# Bank Stock Returns and Macroeconomic Variables: Empirical Evidence from Selected ASEAN Countries

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# Bank Stock Returns and Macroeconomic Variables: Empirical Evidence from Selected ASEAN Countries

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# ABSTRACT

The aim of this study is to examine the effect of macroeconomic variables on bank stock returns in ASEAN. The panel data were retrieved from the DataStream and World Bank data archive, consisting of 58 banks from six countries (Malaysia, Indonesia, Singapore, Thailand, Philippines, and Vietnam) for the period 2004 to 2014. The bank stock return index is used as a proxy for bank stock return while proxies for macroeconomic variables are money supply, interest rate, inflation, and foreign exchange rate. By applying pooled OLS regression analysis, the results show that money supply has negative impact on bank stock returns, indicating that changes in money supply is a major signal for change in stock price because it has a direct influence on stock market and an indirect influence on bond market based on the adjustment of interest rates. Inflation also has negative significant influence on bank stock returns, implying that negative inflation –real activity induced the relationship through the money demand theory and the quantity theory of money. Foreign exchange rate has a positive significance influence on bank stock returns, indicating that the foreign exchange exposures of ASEAN banks have influenced their stock returns since most part of the stock returns are sensitive to the changes in exchange rates during the periods. Meanwhile, interest rate is insignificant with bank stock returns, implying that interest rate sensitivity does not exert a significant impact on the common stock of the banks, which could be caused by the effect of wealth distribution triggered by unexpected inflation when banks hold nominal assets and nominal liabilities. It is recommended that ASEAN banks should involve in various off-balance sheet activities and implement effective and efficient approaches of risk management which reduce their exposure to fluctuations in macroeconomic factors.


**Keywords**:  macroeconomic, stock returns, money supply, interest rate, inflation, exchange rate.

**ABSTRAK**

Tujuan kajian ini adalah untuk mengkaji kesan pembolehubah makroekonomi pulangan saham bank di ASEAN. Data panel telah diambil dari Datastream dan data Bank Dunia, yang terdiri daripada 58 bank dari enam negara (Malaysia, Indonesia, Singapura, Thailand, Philippines dan Vietnam) bagi tempoh 2004 hingga 2014. Bank indeks pulangan saham digunakan sebagai proksi untuk kembali saham bank manakala proksi untuk pembolehubah makroekonomi adalah bekalan wang, kadar faedah, inflasi, dan kadar pertukaran asing. Dengan menggunakan panel OLS dikumpulkan analisis regresi, keputusan menunjukkan bahawa bekalan wang mempunyai kesan negatif ke atas pulangan saham bank dan menunjukkan bahawa perubahan dalam penawaran wang adalah isyarat utama bagi perubahan dalam harga saham kerana ia mempunyai pengaruh langsung ke atas pasaran saham dan pengaruh tidak langsung kepada pasaran bon berdasarkan pelarasan kadar faedah. Inflasi juga mempunyai pengaruh negatif yang besar ke atas pulangan saham bank, membayangkan hubungan melalui teori permintaan wang dan teori kuantiti wang. Kadar pertukaran asing mempunyai pengaruh yang signifikan dan positif ke atas pulangan saham bank, menunjukkan bahawa pendedahan pertukaran asing bank ASEAN telah mempengaruhi pulangan saham kerana kebanyakan sebahagian daripada pulangan saham sensitif kepada perubahan dalam kadar pertukaran sepanjang tempoh itu. Sementara itu, kadar faedah adalah tidak penting dengan pulangan saham bank, membayangkan bahawa sensitiviti kadar faedah tidak memberikan kesan yang besar ke atas saham biasa bank-bank, yang boleh disebabkan oleh kesan pengagihan kekayaan yang dicetuskan oleh inflasi yang tidak dijangka apabila bank-bank mempunyai aset yang nominal dan liabiliti nominal. Ia adalah disyorkan bahawa bank-bank di negara ASEAN harus melibatkan pelbagai aktiviti di luar lembaran imbangan dan melaksanakan pendekatan yang berkesan dan cekap pengurusan risiko yang mengurangkan pendedahan mereka kepada faktor-faktor makroekonomi.

**Kata kunci**: makroekonomi, pulangan saham, bekalan wang, kadar faedah, inflasi, kadar pertukaran.

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**AHMED JASIM MOHAMMED**
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# LIST OF ABBREVIATIONS

ASEAN – Association of South East Asian Nations

BI – Bank of Indonesia

BNM – Bank Negara Malaysia

BoT - Bank of Thailand

BSP - Bangko Sentral ng Pilipinas

IMF – International Monetary Fund

MAS - Monetary Authority of Singapore

DJIA - Dow Jones Industrial Average

CPI – Consumer Price Index

M – Money Supply

FOREX – Foreign Exchange Rate

**CHAPTER ONE**

**INTRODUCTION**

**1.0 Background**

Investment is simply regarded as funds' commitment. In investment, portfolio managers or investors struggle with determining the value of a specific financial asset that is invested on for a period; in order to evaluate whether or not the investment is up to its worth. In making decision on the way to allocate funds among various investment opportunities, it deems imperative to properly assess the intrinsic value of the investments by comparing the estimated value with the main market prices. In regards to the issue of estimating financial asset value, numerous valuation approaches for estimation have been formulated over time. These valuation approaches apply numerous inputs such as the expected rate of return, risk premium, cash flow, interest rate, inflation rate, exchange rate, growth rate, and sales. These variables that are regarded to be associated with the future returns on investment are seriously influenced by the economic attitude. In addition, based on operating in diverse industries in similar economy, companies have different sensitivities to economic factors such as interest rates, inflation, exchange rates, money supply, and economic growth. Thus, companies' different industry and economic environment should be put into consideration in the process of valuation.

Macroeconomic variables are theoretically considered as the causes of volatility in the stock market. Thus, these variables are considered as the important indicator of stock returns. According to Binder and Merges (2001), market portfolio return volatility is negatively associated with the ratio of required profits to required incomes of the

economy. Furthermore, Nardari and Scruggs (2005) conclude that increase in uncertainty concerning future expected returns is mostly related with recessions. Though, both Moore (1983) and Schwert (1989) regard stock prices as an important indicator, stating that the changes in stock prices occur before the changes in business activities. In studies, the association between stock returns and economic variables has been proven especially in advanced markets. Despite the evidence of significant associations between economic variables and stock returns in both advanced and developing markets, there is so far no agreement concerning neither the causal direction nor signs of association.

## 1.1 Introduction

One of the essential areas in finance and economics is the stock market; and the attempt in predicting its performance has enticed important consideration of various economic and financial analysts representing a popular part of financial studies. Essentially, supply and demand determine the price of a stock (Al-Shubiri, 2010). The amount of shares issued by a firm created supply of stock, while the amount of people who wish to buy the shares created the demand. In this case, sellers and buyers assess information on the company, the industry, the business environment, as well as their own goals of investment (Palepu, Healy & Peek, 2008; NYSE, 2006). The first thing to consider when making a decision on buying or selling a stock is the financial healthiness of the company. Cash flow analysis, ratio analysis and strategy analysis are key liquidity determinants to evaluate the financial healthiness of the firm by considering the previous, current and future performance of the firm (Palepu et al., 2008).

Another essential factor that is considered in firm evaluating is the industrial performance (Palepu et al., 2008). When an industry is declining, investors may wonder why the firm

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is not growing even when it is financially healthy. Adding to the specific industry or firm, general trends signifying fluctuations in the overall political and economic environment will be carefully monitored by the investors. These signals can indicate the healthiness of the economy (NYSE, 2006). Meanwhile, macroeconomic variables measured the performance of the economic environment. There are numerous studies that evaluate the link between stock performance and these variables over a kind of diverse time horizons (Mollick & Assefa, 2013; Abugri, 2006; Asprem, 1989). This study concentrates on how the stock return of the banks is affected by some of these macroeconomic variables specific interest rate, foreign exchange rate, inflation rate, and money supply.

## 1.2 Monetary System in ASEAN

### 1.2.1    Indonesia

The main objective of the central bank of Indonesia (BI) has usually been to attain and sustain its currency (Rupiah) value stability. Before the financial crisis, BI was implementing a swarming peg exchange rate system to attain this objective. The International Monetary Fund (IMF) categorized Indonesia as country implementing a managed floating system at that period. Though, the Rupiah was basically fixed to the US dollar having a fixed depreciation rate that is usually announced once a year. The austere pressure of depreciation during the crisis led to BI abandoning the exchange rate system and adopting an open system in a robust base money targeting context. This was applied to tame inflation and reinstate reliance in the currency. In order to achieve the target of the base money, BI depends on an open market operation instrument by selling BI's certificate.

