exchange rate and money supply are normally distributed as the P-value for those variables are significant at 5% level (P>.05).

Table 4.1 : Descriptive Statistics.

	Mean	Max	Min	SD	Skewness	Kurtosis	Jarque-Berra
Banks in Malaysia							
CIMB	8.749000	14.18000	5.120000	2.369235	0.399674	2.369973	2.589728***
Hong Leong	5.984667	9.200000	4.340000	1.530298	1.003202	2.513046	10.656960
Maybank	7.704333	10.41000	3.570000	1.854908	-0.311075	2.116180	2.920521***
Public Bank	8.788167	13.02000	5.140000	2.196106	0.028482	2.202854	1.596719***
RHB	4.366167	8.720000	2.070000	1.508992	0.690970	3.441227	5.261106**
Macroeconomic Variables							
KLSE	0.979583	13.54536	-15.22264	4.55091	-0.585110	5.345894	17.18158
CPI	2.684988	8.514664	-2.441151	2.333704	0.405193	4.166216	5.041967**
IPI	1.644641	14.07151	-17.57885	6.998235	-0.912689	3.507663	8.974318*
IR	1.239833	1.490000	0.800000	0.254095	-0.536734	1.436361	8.993253**
EXRATE	3.436933	3.752661	3.100536	0.182268	-0.192235	1.969790	3.022871***
log(M2)	13.64223	13.87392	13.36196	0.152534	-0.312348	1.879436	4.114768***

Note: Max, Min, SD, KLSE, CPI, IPI, IR,EXRATE and M2 stand for maximum, minimum, standard deviation, Market
*, ** and *** indicates significant at 1%, 5%, and 10% significance level, respectively.

4.2 Stationary Properties

Augmented DickyFulley (ADF) and Phillips-Perron (PP) test are applied on all dependent and independent variables in this research to test the stationary of the data series. The null hypothesis for ADF and PP test is that the series is non-stationary. Table 4.2 and 4.3 present the results of both the unit root test. According to Table 4.2, the result indicates that the stock returns of all banks are non-stationary (P>.05) in both tests except for the stock returns of CIMB bank that show stationary(P<.05) at the level with deterministic trend. For macroeconomic variables, KLSE shows stationary (P<.05) in both tests at the level with or without deterministic trend while money supply only shows stationary result in ADF test without deterministic trend at all significance levels. The others economic variables show non-stationary (P>.05) for both tests at the level with or without deterministic trend at 5% significance level.

In contrast, the results of unit root test at the first difference (Table 4.3) indicate that almost all banks' stock returns became stationary in ADF and PP test with or without deterministic trend at all levels of significance except for sock returns of RHB bank under the ADF test. At the same time, ADF and PP test have show different result for the exchange rate and money supply. These variables remain insignificant in ADF test with trend at 5% level of significance but show stationary result in PP test at all significance levels after first differencing. According to Blough (1992), this situation happens due to the ADF test may have low power against the stationary alternatives.

Table 4.2 : Result of the Unit Root Test for Level

Variable	Augmented Dickey Fuller (ADF)		Phillips Perron (PP)	
	Level			
	Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
	Banks in Malaysia			
CIMB	-2.354998	-3.780283**	-2.135764	-1.964822
Hong Leong	0.640862	-0.832893	0.437500	-0.998348
Maybank	-1.35887	-1.170293	-1.182077	-0.988863
Public Bank	-0.463904	-2.692474	-0.410033	-1.731287
RHB	0.205608	-1.557889	0.628336	-0.567833
	Macroeconomic Variables			
KLSE	-3.713494***	-3.681979**	-6.006526***	-5.961759***
CPI	-2.435100	-3.200236*	-2.031362	-2.133281
IPI	-2.197940	-2.152532	-2.222618	-2.175423
IR	-0.911690	-2.354651	-0.789114	-1.844279
EXRATE	-2.241988	-2.531135	-1.339056	-1.702758
Log(M2)	-3.589003***	-1.685881	-1.312751	-2.004595

Note: The table presents the results of the Augmented DickyFulley (ADF) and Phillips-Perron (PP) unit root test in the Level for CIMB bank, Hong Leong bank, Maybank, Public Bank and RHB bank, Market Return (KLSE), Consumer Price Index(CPI), Industrial Production Index (IPI), Interest Rate(IR), Exchange Rate (EXRATE) and Money Supply (M2).