Institutionally, after the crisis, there was a significant change in Indonesia monetary policy. A new central banking law was enacted in 1999 to establish BI independence. The act gratifies BI to fix a target for inflation each year and the direct monetary policy to actualize it. In other words, due to the act, BI must adopt an inflation targeting framework. Recently, the operating target for attaining BI monetary policy has moved to targeting an interest rate (the 30-days SBI rate) from targeting base money.

### 1.2.2 Malaysia

The main goal of Malaysia's central bank – Bank Negara Malaysia (BNM) is to achieve a price stability that will lead to a supportive environment for promotion of a viable economic activity level. In order to achieve this goal, the strategy of the BNM monetary policy before the mid-1990s had focused on monetary aggregate target. The strategy was not officially known to the public that the daily volume of money market liquidity was influenced by BNM in order to be in line with the target of monetary growth. Instability of targeted monetary aggregates was created by large capital inflows and its contrary in the early 1990s (Cheong, 2005). Therefore, BNM moved its concentration to interest rate targeting from monetary targeting in the mid-1990s. BNM applies the 3-month interbank rate to achieve the operational policy target. In regards to the exchange rate system, IMF categorized BNM as using a managed floating system. The exchange rate of Malaysian Ringgit is allowed to be free in some unexpected band and the BNM mediate when it is necessary.

In reaction to the financial crisis Asian, the exchange rate of Ringgit was fixed towards the end of 1998 along with an obligation of a selective capital control so as to offer a

better monetary autonomy to BNM in manipulating domestic interest rate in order to aid the recovery of the economy (Kim & Lee, 2004). Though, BNM shifted back to the adoption of a managed float exchange rate system in July 2005.

### 1.2.3 Singapore

The Monetary Authority of Singapore (MAS) has a major goal of stimulating price stability in order to ensure low inflation rate as a complete foundation for a sustainable economic development. In achieving its goal, a unique monetary policy framework is adopted MAS by focusing on management of exchange rate relative to managing the interest rate or the money supply. The Singapore dollar exchange rate has been managed by MAS since 1981 against an unidentified trade-weighted bag of currencies of Singapore's main trading competitors and partners (Parrado, 2004; McCallum, 2006). The structure of this bag is being occasionally reviewed in order to be in line with the changes in the trade patterns of Singapore. However, they did not disclose the facts regarding the index as well as the limits of the target bands. The level of any depreciation or appreciation rest mostly on the anticipated inflationary pressures and the MAS interferes in the foreign exchange market in order to avert extravagant changes in the exchange rate.

The rationalization behind this exclusive behavior lies mainly on the features of the economy of Singapore which is small and open. In this type of case, the exchange rate is considered to be a perfect intermediary target for monetary policy in order to uphold price stability. The high financial openness level and capital flow sensitivity to interest rate disparities makes it challenging to target either interest rates or money supply in

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Singapore. Net cash flows from abroad explain the bulk of changes in local money supply and local interest rates are mostly determined by both foreign rates and market anticipations on the future influence of the Singapore dollar.

### 1.2.4    Thailand

The Bank of Thailand (BoT) does not specify a major goal in its act. Though practically, upholding financial and monetary stability to accomplish sustainable economic development has constantly been the main objective of the BoT. In addition, BoT made the announcement in May 2000 that they are adopting an explicit inflation.

In order to attain its objective, the framework of BoT's monetary policy could be divided into three different incidents. Prior to the 1997 financial meltdown, the adoption of the pegged exchange rate system was the anchor of BoT's monetary policy (Phuvanatnaranubala, 2005). However, the announcement of the value of Thai Baht against the US dollar was usually done and defended on a daily basis.

Due to the breakdown of the 1997 financial crisis, BoT has been forced to float the exchange rate and adopt the monetary targeting system for achieving its monetary policy. Based on the pegged exchange rate previously adopted by the BoT, the management of the liquidity was also done on a daily basis in order to avoid excessive liquidity and interest rate volatility in the financial system. An extensive reassessment of both the external and domestic environment was made in May 2000, and decided to change to the adoption of inflation targeting framework in steering its monetary policy (Devakula, 2001, Phuvanatnaranubala, 2005). The main reason for the move was a valuation that the association between the money supply and growth output is unstable, particularly after

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the main crisis when there is uncertainty in the credit extensions and rapid changes in the financial sector in Thailand. Based on this framework, the monetary policy of BoT is implemented by manipulating short-term money market rates through its main policy rates, the 14-day repurchase rate.

### 1.2.5 Philippines

The main goal of the monetary policy of the central bank of the Philippines (Bangko Sentral ng Pilipinas – BSP) is to maintain the stability of price that favorable for a stable and a sustainable economic growth. BSP achieved its independence in monetary policy in 1986. Beginning from January 2002, BSP officially announced the adoption of an inflation targeting context for its system of monetary policy. Regarding the exchange rate system, BSP is classified as an independent floater.

In order to attain its monetary policy main objective, BSP adopted a stringent monetary targeting framework till the middle of 1995. This is due to the observed stable and foreseeable association between the ultimate target and the monetary target of monetary policy. The operational goal was to achieve M3 by influencing the base money as the instrument of the policy. When this observed stable association started to be debatable, BSP steadily changed its framework of monetary policy in 1995. The innovative monetary policy framework adopted during that period was aimed to accompaniment the aggregate monetary targeting adding some method of inflation targeting, and gradually placing additional weight on the latter. Based on the changes, the instrument for policy was also progressively attuned to interest rate targeting from quantity targeting.

**1.3 Problem Statement**

Most economists and financial analysts conclude that the bank costs, revenues and profitability are directly affected by unanticipated changes in the money supply and interest rates (Choi & Yoon, 2015; Chude & Chude, 2013 Kasman et al., 2011; Saunders & Yourougou, 1990). Due to the process of globalization and liberalization of the financial market, the majority of the banks typically performs their operations in overseas and usually face exposure to interest rate risk due to the volatile conditions of financial markets in present years. Thus, changes in interest rates, foreign exchange rate, inflation rate and money supply could have a negative influence on the bank viability since their influence cannot be removed through methods of risk management (Gilkenson & Smith, 1992).

The exposure of banking institutions to changes in money supply, interest rate risk, foreign exchange rate, and inflation can be reduced through the implementation of effective and efficient methods of risk management and involving in numerous off-balance sheet transactions (Kasman et al., 2011). However, there is more vulnerability on the part of financial institutions in developing countries because of their insufficiency in such techniques and instruments. It is not amazed that severe financial crises often occur in these countries. Therefore, it is imperative and worthy to examine the effect of money supply and interest rate on the stock return of the banks in ASEAN since most of the countries under this association are developing countries, and the findings can have significant effects on policy formulation and financial stability of banks and regulatory authorities in ASEAN.

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 the public as it is the key

attribute giving the adverse impact of bank and causing the failure of numerous banks. Exchange rate and interest rate changes could have a  negative effect on the banks viability as this impact could only be reduced but couldn't be avoided through risk management techniques (Gilkenson & Smith, 1992). Many new banks have been setup during the economice 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 compared to other developed countries. Thus, the 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 a 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).

In spite of the clear necessity to understand the influence of money supply and interest rate on the stock return of banks, only limited studies examined overtly the joint relationship of money supply and interest rate on stock returns of banks and its volatility in the case of developing markets (Adam & Tweneboah, 2008; Al-Sharkas, 2004; Maysami et al., 2004). Though, many of the research on this problem only focused on developing markets (Choi & Jen, 1991; Laurenceson, 2002; Gunsel & Cukur, 2007; Humpe & Macmillan, 2007). Therefore, the goal of this research is to add to the related studies by examining the effect of interest rate and money supply on bank returns applying data from the major markets in ASEAN from 2004-2014.  ASEAN stock

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markets are of interest because of the increased economic cooperation in accordance with the ASEAN agreement, the successful financial reform, and the distinguished structure of emerging stock markets.

## 1.4 Research Questions

1. How does the interest rate affect the stock returns of banks?

2. How does the foreign exchange rate affect the stock returns of banks?

3. How does inflation rate affect the stock returns of banks?

4. How does money supply affect the stock returns of banks?

## 1.5 Research Objectives

1. To examine the influence of money supply on the stock returns of banks.

2. To examine the impact of interest rate on the stock returns of banks.

3. To investigate the influence of the inflation rate on the stock returns of banks.

4. To evaluate the effect of foreign exchange rate on the stock returns of banks.

## 1.6 Significance of the study

This study will be of importance to other researchers, policy maker, and practitioners within and outside the region of ASEAN. This study will be useful for research because it contributes to the body of knowledge of banking studies, especially on the relationship between macroeconomic variables and bank stock returns. The result of this empirical research is useful to other researchers. It is advantageous due to its contribution to the body of knowledge especially on the association between macroeconomic variables and

bank stock return. This study also provides evidence of the relationship between money supply, interest rate, inflation rate and foreign exchange rate with bank stock returns in ASEAN. This study will be of importance to policy makers because it will facilitate the formulation of policies regarding macroeconomic variables in banking, and also to promote, effective risk culture through enforcing the implementation of an effective risk management on banks for creation of measures and prevention against any possible threat of financial crisis on the economy. It is of importance to practitioners by showing the value of macroeconomic variables on bank performance, and enables them to improve their risk management practice.
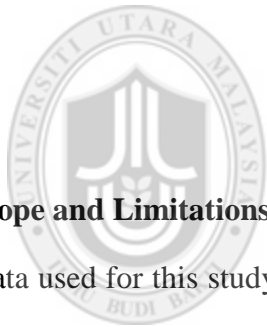
## 1.7 Scope and Limitations of the study

The data used for this study are limited and applicable to conventional commercial listed banks in ASEAN. The data consists of 58 banks from six countries (Malaysia, Indonesia, Singapore, Thailand, Philippines, and Vietnam) for the period 2004 to 2014.

However, the results and the recommendations are useful for both financial and non-financial firms, governments, financial analysts, researchers, managers, accountants and stakeholders and all other interested users.

**1.8 Organization of the study**

**Chapter 1**: contains the introduction, background of the study, problem statement, research   questions and objectives, significance of the study, and scope of the study.

**Chapter 2**: focuses on the literature reviews of previous researches that relate to this study. Further, this chapter provides a review of literature which is related to clarifying financial theory regarding relationship between economic factors and stock returns.

**Chapter 3**: Discusses the methodology which includes the research design.

**Chapter 4**: provides pattern and the analysis of the findings and interpretation of data to answer the objectives of the study. The discussion that includes the result between the dependent variables and independent variables with the results of hypotheses tested is presented. Lastly, a summary of results can be obtained at the end of this chapter.

**Chapter 5**: Discusses the summary of the findings, recommendations followed by limitations and future research.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

An insight on what this study entails was given by previous chapter through expatiating on the views of researchers on interest rate, foreign exchange rate, inflation rate and money supply and their effect on bank stock returns. However, this chapter provides an overview of the findings of previous researches on interest rate, foreign exchange rate, inflation rate and money supply and their effect on bank stock returns. The purpose is to develop the expected relationship between these three macroeconomic variables (interest rate, foreign exchange rate and money supply) and bank stock returns. This chapter is divided into sections. Section 2.1 gives an overview of economic growth and financial liberalization in ASEAN. Section 2.2 gives a summary of the ASEAN stock market. Section 2.3 expressed past studies on the influence of interest rate on bank stock return. Section 2.4 discussed in the earlier studies on the effect of foreign exchange rate on bank stock return. Section 2.5 discussed the previous studies on the relationship between inflation rate and bank stock return.

## 2.1 Economic Growth and Financial Liblarization in ASEAN

A remarkable record of constantly high economic development for ASEAN in the last two decades merits contemplation. ASEAN has demonstrated as leading economic power house and the fastest growing economic regional block in the world. From 1987-1992,

ASEAN real GDP growth rate has remarkably ranged at averaged of 7.3%. The ASEAN growth rate of 7.3% was significantly above the 2.3% experienced by developed market economies, exceeded the North America of 2.5%, surpassing the world average of 2.2% (Tongzon, 1998). For Thailand, Singapore and Malaysia, the GDP growth rate was at 9%. Indonesia and Philippines achieve 6.6% and 3.3% respectively (Chia & Pacini, 1997). Meanwhile, ASEAN total GDP growth from 2001-2013 is 313% which surpasses that of Australia (294%), European Union (100%), India (257%), Japan (20%), Korea (137%), Taiwan (65%), and United States (57%) (Asia Matters for America).

The financial liberalization policies are undertaken in earnest in this region since the early 1970s contribute to the economic boom in ASEAN (Ariff, 1996; Chia & Pacini, 1997). These reforms attempted to expand the domestic capital mobility, as well as, to induce an inflow of international capital. Liberalization in the financial sector of Malaysia and Singapore started as early as 1973. The reform of their financial sectors was executed by opening markets to international influences, removing restrictions on the deposit interest rate, and abolishing the current and capital account restrictions. Similar reforms were undertaken a decade later in Indonesia, the Philippines, and Thailand. In the mid1980s Indonesia and Thailand took steps toward full financial liberalization by removing the interest rate ceiling and opening the current and capital accounts. In the early 1990s, the ASEAN countries have implemented another wave of liberalization policies. Both Malaysia and Singapore focused on the growth in capital markets; an investor protection was provided in Malaysia, and a preferential tax treatment for investors was provided in Singapore. In 1988, Indonesia adopted a policy to develop financial institutions and improve deposit yields. Thailand embraced a banking reform in

1990 by expanding the scope of banking business and liberalizing branches. Concurrently, the Philippines passed a new foreign investment law that allowed up to 100% foreign ownership in selected companies and eliminated all regulations on foreign exchange restrictions. In all, sequenced and gradual reforms in both real and financial sectors have improved the efficiency of the financial systems in these ASEAN countries.

## 2.2 The ASEAN Stock Market

The globalization of the capital forming process introduces a unique challenge to the ASEAN capital markets. In the early 1980s, when the ASEAN stock markets took off; funds from depressed European countries and recession-bound Japan were tempted by the high-profit margin from these markets. Between 1993 and 1996, money managers from the United States, Europe, and Japan pumped short-run credit into the ASEAN region and, consequently, heated the economies of Thailand, Indonesia, and Malaysia. The total foreign investment inflow into the "Asian-Gang of Five" (Indonesia, Malaysia, the Philippines, Thailand, and Korea) skyrocketed during the period of 1988-1991 and 1993-1996 up to almost S70 billion (Biers, 1998). This high inflow volume of foreign investment, as well as financial liberalization and deregulation undertaken domestically, had created a boom in ASEAN capital markets.

All of the market trading systems involve continuous trading; all listed securities are available for trading during the entire time the market is open for trading. This allows market participants to obtain more accurate information regarding the price quotations and trading volume. Short sales and insider trading are not permitted on any of the ASEAN markets. Traded securities do not result in immediate delivery. Instead, the

number of days required for settlement, delivery and payment of a market trade varies from three business days in Thailand to seven business days in Malaysia and Singapore. Regarding foreign investment, each market maintains separate regulations governing foreign investment, including the repatriation of income and capital. There are no significant restrictions on foreign investors purchasing shares in Malaysia and Singapore. Some restrictions on foreign investment in Indonesia and Thailand indicate that a special restriction regarding registration ownership applies to foreign investors. In the Philippines, foreign investors are allowed to trade exclusively in a certain class of stocks designated for foreigners.

Over the last two decades, the size of stock market exchanges has increased, making the ASEAN countries economy to grow tremendously. Based on the World Stock Exchange Fact book, 1997, Indonesia experienced the greatest percentage increase in market capitalization of 816.38%. Malaysia's growth rate for the same period was 360.20%, the Philippines 637.66%, Singapore 83.6% and Thailand by 211.81%. The increase of market capitalization arose from both price appreciation of listed firms and significant increases in the number of firms listing their securities on the exchanges. This immense growth in market capitalization can be characterized as the emerging market phenomenon. However, is the ASEAN stock market crash in July 1997 brought all markets in this region into a collective financial crisis. This contagious effect suggests that stock markets in the ASEAN countries are closely linked.

Price (1994) presents the risk ratings of these markets from International Country Risk Guide (ICRG). The ranking takes into account political, financial, and economic issues. At the end of 1992, the Philippine stock market was considered the least attractive with

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respect to the aforementioned considerations, followed by the Indonesian and Thai markets. Palac -McMiken (1997) also derives ASEAN stock market risks and returns from the investment return and market volatility. He stressed that the Indonesian stock market bears the highest risk and return. The returns to both the Philippine and Thai stock markets are roughly at the same level, but the Thai market carries much less risk, making it comparatively more attractive to investors. The low risk in the more advanced markets of Malaysia and Singapore is accompanied by a low return. In this study, the rank for risk and return across ASEAN stock markets calibrated by Palac-McMiken (1997) will be referred to as the characteristics of these stock markets.

ASEAN has, further economically, expanded its business based by the establishment of the ASEAN Economic Community (AEC) in 2009. The seven countries of ASEAN exchange and the stock markets were established. This has resulted in the combination of 3,613 firms listed in seven stock markets with a market value of 1,980.3 billion $ or ranked eighth in the World Federation of Exchanges (2013).