***, ** and * indicates significant at 1%, 5%, and 10% significance level, respectively.

Table 4.3 : Result of the Unit Root Test for First Different

Variable	Augmented Dickey Fuller (ADF)		Phillips Perron (PP)	
	First Different			
	Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
	Banks in Malaysia			
CIMB	-5.708907***	-5.721737***	-5.659072***	-5.665793***
Hong Leong	-6.446490***	-6.575114***	-6.438782***	-6.575114***
Maybank	-6.018915***	-6.026969***	-6.016733***	-5.990902***
Public Bank	-3.598696***	-3.572617**	-8.425183***	-8.368870***
RHB	-2.771122*	-2.931772	-8.333255***	-8.400146***
	Macroeconomic Variables			
KLSE	-9.143727***	-9.058545***	-19.50542***	-19.30871***
CPI	-4.823341***	-4.779787***	-4.841524***	-4.797929***
IPI	-10.02190***	-9.97706***	-9.808389***	-9.771532***
IR	-3.818541***	-3.774738***	-4.484112***	-4.445024***
EXRATE	-3.356827**	-3.308407*	-5.137092***	-5.08845***
Log(M2)	-2.604086*	-3.164436	-6.398697***	-6.444361***

Note: The table presents the results of the Augmented DickyFulley (ADF) and Phillips-Perron (PP) unit root test in the first differences for CIMB bank, Hong Leong bank, Maybank, Public Bank and RHB bank, Market Return (KLSE), Consumer Price Index(CPI), Industrial Production Index (IPI), Interest Rate(IR), Exchange Rate (EXRATE) and Money Supply (M2).

***, ** and * indicates significant at 1%, 5%, and 10% significance level, respectively.

4.3   Impact of Macroeconomic Variables on Bank's Stock Returns

The performance of the five major banks in Malaysia in stock market has been analyzed by employing OLS method to determine the impact of the macroeconomic variables on those banks' stock returns. The results of the OLS estimation are presented in Table 4.4. The R^2 of each models indicate that the stock returns for each individual bank are well explained by the independent variables. Moreover, the zero probability of F-statistic for all models proved that the overall models are significant at all levels.

According to the result table, the market return (KLSE) is significantly affects the stock return for Hong Leong bank, Maybank and RHB bank at 10% significance level. In contrast, the CPI is the variable having significant influences on all banks' stock returns under study at all significance level except for Hong Leong bank. The result also demonstrates that IPI is significantly affecting the stock returns of CIMB bank, Hong Leong bank, Maybank, and Public Bank at all significance level. Besides, the IR has shows significant effect on Hong Leong bankas well as Maybank's stock returns. Moreover, the result reveals that exchange rate will have significant (P<.10) impact over the stock return of all banks. Furthermore, the money supply gives significant impact on stock return for Maybank, and Public Bank at 10% significance level.

From the result, it indicates that money supply explains a greater proportion of all banks' stock returns except for RHB bank where exchange rate explains greater proportion on it. Evidence of exchange rate sensitivity is strong as it has significant influences on all banks' stock returns. In addition, the evidence of market return, inflation and industrial production index sensitivity is relative stronger compare to interest rateand money supply sensitivity as coefficients of both interest rateand money supply are significant in only 2 out of 5 cases.

According to the result in Table 4.4, CPI and exchange rate are negatively related to all banks' stock returns while IPI is positively related to stock returns for all banks under study. Besides, the market return and interest rate variables maintain a positive relationship with the stock returns for most of the banks. According to the result, money supply has positive relationship and significant impact on Public Bank's stock returns while shows statistically significant and negative impact to Maybank's stock returns. At the same time, interest rate has positive relationship and significant impact on Maybank's stock returns but has statistically significant and negative impact to Hong Leong bank's stock returns.

Table 4.4 : Estimates of OLS Regression of Individual Banks.