## 2.3 The Relationship between Money Supply and Bank Stock Returns

Earlier studies on the relationship between money supply and bank stock returns largely indicate that changes in the growth rate of the money supply could be used as a major indicator for changes in stock price, while subsequent studies questioned these studies (Reilly & Brown 2006).

A twofold association between the stock market and macroeconomic factor volatility was examined by Beltratia and Morana (2006). They found that the unconnected variations in the monetary policy that affect the money growth and interest rate volatilities, appears to

be the main reason for the disruptions in stock returns volatilities and thus explain the degree and discrete obstacles in volatility. In addition, despite the volatility of stock market influencing the volatility of macroeconomic factors, the direction of causality is robust from macroeconomic factor to the volatility of the stock market. The study of Flannery and Protopapadakis (2001) on the NYSE-AMEX-NASD showed that the money supply is a strong candidate for risk factor. The aggregate of money (generally M1) influences both conditional volatility and returns. Errunza and Hogan (1998) found that volatility of money supply does Granger cause volatility of returns in France and Germany, but does not in Belgium, Switzerland, UK, Netherlands, and Italy.

Humpe and Macmillan (2007) found that money supply significantly and negatively influenced the stock prices in Japan, but positive and insignificant with US stock prices. Širucek (2013) that study the effect of money supply on the stock indices of US capital market during the years 1967-2011 through the Dow Jones Industrial Average (DJIA) found that there is a significant positive relationship between money supply and US stock price under the years reviewed. Choi and Yoon (2015) examined the association between Korea and US money supplies fluctuation and the Korean stock market volatility. They found no relationship between the variables, indicating that the flow of information to the market is not influenced by any changes in money supply.

There are mixed results regarding the studies of emerging markets. Muradoglu and Metin (1996) empirically found that money supply and stock returns are positively related in a short run dynamic model. Furthermore, Muradoglu et al. (2001) found that there is no cointegrate association between monetary factors and stock prices for the periods reviewed. The study of Maghayereh (2002) examined the Amman Stock Exchange; he

found that the money supply (M1) has a negative insignificant relationship with stock returns. Moreover, Karamustafa and Kucukkale (2003) found that money supply has insignificant relationship and does not Granger cause stock price.

Meanwhile, Al-Sharkas (2004) and Maysami et al. (2004) found a positive significant relationship between money supply and stock returns in Jordan and Singapore respectively. Nishat and Shaheen (2004) showed that money supply and the index of Karachi Stock Exchange are cointegrated with a two long-term equilibrium associations existing between the two variables. It also indicates that the money supply does Granger cause stock price.

Yildirtan (2007) revealed that ISE 100 Index is positive and significantly affected by an increase in the money multiplier. Abugri (2008) found that changes of stock returns to money supply significantly negative in Argentina and Brazil, while the changes of stock returns to money supply is insignificant in Chile and Mexico. Though, Tursoy et al. (2008) and Kandir (2008) showed in their respective studies that there is an insignificant relationship between money supply and stock returns. Ozturk (2008) findings showed that stock returns Granger cause money supply, but money supply does not Granger cause stock returns. Ozbay (2009) indicate that there is insignificant association between money supply and bank stock returns; implying that bank stock returns is not affected by money supply. Cagli, Halac and Taskin (2010) found that there is no co-integration between stock prices and money supply in the Turkish market. Chude & Chude (2013) examine the link between money supply and stock return in Nigeria. They found that money supply and stock return in Nigeria have a positive long run relationship.

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## 2.4 The Relationship Between Interest Rate and Bank Stock Returns

It is expected that there should be a negative relationship between interest rates and market returns either by the effect of discount factor or inflation (Ozbay, 2009). The study of Flannery (1981) applying the cash flow method with bank stocks found that they are not influenced by the fluctuations in interest rates because the changes does not significantly influence profits and costs.

Previous empirical research on the sensitivity of banks' interest rate consist of the studies of Bae (1990), Scott and Peterson (1986), Booth and Officer (1985), Flannery and James (1984), Chance and Lane (1980), Lynge and Zumwalt (1980), Lloyd and Shick (1977), and Stone (1974). By applying a two-index factor model that includes both interest rate and market factors in the bank stock returns using the theory of constant variance error terms, their findings was only different based on the level and the direction of the impact. The empirical studies of Chance and Lane (1980) and Lloyd and Shick (1977) showed a weak proof of interest rate influence on the stock return of the financial institutions. However, Bae (1990), Scott and Peterson (1986), Booth and Officer (1985), Flannery and James (1984), and Lynge and Zumwalt (1980) found that interest rates negatively influence stock returns.

Choi and Jen (1991) found that interest rate and market risk are significantly related to common stocks. The findings imply that the interest-rate risk for a large firm is negative while the interest-rate risk for smaller firms is positively significant. The findings also indicate that the interest-rate risk premium clarifies a significant part of the changes in expected returns between the bottom quintile and top quintile of the MEX and NYSE firms. Ryan and Worthington (2002) examined the relationship between interest rate bank

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stock returns in Australia by dividing the interest rate into three parts which include short, medium and long-term. The findings indicate that interest rate-risk is a significant determinant of bank stock returns, alongside short and medium term interest rate volatility and levels. However, there is no significant relationship between long-term interest rates and bank stock returns. Humpe and Macmillan (2007) also found that both Japan and US stock prices have a negative relationship with long term interest rate.

The relationship between interest rate and stock returns has also been studied in emerging markets. Al-Sharkas (2004) and Adam and Tweneboah (2008) found a negative significant relationship respectively in Jordan and Ghana respectively. Maysami et al. (2004) found that short and long-term interest rates have positive and negative significant relationship with stock market in Singapore respectively. The findings of Abugri (2008) found that the effect of interest rates on stock returns is significantly negative in Argentina, Chile, and Brazil, but insignificant in Mexico. The findings of Muradoglu and Metin (1996) showed that stock returns is significantly and negatively affected by interest rates growth.

Yildirtan (2007) finds that interest rate differential and real interest rate have a very weak negative relationship with returns. The study of Kandir (2008) on stock portfolios found that interest rate have a negative influence portfolio returns. Meanwhile, Tursoy et al. (2008) find that interest rate and stock returns are insignificantly related. Ozturk (2008) found that lagged overnight interest rate does Granger-cause stock return, but stock return does Granger-causes overnight interest rate and treasury interest rate. Most studies for both emerging and developed markets indicate a negative association between interest rate and stock returns, which are in line with the assumption.

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## 2.5 The Relationship Between Foreign Exchange Rate and Bank Stock Returens

The study of Agrawal et al. (2010) is between stock returns and the changes in the value of Indian Rupee, the findings showed a small negative influence on stock returns. Chkili and Nguyen (2014) evaluate the relationship between exchange rate and stock prices in the system-switching environment. The exchange rate effects to stock market return is insignificant for the BRICS countries (Brazil, Russia, India, China, and South Africa), representing the five main emerging economies based on economic growth and stock market development. The findings indicate that stock markets in BRICS countries are not influenced by exchange rate, irrespective of the regimes. Caporale, Hunter and Ali (2014) studies the changes the period of instability of the exchange rate applying statistics from six developed economy on before and during the disaster period, and arriving at the same conclusion for together United Kingdom and United States during the crisis age. But, some empirical studies also show evidence of a theoretical relationship between stock performance and exchange rates. Kurihara (2006) evaluates the association between stock prices and macroeconomic variables. The findings show that exchange rate significantly influence stock prices.

The studies of Chen, Naylor and Lu (2004), Sharma and Mahendru (2010), Pan, Fok and Liu (2007), and Phylaktis and Ravazzolo (2005) found an important causalty relationship since exchange rates to returns. Also for bot Yang, Tu and Zeng (2014) showed that greatest stock markets and FX markets are negatively related in the market for nine markets Asian for 1997-2010. More and Wang ( 2014) also catches that there is bad

relationship among real exchange rates and stock prices for the stock market in the United States relatively to the emerging and developed Asian markets. Can Inci and Soo Lee (2014) evaluate the relationship among fluctuations in exchange rate and stock returns in five main countries in Europe and show causal relationship from fluctuations in the exchange rate to stock returns. They concluded that the relationship has been very important and more robust in the time of recession and in recent years relatively to expansion and former periods.