	Constant	KLSE	CPI	IPI	IR	EXRATE	log(M2)	F-stat	R^2
CIMB	-72.67115	-0.025936	-0.567007***	0.093448*	1.364375	-1.109496*	6.225957	6.098363	0.413027
	(0.4699)	(0.6544)	(0.0003)	(0.0738)	(0.6462)	(0.0739)	(0.3291)	(0.000069)	
Hong Leong	-27.62806	0.041046**	-0.009687	0.07515***	-2.271008***	-2.449174**	3.277195	62.687970	0.876494
	(0.4104)	(0.0373)	(0.8440)	(0.0001)	(0.0252)	(0.0310)	(0.1260)	(0.0000)	
Maybank	98.77256	0.054278*	-0.317701***	0.083688***	3.714865***	-4.234286**	-5.897779*	40.409300	0.820616
	(0.0473)	(0.0585)	(0.0000)	(0.0015)	(0.0127)	(0.0113)	(0.0608)	(0.0000)	
Public Bank	-110.0193	0.020818	-0.138041***	0.047189***	0.891891	-4.766866***	9.848659***	248.871700	0.965723
	(0.0001)	(0.1577)	(0.0005)	(0.0006)	(0.2367)	(0.0000)	(0.0000)	(0.0000)	
RHB	-28.07941	0.038946*	-0.155076***	0.009938	0.516066	-4.924929***	3.598698	46.054460	0.839066
	(0.4570)	(0.0775)	(0.0069)	(0.6075)	(0.6437)	(0.0002)	(0.1353)	(0.0000)	

Note: KLSE, CPI, IPI, IR, EXRATE and M2 stand for Market Return, Consumer Price Index, Industrial Production Index, Interest Rate, Exchange Rate and Money Supply, respectively.

*** , ** and * indicates significant at 1%, 5%, and 10% significance level, respectively.

4.4 Diagnostic Checking

We have performed covariance analysis for all the macroeconomic variables to ensure that the independent variables do not inter-related among each other in our regression model. The results have found that there is no issue of multicollinearity among those selected independent variables as all the value of Variance Inflation Factor (VIF) show between the explanatory variables are less than 5.

Meanwhile, there are quite a numbers of researches such as Kasman et al. (2011), Muneer (2011), and Tai (2005) found that time series data could have high probability of existence of autocorrelation and heteroscedasticity problem in the residual, therefore, the suitability of linear estimation method (OLS) is examine with the ARCH test. The null hypothesis (H_0) will be rejected if the autocorrelation and heteroscedasticity problems occur in the square residuals of equation.

In fact, as the probability of F-statistic for most of the models are insignificant (P>.05) at 5% level of significance under Autoregressive Conditional Heteroscedasticity (ARCH) Test (See Appendix 4.1). Thus, we do not reject the null hypothesis (H_0) and conclude that there is no heteroscedasticity problem in the models. OLS method is suitable to use in running the data series.

Besides ARCH test, we have used Breusch-Godfrey Serial Correlation LM Test to examine the existence of autocorrelation in the model. Based on the result, it is proven that most of the models are free from autocorrelation problem since the most of the probability of chi-square are higher than 0.05. We do not reject the null hypothesis and conclude that there is no autocorrelation problem exists in the models (See Appendix 4.2). At the same time, the normal rate of Durbin Watson statistic (1.6-2.4) for all models also support that there is no autocorrelation problem in this model.

Furthermore, we have used Ramsey RESET Test to check whether our model is correctly specified. Almost all probabilities of F-statistics for all models are greater than 0.05 which representing that the model is correctly specified at 5% level of significant (See Appendix 4.3). Therefore, we do not reject the null hypothesis (H_0) and conclude that there is no model specification error in the models.

For the normality test, we used value of Jarque-bera to investigate whether the residual are normally distributed. As only model for Public Bank shows normality with theP-values of JB-statictics greater than 0.05, we reject H_0 and conclude that the error term is not normally distributed(See Appendix 4.4). However, based on the Central Limit Theorem, as long as the sample size is large enough (n>30), the sampling distribution will be normal or nearly normal (Ivo, Nicolas, & Juana, 2008).

4.5   Inferential Analyses

The relationship between stock returns of the five banks and macroeconomic variables is analyzed individually. The results the OLS regression estimations display the different behavior of stock returns at different bank though all models have produced significant results. However, the CIMB bank's stock returns is less responsive to economic variables as compare to other four major banks' stock returns in Malaysia since the value of R^2 and F-statistics for CIMB bank is relatively lower. In other words, the Hong Leong Bank, Maybank, Public Bank and RHB Bank demonstrate greater exposure to the changes in economic variables.

According to our regression result, market return is in general found to be significant and positive related to the stock returns. This result is consistence with our expected sign and suggests that the market return volatility is important in explaining the banks' stock returns volatility and growth in market return will give positive influence on stock returns of banks. This finding is in line with most of the previous researches such as Butt et al. (2010), Joseph and Vezos (2006), Kasman et al. (2011)

and Muneeret al. (2011). They indicated that market return is found to be positively and the most significant factor in influence the banks' stock returns.

Based on our result, consumer price index is significantly influences most of the banks' stock returns under study though the relationship is negative. This result is same with our expectation where inflation gives adverse impact to banks' stock returns. It is very important variable in examine the volatility of stock returns as all banks' stock returns will significantly affected by the changes of inflation. This finding is in line with the studies conducted by the Al-Albadi and Al-Sabbagh (2006), and Li et al. (2010) where they reported significant but negative relationship between stock returns and inflation.

Moreover, industrial production index shows positive and significant relationship to banks' stock returns. The positive relationship show is consistent with our expected sign and is in line with the research done by Muneer et al. (2011), Sill (1995), Chen, Roll and Ross (1986) which indicates industrial production has impact on the stock returns.

At the same time, interest rate also presents the same result as industrial production index. This finding is inconsistent with our expected sign which speculate negative relationship between interest rate and the banks' stock returns. The result is inconsistent with the research done by Akella and Greenbaum (1992), Choi et al. (1992), and Kwan (1991) which demonstrates that stock returns appear to be significantly and negatively correlated to interest rate changes. However, this result is in line with Butt et al. (2010), Kasman et al. (2011), and Muneer et al. (2011) which reveal that the positive relationship between banks' stock returns and interest rate can be caused by the nature of Banking Industry being the financial sector. Muneer et al. have stated that bank as a lender could generate extra income from the interest rate rises. Besides, the insignificant impact of interest rate to the banks' stock returns in this study can be caused by the selection of the general saving deposit rate as our measure of interest rate.

Furthermore, the result has indicated that most of the banks' stock returns have negative significant relationship with the exchange rate. This result is consistent with our expected sign and the findings of Kasman et al. (2011), Tai (2005), and Tabak (2006). This proven that the exchange rate volatility does impact the banks' stock returns and the appreciation of US currency will harm the banks. Kasman et al.indicate that numerous financial analysts as well as economists agree that costs, profitability and revenues of banks are directly affected by the unexpected changes in exchange rate.

In addition, the result has shows that money supply hasinsignificant but positive relationship with the banks' stock returns in overall. This finding is in line with our expected sign and the research done by Ozbay (2009), and Kandir (2008) which indicated that money supply does not have significant relationship with banks' stock returns.

4.6   Conclusion

In summary, there are four economic variables show statistical significant relationship to the volatility of banks' stock returns. Exchange rate is affecting all the banks' stock returns under study while money supply is giving the biggest effect on banks' stock returns. The priori sign of the coefficient for all independent variables in the result are mostly same as expected sign we discussed in earlier chapter and are consistent with the theory of previous study done by other researcher except for interest rate.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0   Introduction

This chapter presents the discussion, conclusion as well as implication of the study. The first section in this chapter provides the overall picture and the major findings in this study. The second section is a discussion on the policy implication. The third section will present the limitation of the study while section four provides some recommendations for future research.