Based on observation, it shows that there are mixed empirical findings. Some researchers make an attempt to explain the cause of these findings with concentration the business level. For the examines Can Inci and Soo Lee (2014) stressed that industrial examination of relationship between exchange rate and returns of the stock is necessary because of the industrial variations and there might be more relevant to exposures at level of sector. Al-Shbooul and Aniwar (2014) using the data weekly from 2003 – 2011 to evaluate the exposure to exchange rate Canadian industries. Their study shows significant in four out of thirteen industries examined. Olugbode et al. (2013) evaluate exchange rate and the sensitivity of thirty-one non-financial sectors in United Kingdom during the period 1990-2006, and finalized that competitive sectors are hardly influenced relatively to other sectors, which is consistent with the view of Aray and Gardeazabal (2010). Miao et al. (2013) evaluate the impact of changes in the exchange rate on the return for the stock 16 industries in China and show proof from seven sectors out of the sixteen sectors.

**2.6 The Relationship Between Inflation Rate and Bank Stock Returns**

The findings of Humpe and Macmillan (2007) on the influence of macroeconomic variables on Japan and US stock returns show that there is a long-term association between stock markets and consumer price index in both US and Japan. However, only US indicates a negative relationship between stock market and consumer price index. They also claimed that consumer price index and industrial production are negatively related in Japan. These variations in findings may be related to the financial crisis that affects Japanese economy in the 1990s which lead to a liquidity trap. Gunsel and Cukur (2007) found similar findings when they found that there is an insignificant relationship between stock returns and unexpected inflation. This is because it has been predicted by the market and it has been incorporated into the stock prices prior to the announcement. Flannery and Protopapadakis (2001) find that consumer price index (CPI) strongly influence NYSE-AMEX-NASD.

In addition, Frimpong (2009) found that macroeconomic variables applied and Ghana stock markets are significantly and negatively related. However, a positive relationship between inflation and stock returns is also found by other researchers such as Abdullah and Hayworth (1993) and Kandir (2008). Abdullah and Hayworth (1993) stressed that the positive association between the two variables is because equity is used to hedge inflation. Meanwhile, Kandir (2008) revealed that the rate of inflation is only significant in three out of the twelve portfolios examined. He made an attempt to use the equity returns as a hedge against the macroeconomic variables. Hoguet (2008) finds empirical evidence between declining stock price and high inflation, implying a negative association between stock return and inflation. Naka, Mukherjee and Tufte (1998) found

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that the largest factor of stock prices in India is inflation. Chen (2005) also finds that stock return is not predicted by inflation.

Fama and Schwert (1977) find that the expected and unexpected inflation rate component and common stock returns in the USA are negatively related. Fama (1981) assume that the negative relationship inflation and the real stock returns perceived in post-1953 period leads to proxy effects. More related real variables determined stock returns, and negative stock return-inflation relationship is caused by negative relationship between real activity and inflation. Saunders and Tress (1981) find that inflation and nominal stock return of Australia are significantly and negatively related, indicating that stocks are very poor in hedging inflation for shareholders. Moreover, the findings imply a major unidirectional correlation between stock returns and inflation, as charges of price level lead equity index during the period. Gultekin (1983) finds that the association between inflation and stock returns are unstable over the period and their variations among countries irrespective of either emerging or developed markets

Similar to the findings in developed markets, the study of Nishat and Shaheen (2004) in Pakistan showed that the largest determining factor of stock prices is inflation. They also found that inflation does Granger-causes the movements of stock price in Pakistan. Al-Sharkas (2004) and Maghayereh (2002) also find a strong negative association between inflation and stock prices in Jordan. Al-Abadi and Al-Sabbagh (2006) find that anticipated inflation has a negative significant influence, while unanticipated inflation is insignificantly influence on bank stock returns.

However, some studies such as Firth (1979), Maysami et al. (2004) and Adam and Tweneboah (2008) find a positive significant relationship between stock returns and

inflation. Their findings indicate robust contrary empirical evidence from other studies indicating a negative relationship. The findings of Muradoglu and Metin (1996) imply that negative relationship between inflation and stock prices occurs when the model include other monetary variables. Ozturk (2008) finds that there is no causal association between stock returns and inflation. Tursoy et al. (2008) find that stock return and inflation are insignificantly related. Rjoub et al. (2009) find that unexpected inflation and constructed portfolio returns are positively related.

Li, Narayan, and Zheng (2010) find that unanticipated increase in inflation rate would negatively affect the stock market, which will lead to decrease in stock prices and stock return. Unanticipated inflation may occur during economic recession, which occurs unexpectedly. However, expected inflation occurs when the movement of future or current economy can be predicted.

Most of the previous studies found a positive association between stock returns and expected inflation, while a negative association between stock returns and unexpected inflation also occur. This indicates that, the influence between stock returns and expected inflation may be significant compare to stock returns and unexpected inflation.

## 2.7 Summarizing of the Literature Review

| No | Author, year | Type of data | Variables | Empirical | Comments |
|---|---|---|---|---|---|
| 1 | Andrew (2002) | Time-series (1996-2001) | Interest rate, market index , Foreign exchange rate | GARCH-M | Long-term interest rates do not appear to be significant to the Australian bank return. |
| 2 | Ozbay (2009) | Time – series (1998 to 2008) | Interest rate, real economy, inflation, foreign exchange | Granger causality model | Macroeconomic factors by using stock returns is somewhat stronger to predicting stock returns by applying macroeconomic variables. |
| 3 | Agrawal et al (2010) | Time series (2007-2009) | Stock returns, exchange rates | Granger Causality test | Which proved unidirectional causality running from stock returns to exchange rates. |
| 4 | Kasman et, al (2011) | Panel data (1999- 2009) | Interest rate, FX,  MRK | OLS and GARCH | Bank stock return sensitivities are found to be stronger for market return than interest rates and exchange rates |
| 5 | Foong, et al (2012) | Monthly data (2006-2010) | BS,MR,MS,EX,IR,IPI,CPI | Multi factor model | The exchange rate is affecting all the bank stock returns while the money supply is giving the biggest effect on bank stock returns. |
| 6 | Badrudin (2009) | Panel data (1973 -2007) | Bank stock return, money supply, Lones, deposit reserves | Generalized Method of Moments (GMM) | Banks important in the development of the growth of money through loan creation of the money supply and bank stock price formation. |
| 7 | Širucek (2013) | Time series (1967-2011) | IPI,CPI.PPI, MS | Time line analysis, unit root, Granger causality | M2 is not a significant factor in the development of the speculative bubble, while the money supply represented by the MZM aggregate is an important determinant of this bubble. |
| 8 | Flannery (1981) | Panel data (1959- 1978) | Interest Rate, revenue, bank stock | Regression model | Large banks effectively hedged themselves against market rate risk by assembling asset and liability portfolio with similar average maturities. |

| | | | | |
|---|---|---|---|---|
| 9 | Yang (2014)& Moore (2014) | Period (1997 – 2010) | Indicate that most foreign exchange markets and stock markets are negatively correlated for nine Asian markets | |
| 10 | Stone (1974), Lloyd and Shick (1977), Lynge and Zumwalt (1980), Chance and Lane (1980), Flannery and James (1984), Booth and Officer (1985), Scott and Peterson (1986), and Bae (1990) | | By employing a two-index factor model (including both market and interest rate factors) on the bank stock returns. | Stock returns of financial institutions were negatively affected by interest rate changes. |
| 11 | Lintner (1965),Hoguet( 2008), Naka, Mukherjee and Tufte (1998),Frimpong (2009) | | The Negative relationship between inflation and stock return because an increase in the rate of inflation is accompanied by both lower expected earnings growth and higher required real returns. | |

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

The goal of this study is to find experiential evidence on the connection between bank stock return and macroeconomic variables in the context of ASEAN; and the data and the empirical method applied to carry out this study are explained in this chapter. ASEAN consists of the ten countries which include Malaysia, Indonesia, Singapore, Thailand, Philippines, Vietnam, Brunei, Cambodia, Myanmar, and Laos. However, this study only collects from six out of these ten countries (Malaysia, Indonesia, Singapore, Thailand, Philippines, Vietnam) since the other four countries (Brunei, Cambodia, Myanmar, Laos) do not operate an established stock market.

## 3.1 Data Descriptions

A panel data approach is used in this study to find the practical evidence between the link between money supply and bank stock return in ASEAN. The economic and bank data collected from the six countries are a yearly data from the period 2004- 2014.

**Table 3.1 Sample periods used in each country**

| Country | Sample periods |
|---|---|
| Malaysia | 2004 – 2014 |
| Singapore | 2004 – 2014 |
| Thailand | 2004 – 2014 |
| Indonesia | 2004 – 2014 |
| Philippines | 2004 – 2014 |
| Vietnam | 2007 – 2014 |

## 3.2  Sources of Data

The data for this study was retrieved from the DataStream and World Bank data archive. Bank stock returns were retrieved from the DataStream while macroeconomic variables were retrieved from World Bank data archive. These consist of 58 banks from six countries. The banks are depicted in appendix 1.