5.1   Summary

This study undertakes a research to seek the effects of the macroeconomic variables namely market return (KLSE), inflation (CPI), industrial production index (IPI), exchange rate (EXRATE), interest rate (IR) and money supply (M2) on Malaysia major banks' stock returns. The data is collected over the period of 2006 to 2010 and Ordinary Least Square (OLS) method is applied to examine whether the banks' stock returns are sensitive to the macroeconomic variables changes.

At the beginning of the estimation, descriptive analyses have been done to all dependent and independent variables. There are 5 variables show positively skewed while the other 6variables are negatively skewed. Besides, almost all banks' stock returns show lower than normal kurtosis whereas for the macroeconomic variables, only half of it shows lower than normal kurtosis. Same situation goes to Jarque-Berra test statistics, there are 4 out of 5 banks' stock returns show it normality at 5% level of significance. However, there are 2 data series for macroeconomic variables are not normally distributed at 5% level of significance.

ADF and PP test have been carried out to analyze whether our data series are stationary. All data that originally show non-stationary at the level have become stationary after first differencing in PP test whereas for ADF test after first differencing, some variables that testing with deterministic trend such as banks' stock returns of RHB bank, exchange rate and money supply remains insignificant at 5% significance level.

Based on the result, it is concluded that exchange rate is the most significant variable in explaining the fluctuation of Malaysia banks' stock returns though it gives negative effect on the stock returns. This shows that depreciation of home currency (Ringgit Malaysia) against the US Dollar will cause banks' stock returns to drop. Other macroeconomic variables are statistically significant to banks' stock returns occasionally. It is found that the changes of market return are statistically significant and positively affecting the banks' stock returns in overall. Interest rate is positively related to stock returns for most of the banks but less banks' stock returns show significant to this variable. So, we can conclude that there is no relationship between banks' stock returns and interest rate. Additionally, industrial production index is positive and significant to the variation of banks' stock returns in general. Consumer price index is statistically significant but negatively related to the fluctuation of banks' stock returns. This shows that rising inflation in Malaysia adversely impact the stock returns of all banks under study. Money supply maintains positive butinsignificant relationship with banks' stock returns.No evidence reveals that there is relationship between banks' stock returns and money supply.

The result also demonstrate that although the exchange rate accounts for most of the volatility of banks' stock returns, the other additional economic variables have increases the explanatory power of the model in explaining the variation of stock returns for different banks in Malaysia. Market return, inflation, industrial production index, and exchange rate do have relationship towards banks' stock returns volatility where increase in market return and industrial production index will directly increase

the banks' stock returns. At the same time, banks' stock returns are most sensitive to the changes in money supply.

According to the findings, although banks will react differently to the macroeconomic variables, the fitness of the models and the usefulness of the multifactor model have been proved by the significant results of the study.

5.2 Policy Implications

From this study,either policy makers, government, even private sectors could introduce a set of policies to be implemented in their relative future operations. Different set of policies would suit for different industries or countries, which depends on their traits or cultures. Each of the variables used are playing a very important role in conducting this study, of courseinterest rate and money supply are not excluded when examining the variations of bank stock returns. Although these two variables were showed insignificant in empirical result we gained, most of previous researchers were strongly proposed that they are the essence factors in determining bank stock returns. In Malaysia, policy makers could try to make an improvement on the mentioned macroeconomics factors,by implementing or manipulating on policy tools, so that the effect of these two variables on the bank stock returns could able to be emphasized.

Fiscal and monetary policy, are the most common and powerful policy tools that will use by government in controlling economy system within the country. Fiscal policy is the use of government expenditure and revenue collection, for example taxation, to influence the economy. While, monetary policy is the way that government or the Federal use to control or manipulate on the supply of money, which usually targeting at a certain rate of interest that aimed to promote sound and stable economic growth within a country. Among these two policies, monetary policy is especially useable for any adjustments in interest rate, as the level of money supply would be vary by

changing on the movement on interest rate, and thus, the inflation within the country would be able to relief too. Any adjustment made by the government using the monetary policy on the interest rate, would affect the actions to be took by private sectors, as both parties are depends on each other. As such, private sectors, especially banking finance institutions, would have to make some adjustments on their own interest rates, for example pushing up or lower down interest rates on lending or borrowing, in order to maintain or improve the regular business operations.