**Table 3.2 Number of banks**

| Country | Number of banks |
| --- | --- |
| Malaysia | 8 |
| Singapore | 3 |
| Thailand | 9 |
| Indonesia | 19 |
| Philippines | 13 |
| Vietnam | 6 |

## 3.3  Definition of the Variables

### 3.3.1    Dependent Variable

**Bank stock returns:** The dependent variable for this study is the bank stock returns. Previous studies have shown that some important factors determine stock return, however the exact amount cannot be ascertain (Foong et al, 2012).  According to Ihsan et al. (2007), the general understanding is that systematic financial and economic news influence stock return. In addition, Butt et al. (2010) also stressed that a number of various direct or indirect factors that predict a significant part of stock returns have an influence on stock returns. The Association of the Southeast Asian Nations (ASEAN) economies are highly diverse economically, financially and socially in regards to culture, resource endowment, historical background, size and levels of economic development; but they are all market-based economies with a high degree of export dependence which

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economic integration is rationalized by a large ASEAN market, in the form of ASEAN Free Trade Area (AFTA) (Wongbangpo, 2000). Therefore, the economy performance of these countries is significantly sensitive to the developments within and outside their borders. When economies of these countries turn down, the performance of the stock markets in these associations will be affected (Foong et al., 2012).

### 3.3.2 Independent Variables

**Money Supply:** it is the aggregate quantity of money accessible in an economy. Money supply is divided into M1 and M2. In the case of a restrictive monetary policy, reducing the growing level of money supply will lead to a decrease in the supply of fund and expansion of businesses. A restrictive monetary policy would raise market interest rates and increases firm's cost of capital (Foong et al., 2012; Chude & Chude, 2013; Choi & Yoon, 2015). However, a decrease in money supply might cause in the lower inflation, hence the lower required rate of return, though the lower interest rate (Foong et al., 2012; Chude & Chude, 2013; Choi & Yoon, 2015). Financial scholars and economist are highly determined to know whether stock return is affected by money supply, and many studies have proven that it does (Keran, 1971; Pesando, 1974, Chen et al., 1986; Fama, 1991; Arestis & Demetriades, 1997; Priestly, 1996; Choudhry, 1996; Omole, 1999; Cassola & Morano, 2004; Van Nieuwerburgh et al., 2006; Gan et al., 2006; Ikoku, 2007; Gay, Jr., 2008; Vazakidis & Adamopoulos, 2009; Maku & Atanda, 2009; Osisanwo & Atanda, 2012).

Any changes in money supply have a close relationship with stock price fluctuation, a direct influence on stock market, and an indirect influence on bond market based on the adjustment of interest rates (Choi & Yoon, 2015). When the decrease in real interest rates is as a result of the increase in money supply, investors will anticipate an increase in stock returns (Christopher et al., 2006, Chude & Chude, 2013). However, stock prices will be affected negatively when money supply increases excessively because it could induce inflation. Therefore, the stock market volatility can be increased by money supply (Choi & Yoon, 2015).

**Interest Rate:** 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). In some years now, the globalization and liberalization of financial markets have triggered exposure to many sources of risk. The influence of interest rates and money supply on banks' stock returns has been of main concern to regulatory authorities, bank managers, investors and academic communities, since the failure of numerous banks has been specifically attributed to the adverse influence of their fluctuations especially interest rates (Kasman, Vardar & Tunc, 2011; Elyasiani & Mansur, 2004).

Several hypotheses and models can theoretically explain the influence of changes in interest rates and exchange rate on bank stock returns (Kasman et al., 2011). Primarily, based on Merton's (1973) Intertemporal capital asset pricing model (ICAPM), interest rate risk can be included in ICAPM as a possible additional market factor, as a change in the interest rate can signify a change in the set of investment opportunity. As a result of

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this, investors need extra compensation for risk bearing due to the changes. Similarly, the consequences of APT can give evidence may be interest rate or exchange rate are priced factor in the bank stocks' equilibrium price (Sweeney and Warga, 1986). In regards to equilibrium, interest rate and exchange rate sensitivities exert a significant impact on the common stocks of financial institutions, including banks (Kasman et al., 2011; Yourougou, 1990).

Some authors also explain the sensitivity of banks' interest rate on stock return based on the arrangement of their balance sheet by using the nominal contracting hypothesis (Bach & Ando, 1957; Flannery and James, 1984; French et al., 1983; Kessel, 1956). This hypothesis indicates that the sensitivity of banks' interest rate on stock return is determined by the number of net nominal assets the bank held (Kasman et al., 2011). Banks common stock returns are affected by the effect of wealth distribution triggered by unexpected inflation when banks hold nominal assets and nominal liabilities (Kasman et al., 2011). However, since most financial institutions have not completed the process of internalization, there is a high probability that interest rate sensitivity is different among banks. Thus, the financial operations and nationality of banks will influence the degree of the differences.

In addition, this has been proven when some authors (Lloyd & Shick, 1977; Chance & Lane, 1980; Lynge & Zumwalt, 1980; Flannery & James, 1984; Booth & Officer, 1985; Scott & Peterson, 1986; Bae, 1990) use the two-index model (i.e. Both the market and the interest rate factor) suggested by Stone (1974) to examine the bank equity returns based on the hypothesis of constant variance error term. While some authors (Lloyd & Shick, 1977; Chance & Lane, 1980) find that the index of interest rate has a little contribution to

the process of generating stock returns of financial institutions, some other authors (Lynge & Zumwalt, 1980; Flannery & James, 1984; Booth & Officer, 1985; Scott & Peterson, 1986; Bae, 1990) uniformly find that the index interest rate does not contribut to the process of generating stock returns of financial institutions. According to Akella and Chen (1990), these dissimilarities in results can be traced to the variations sample period and interest rate variables, structural changes in the banking sector, and / or model specification.

**Inflation Rate:** The presence of inflation in an economy increases the value of the contingent claims. Therefore, the proportionate increases in prices should not affect the actual rate of equity returns. However, Hong (1977) stressed that the monetary assets of a firm such as cash, debt, securities and receivables are independent of changes in the level of price. Hence, changes in inflation only affected the actual part of the firm.

Surprisingly, studies have shown evidence of a negative relationship between nominal stock return and inflation (Fama & Schwert, 1977; Gultekin, 1983). According to Fama (1981), this negative relationship can be explained through two channels. Firstly, the negative inflation –real activity induced the relationship through the money demand theory and the quantity theory of money, and stock returns have positive relationship with real variables such as output and expenditure as elucidated in the finance theory. Secondly, nominal risk-free rate and discount rate may increase through increase in inflation. This will then decreases stock price as stock price may be regarded as the discounted value of the estimated dividends.

**Foreign Exchange Rate:** The enormous rise in liberalization of capital movements and globalization of trade have position currency value as a determinant factor influencing equity prices and profitability of business (Kim, 2003). The international competitiveness of firms is affected by the fluctuations of exchange rate. It influences firm value since currency values fluctuations leads to the change in future cash flows. The theory of economy suggests that exchange rates fluctuations will lead to change in profitability and investments, reflecting in the financial performance. As a result of this, stock returns are affected by movements in the firm's operations (Agrawal, Srivastav & Srivastava, 2010). This has been proven by previous and often referred research of Dornbusch and Fisher (1980) using a flow oriented model. They stress that the future cash flows, competitiveness and exports of local firms improves when there is depreciation in the value of the local currency. This will lead to increase in prices of stock, as a reaction to the increase in anticipated cash flows. On the other hand, the foreign demand of exporting firms decreases when the local currency appreciates (Cheng, Tzeng & Kang, 2011; Solnik & McLeavey, 2009). This decreases the stock return as well as the profitability. Meanwhile, for a firm that deals in importation its firm value sensitivity to changes in currency is in contrary (Yau & Nieh, 2006).

The volatility of exchange rate can influence both the stock performance of domestic and international firms (Agrrawal et al., 2010). Local firms with not global processes, transactions, liabilities and assets and also face the exposure to changes in exchange rate since the price channels of their input and output, chains of demand and supply or the competitors prices may  be influenced by changes in exchange rate.

Hypothesis clarified that changes in the money qualities impact organization's benefits and henceforth their stock execution. The hypothetical clarification is clear and may appear glaringly evident on occasion, in spite of the fact that the exact results are blended.