Other than that, macroeconomic policy which act to dealing with the performance, structure, behavior, and decision making of the whole economic, would be a good strategy that could be implement by policy makers. As suggested by macroeconomists, economic indicators such as gross domestic productions (GDP), unemployment rates, and prices indices can be use to understand on the cycle of overall economy. A model could be develop on factors such as national income, output, consumption, unemployment, inflation, savings, investment, international trade and finance, which will then use to explain the relationship between each other. The model and its forecasts on economic growth are useful for government and those big corporations to aid in the development and evaluation of economic policy, even business strategy. This policy would able to explain in deep on the attempt to understand the causes and consequences of short-term fluctuations in national income or business cycle, the attempt to understand on determinants of long-term economic growth, for example increases in national income.

In order to treating money supply, policy makers would also use the same policy, which is monetary policy, as like what implement on treating interest rate. Interest rate and money supply are work together in the monetary policy. This is because when there is any increment or subtraction on money supply, it will indirectly affecting the movement of interest rate. For example, if money supply is increase by the Fed, private sectors would plan to increase their interest rate on borrowing or lending too, and then the financial performance of the corporation would change accordingly, hence their bank stock return would be influence. This is why money

supply is the core factor in monetary policy, as it would determine the movement of interest rate. As a result, policy makers would be able to get a win-win situation by implementing monetary policy on these two variables.

5.3   Limitations of Study

After carry out empirical test for our study, we noticed that there are some limitations that prevent us for further improvement.

First of all, it would be the matter of data set. The data set that we used to study on the research is on monthly basis. This was proposed by most of the previous researchers whom did on the same study as us. Nevertheless, after testing on all the variables, we would observe that data which extracted on monthly basis was not enough to generate the accurate and reliable result. Therefore, this inaccurate monthly data set would cause the result to be inefficient.

While, another limitation is matter with the econometric model that we employed in our test namely Ordinary Least Square (OLS) model. When we get the empirical result, although this is the simplest model to be used, however, we found that this model was unable to address for kind of econometric problems, such as heteroscedasticity and autocorrelation. By employing other advance model, for example Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) model, the result would be act in different way.

We may think of, the occurrence of these restrictions might due to the sample size used in our study. Unfortunately, the sample size of the data that we are able to extract was limited to only five years. As for data more than this time period was in incomplete set, meanwhile, there are missing data which more than this timeframe. One the independent variable, Industrial Production Index (IPI) is one the example, in which having the problem of expansion of data set.

Though what recommended by most of previous researchers were same as what we are used in our study. There may be still a problem that the macroeconomic indicators used in this study may not be sufficient to generate for better result.

5.4   Recommendations and Future Research

In order to make a more precise and exact research, it is a need to improve and overcome those constraints. Since there are three major limitations stated on the above sections, hence, we would suggest the solutions for each of them.

To overcome the data constraint, we may be get a try on using the data series extracted on daily basis. As some of the researchers found that, the result has shown more exact by using daily data on carry out the relevant empirical studies.

For the factors constraint, future research may be done by adding more macroeconomic variables, such as Gross Domestic Productions (GDP) or Foreign Direct Investment (FDI), in order to test on the impact of each of them of banks' stock returns. The additional variables that expected to use should be more relevant to the study and be supported by related supporting materials. However, researchers should bear in mind that, there might be problem incur to the econometric model due to the involvement of irrelevant variables.

To improving the empirical result, it is better to apply Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) model rather than Ordinary Least Square (OLS), as this economic model is more advance in addressing and solving for econometric problems, such as heteroscedasticity and autocorrelation that unable to solve by OLS model. Previous research (Bollerslev, 1986, 1990; Muneer et. al, 2011) were found that the Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) model is sustainable in capturing assets returns and volatility by allowing

the means of assets return to be depends on their time-varying variance together with other contributory factors.

Other than these, future researchers may try to extend the study on those foreign banks that have subsidiaries in Malaysia, rather than the focus point only concentrate on domestic-based banks. Furthermore, future study could also be carry out by research on the impact of different exchange rate regime, for instance, flexible exchange rate regime versus fixed exchange rate regime, to the performance of banks' stock returns.