The measurements of dependent variable and independent variables of this study are as follows:

| Variable | Measure | Notation | Sources |
|----------|---------|----------|---------|
| **Dependent variable** | | | |
| Stock Return | The return on bank stock | R | Data Stream |
| **Independent variable** | | | |
| Money Supply | Log of money and quasi money | M2 | World Bank |
| Interest Rate | Real interest rate | INT | World Bank |
| Inflation Rate | Inflation rate | INF | World Bank |
| Exchange Rate | Exchange rate | EXRATE | World Bank |

*Based on yearly data

**3.4 Hypotheses Development**

The hypotheses of this study are based on the theoretical framework of this study, which is defined as follows:

**3.4.1   Money Supply (M2)**

The initial studies generally imply that changes in the growth rate of the money supply could serve as a leading indicator of stock price changes, while subsequent studies questioned these findings (Reilly and Brown 2006). Previous studies have also shown evidence that the discrete changes in monetary policy, affect the volatilities of interest rates and money growth, seem to be the best candidate to account for breaks in the volatility of stock returns and therefore to explain the level and discrete jumps in volatility. Furthermore, while stock market volatility also affects macroeconomic volatility, the causality direction is strong from macroeconomic to stock market volatility (Errunza & Hogan, 1998; Flannery & Protopapadakis, 2001; Beltratia & Morana, 2006).

Some studies found a negative relationship between money supply and bank stock returns (Maghayereh, 2002; Humpe & Macmillan, 2007; Abugri, 2008), while some other studies found a positive relationship (Muradoglu & Metin, 1996; Al-Sharkas, 2004; Maysami et al., 2004; Širucek, 2013), and some studies found no relationship (Muradoglu et al., 2001; Ozbay, 2009;  Choi & Yoon, 2015). Based on these various findings, it shows there are mixed results on the relationship and the nature of the relationship between money supply and bank stock returns. Therefore, this study predicts a positive relationship between money supply and bank stock return. The hypothesis for this study of the impact of money supply on bank stock returns is:

*Hypothesis 1*

**H1: There is significant relationship between money supply and bank stock returns.**

**H$_o$:**   $_1 = 0$

**H$_1$:**   $_1$   0

### 3.4.2   Interest rate

However, empirical studies provided that there is substantial evidence for banks' stock returns exhibiting statistically significant negative relationship with interest rates variations (Fama, 1981; Geske & Roll, 1983; Flannery & James, 1984; Brewer & Lee, 1985; Scott & Peterson, 1986; Kane & Unal, 1988; Saunders & Yourougou, 1990; Kwan, 1991; Akella & Greenbaum, 1992; Choi et al., 1992).

It has been stated earlier that interest rate is used to control the investment, inflation and unemployment and to affect the performance of the economy (Cheng et al, 2011). Worthington (2002) examined the relationship between interest rate bank stock returns in Australia by dividing the interest rate into three parts which include short, medium and long-term. The findings indicate that interest rate-risk is a significant determinant of bank stock returns, alongside short and medium term interest rate volatility and levels. However, there is no significant relationship between long-term interest rates and bank stock returns. Humpe and Macmillan (2007) also found that both Japan and US stock prices have a negative relationship with long term interest rate.

It has been proven that most study on interest rate and bank stock return is consistent with the theory as the studies for both developed and emerging markets report negative

relationship between stock returns and interest rate. Therefore, this study predicts a negative relationship between interest rate and bank stock returns. The hypothesis for this study of the influence of interest rate on bank stock returns is:

*Hypothesis 2*

**H2: There is a significant relationship between interest rate and bank stock returns.**

$H_o$:  $_2 = 0$

$H_1$:  $_2$  $0$

### 3.4.3  Inflation Rate

There are mixed findings regarding the impact of inflation on stock returns. The study of Hoguet (2008) found a negative correlation between stock return and inflation, implicating that higher inflation rate reduces expected growth earnings and increases required real rates of returns. Many findings also find negative relationship (Maghayereh, 2002; Al-Sharkas, 2004; Nishat & Shaheen, 2004). In contrast, some studies found positive correlation between inflation and stock returns (Firth, 1979; Maysami et al., 2004; Tweneboah, 2008). Moreover, some set of studies also found insignificant relationship between stock returns and inflation (Ozturk, 2008; Tursoy et al., 2008). Due to this argument, this study predicts a negative relationship between inflation and bank stock returns. The hypothesis for this study of the impact of inflation rate of bank stock returns is:

*Hypothesis 3*

**H3: There is a significant relationship between inflation rate and bank stock returns.**

**H$_o$:** $_3 = 0$

**H$_1$:** $_3$   $0$


### 3.4.4   Exchange Rate

Grammatikos et al. (1986) and Chamberlain et al. (1997) were the initial studies that focused specifically on the exposure of foreign exchange rate on banks' stock return. Their findings showed that foreign exchange exposure influences US banks' returns. Chamberlin et al. (1997) relate the sensitivities of exchange rate of Japanese banks with US banks through the use of both monthly and daily data. They revealed that a significant part of the stock returns of US banks seemed to be sensitive to the changes in exchange rate; while only a smaller number of stock returns of Japanese banks are sensitive to changes in exchange rate.

Kasman et al. (2011) examine the influence of both changes in exchange rate and interest rate on the stock returns of banks in Turkey applying the GARCH and OLS estimation models. Their findings showed that changes in exchange rate and interest rate significantly and negatively influence the conditional stock returns of banks. Their result also implies that the volatility of exchange rate and interest rate are the main determinants of the volatility of the stock returns of banks. Based on this argument, this study predicts

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a negative relationship between foreign exchange rate and bank stock returns. The hypothesis for this study for the impact of foreign exchange rate on bank stock returns is:

*Hypothesis 4*

**H4: There is a significant relationship between foreign exchange rate and bank stock returns.**

**H$_o$:** $_4 = 0$

**H$_1$:** $_4$ $0$

## 3.5 Summarizing of the Hypotheses

1. *There is a significant relationship between money supply and bank stock returns.*

2. *There is a significant relationship between interest rate and bank stock returns.*

3. *There is a significant relationship between the inflation rate and bank stock returns.*

4. *There is a significant relationship between foreign exchange rate and bank stock returns.*

## 3.6 Theoretical Framework

The theoretical framework for this study is depicted below in figure 3.1.

**INDEPENDENT VARIABLES**                                      **DEPENDENT VARIABLE**
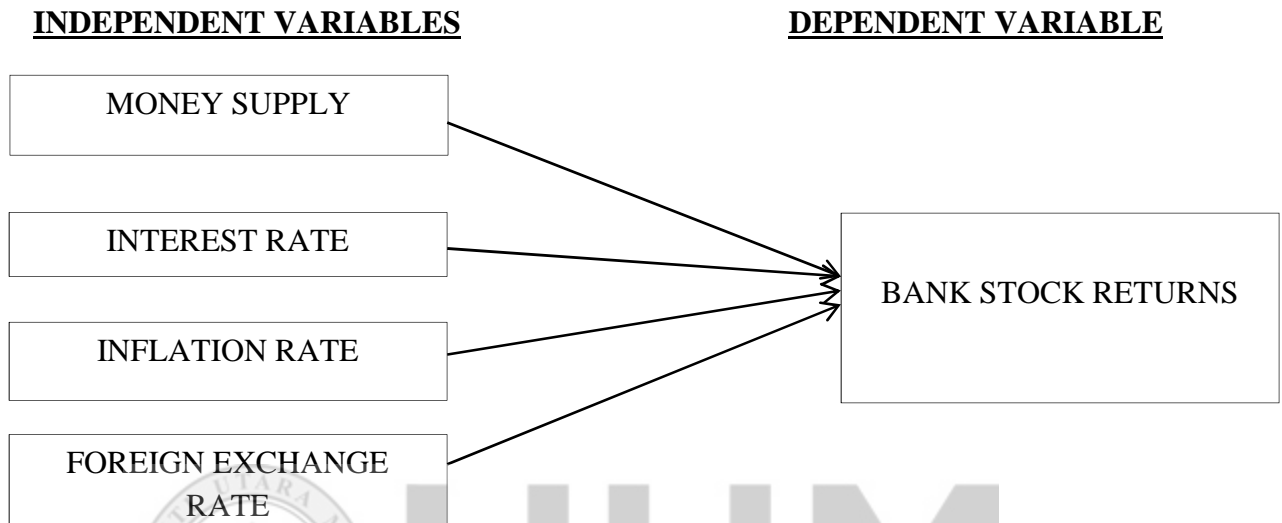


Figure 3.1: *Theoretical Framework*

## 3.6 Regression Model

In order to test the proposed hypotheses, a model was analyzed. The following model was

estimated for the hypotheses:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_{it}$$

$$R_{it} = \beta_0 + \beta_1 M2_{it} + \beta_2 INT_{it} + \beta_3 INF_{it} + \beta_4 EXRATE + e_{it} \qquad (1)$$

$\beta_0 = $ the constant term

$\beta_1, \beta_2, \beta_3, \beta_4 = $ coefficient of parameters

Where:

$R_{it}$ = the return on the bank stock at time t

$M2_t$ = the money supply at time t

$INT_t$ = the interest rate at time t

$INF_t$ = the inflation rate at time t

$EXRATE_t$ = the exchange rate at time t

$\mu_t$ = the residual error of the regression

## 3.8  Empirical Method

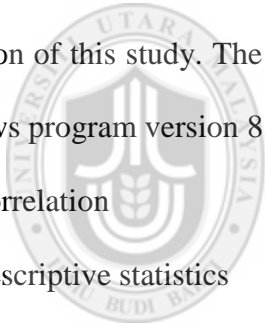This section deals with the data analysis techniques employed to solve the research question of this study. The data will be analyzed based on the several methods using the E-views program version 8.1.