By doing so, the scope of investigations on banks' stock returns would be more widely, and thus, better understanding on the healthiness of banking operations and performance would be able to build up.

5.5   Conclusions

As a conclusion, this study could be more extended by employing more information from different aspects. As now Malaysia is in building up a strong and convinced enough economy rapidly, especially in banking and financially sectors, thus research on this banks' stock returns need to be carry on in deeper way in order to provide more improvement spaces to this sector.

Like what suggested by Muneeret. al (2011), this would be an indications for future researchers and academicians to examine more on the inference of economic growth in stock market development, particularly the inter-relationship between economic indicator and stock market performance should be take into investigations to plan on an improved economic policy as well as to undergo the economic growth in Malaysia. The result of the study could be a useful mechanism in understanding the characteristic and roles of economic indicators and stock returns variations in forming the soundness economy in one country.

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APPENDIX

Appendix 4.1: Autoregressive Conditional Heteroscedasticity (ARCH) Test

Heteroskedasticity Test: ARCH

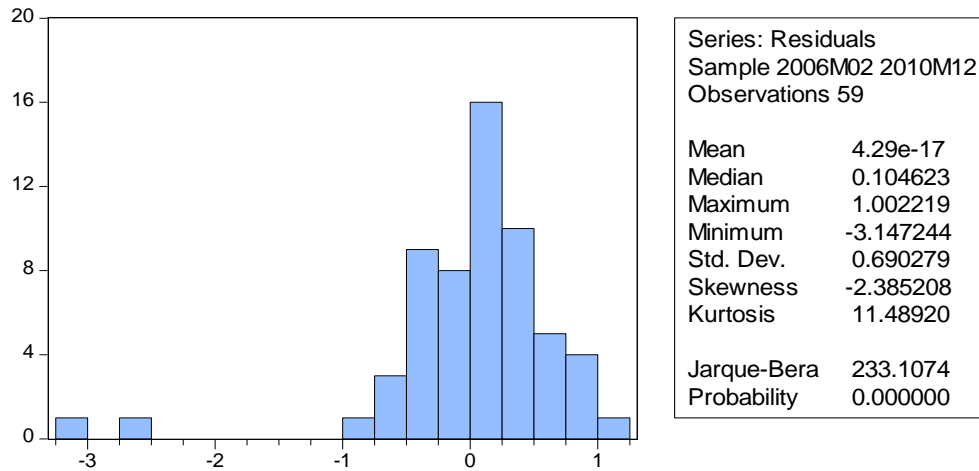|				
CIMB	F-statistic	12.9781	Prob. F(1,57)	0.0010
Hong Leong	F-statistic	3.079505	Prob. F(1,57)	0.0848
Maybank	F-statistic	0.024777	Prob. F(1,57)	0.8755
Public Bank	F-statistic	2.591352	Prob. F(1,57)	0.1131
RHB	F-statistic	0.002038	Prob. F(1,57)	0.9642

Appendix 4.2: Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

CIMB	Obs*R-squared	8.381237	Prob. Chi-Square(2)	0.0151
	Durbin-Watson stat	1.988476		
Hong Leong	Obs*R-squared	2.155118	Prob. Chi-Square(2)	0.3404
	Durbin-Watson stat	1.988476		
Maybank	Obs*R-squared	0.099377	Prob. Chi-Square(2)	0.9515
	Durbin-Watson stat	1.983505		
Public Bank	Obs*R-squared	7.743007	Prob. Chi-Square(2)	0.0208
	Durbin-Watson stat	1.935953		
RHB	Obs*R-squared	0.66485	Prob. Chi-Square(2)	0.7172
	Durbin-Watson stat	1.938062		

Appendix 4.3: Ramsey RESET Test

	Ramsey RESET Test:			
CIMB	F-statistic	0.259088	Prob. F(1,51)	0.6129
Hong Leong	F-statistic	0.010166	Prob. F(1,51)	0.9201
Maybank	F-statistic	0.332461	Prob. F(1,51)	0.5667
Public Bank	F-statistic	0.988271	Prob. F(1,51)	0.3249
RHB	F-statistic	4.202951	Prob. F(1,51)	0.0455

Appendix 4.4: Residual Normality Test

CIMB Bank

Series: Residuals
Sample 2006M02 2010M12
Observations 59

Mean	4.29e-17
Median	0.104623
Maximum	1.002219
Minimum	-3.147244
Std. Dev.	0.690279
Skewness	-2.385208
Kurtosis	11.48920
Jarque-Bera	233.1074
Probability	0.000000

Hong Leong Bank
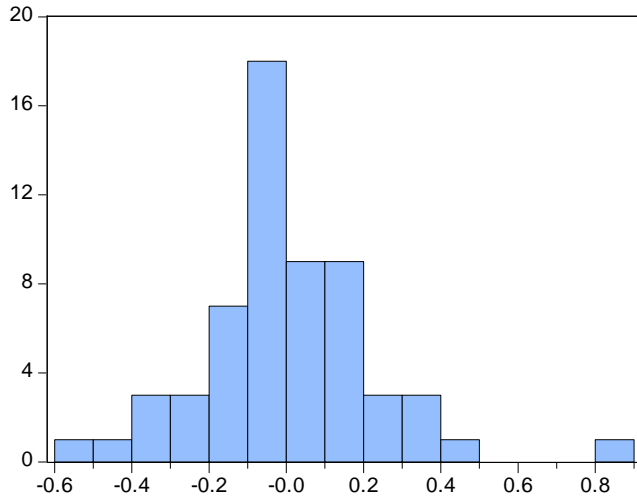
Series: Residuals	
Sample 2006M02 2010M12	
Observations 59	
Mean	-1.48e-17
Median	-0.017546
Maximum	0.812396
Minimum	-0.562785
Std. Dev.	0.219121
Skewness	0.587289
Kurtosis	5.363915
Jarque-Bera	17.12900
Probability	0.000191

Maybank
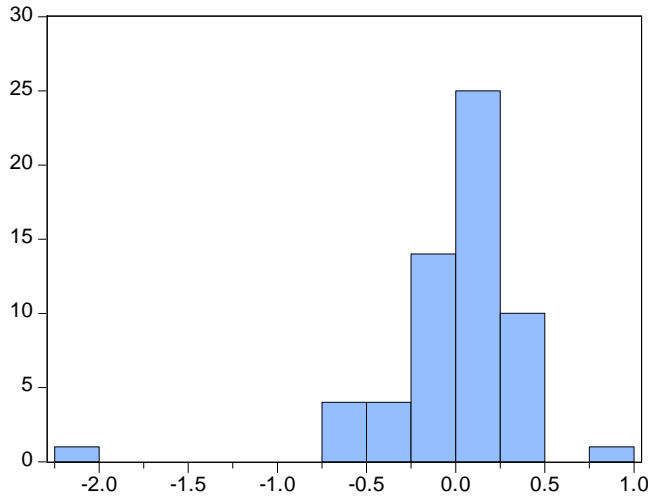
Series: Residuals	
Sample 2006M02 2010M12	
Observations 59	
Mean	3.29e-17
Median	0.051796
Maximum	0.969686
Minimum	-2.173928
Std. Dev.	0.409792
Skewness	-2.522448
Kurtosis	15.04407
Jarque-Bera	419.1717
Probability	0.000000

Public Bank

Series: Residuals	
Sample 2006M02 2010M12	
Observations 59	
Mean	5.20e-18
Median	0.019800
Maximum	0.603467
Minimum	-0.751439
Std. Dev.	0.282492
Skewness	-0.139344
Kurtosis	3.252856
Jarque-Bera	0.348109
Probability	0.840251

RHB Bank

Series: Residuals	
Sample 2006M02 2010M12	
Observations 59	
Mean	3.76e-18
Median	-0.057577
Maximum	0.983816
Minimum	-0.496004
Std. Dev.	0.279907
Skewness	1.068371
Kurtosis	4.503153
Jarque-Bera	16.77846
Probability	0.000227