  I.  Correlation

 II.  Descriptive statistics

III.  Panel OLS

IV.  Unit root test

 V.  Granger causality

### 3.8.1    Correlation

It is often essential to examine the correlation between two or more fiscal variables. There are several ways to observe how sets of data are correlated. Two of the most useful means are scattered plots and correlation analysis.

In statistical terms, dependence are correlation between two casual variables. Correlation refers to any relations involving dependence. Correlations are valuable because they canister predictive relationship.

### 3.8.2    Panel Least Squares Regression

This study regression analysis applies panel Ordinary Least Square estimation. The Ordinary Least Square method is more suitable since it reduces normality problem in models.

### 3.8.3    Unit Root Test

The Unit root test has become widely popular over the past few years to test whether the data are stationary or not.They are many ways to analyze unit root test.  Will use in the study test type (common root- Levin, Lin,Chu and common root- Im,Pesaran ,Shin) and the test use level and 1st difference for both.The result can be rejected if it is found to be negative and significantly different from zero. Conversely, if accepted the null hypothesis, the variable is non-stationary and contains a unit root in the variable.

### 3.8.4 Granger causality Test

Since the stationary test of the variables has been carried out, Granger (1969) causality test is used to analyze the causality direction of bank stock returns and its determinants (inflation rate, interest rate, money supply and exchange rate).

### 3.9 Summary

This chapter has been able to explain and describe vividly the variables used for this study, depicts the theoretical framework and the measurements for the variables. This chapter also explains the specification of the model and the method to apply. It finally expatriates on the hypotheses of the study.
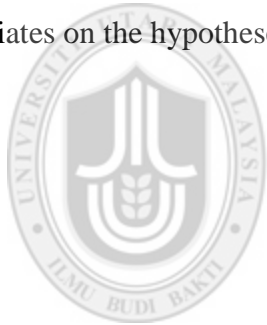
# CHAPTER FOUR

# RESULTS AND DISCUSSIONS

## 4.0 Introduction

The analysis and findings on the empirical relationship between money supply and bank stock returns in ASEAN (Malaysia, Singapore, Thailand, Indonesia, Philippines, Vietnam) is focused on in this chapter. Section 4.1 deals with the data and summary statistics of the variables. Section 4.2 focuses on the correlation matrix of the variables, while section 4.3 expresses the findings of the regression analysis, section 4.4 expresses the findings of the unit root test, section 4.5 findings of the Granger causality tests. Lastly, the discussion of the findings on the empirical relationship between money supply and bank stock returns in ASEAN is elucidated in section 4.6.

## 4.1 Descriptive Statistics

The analysis and findings of this study begin with the descriptive statistics. The summary of the descriptive statistics of bank stock returns, money supply, interest rate, inflation rate, and foreign exchange rate is shown in Table 4.1 below.

**Table 4.1: Summary of the descriptive statistics**

|        | N   | Mean    | Std. Dev. | Median  | Minimum | Maximum | Variance |
|--------|-----|---------|-----------|---------|---------|---------|----------|
| **R**      | 612 | 4.4326  | 2.6207    | 4.0525  | -1.5606 | 11.1026 | 6.8678   |
| **M2**     | 612 | 31.4764 | 3.3446    | 29.9242 | 26.0559 | 36.1527 | 11.1860  |
| **INT**    | 612 | 3.0741  | 3.0007    | 3.4771  | -5.6163 | 11.7825 | 9.0043   |
| **INF**    | 612 | 5.1403  | 3.2460    | 4.6473  | -0.8457 | 23.1163 | 10.5366  |
| **EXRATE** | 612 | 5.4514  | 3.3793    | 3.7998  | 0.2000  | 9.9584  | 11.4199  |

The descriptive statistics for the dependent and the independent variables is depicted above in Table 4.1. The table shows that bank stock returns (R) of ASEAN banks for these periods under review is averagely 443% (4.4326); implying that ASEAN banks generate high stock returns during this period which may lead to high conversion of assets into earnings and high return of shareholders' wealth.

In regards to the independent variables, there is huge money supply (M2) among ASEAN economies in this period with an average of 315% (31.4764); while the average interest rate (INT) for ASEAN economies for this period is 3.07% implying a moderate lending interest rate among ASEAN economies. The average inflation rate (INF) is 5.14% implying that inflation is averagely low and stable in ASEAN economies during this period. The foreign exchange rate depicts an average of 5.45%, implying that the average increase of local currency of ASEAN economies to one United States dollar ($1) is 5.45% during this period.

## 4.2 Correlation

**Table 4.2: Correlation Matrix**

|        | R        | M2        | INT       | INF     | EXRATE  |
|--------|----------|-----------|-----------|---------|---------|
| **R**  | 1.0000   |           |           |         |         |
| **M2** | 0.3851   | 1.0000    |           |         |         |
| **INT**| -0.0727* | 0.0299**  | 1.0000    |         |         |
| **INF**| 0.3626   | 0.5874    | -0.3914   | 1.0000  |         |
| **EXRATE** | 0.6074 | 0.8973  | -0.0378** | 0.6273  | 1.0000  |

Note: **, * indicate significant at 5% and 10% respectively

**Table 4.3: Variance Inflation Factors (VIF) for Multicollinearity test**

| M2 | 5.381 |
|--------|-------|
| INT | 1.345 |
| INF | 2.178 |
| EXRATE | 5.573 |

The correlation among variables is depicted in Table 4.2 above. The coefficient of correlation shows the level of the linear correlation that exists between the variables. Variance Inflation Factors (VIF) were conducted to test for Multicollinearity in the independent variables. The result is depicted in Table 4.3, showing the largest VIF to be 5.573 (EXRATE), and indicating the absent of multicollinearity in the sample as the largest VIF is below 10 (Hair et al., 2006).
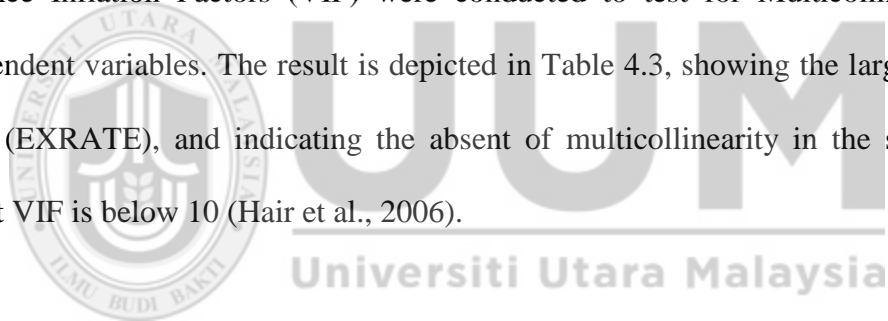
## 4.3 Regression Analysis

The results of the panel data regression on the relationship between money supply and bank stock return are depicted in table 4.4 below:

**Table 4.4: Regression Analysis of the macroeconomic variables on bank stock return**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 362.3703 | 459.7012 | 0.788273 | 0.4308 |
| M2 | -2.31000 | 2.81000 | -8.232842 | 0.0000* |
| INT | 0.133802 | 66.18992 | 0.002021 | 0.9984 |
| INF | -275.7361 | 77.64828 | -3.55109 | 0.0004* |
| EXRATE | 1.074254 | 0.070441 | 15.25046 | 0.0000* |
| R-squared ($R^2$) | 0.437107 | | | |
| Adjusted $R^2$ | 0.433398 | | | |
| F-statistic | 117.8396 | | | |
| Prob (F-statistic) | 0.000000 | | | |
| | | | | |
| n | 612 | | | |

Note: * significant at 1% level

$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_i$

$R_{it} = \beta_0 + \beta_1 M2_{i,t} + \beta_2 INT_{i,t} + \beta_3 INF_{i,t} + \beta_4 EXRATE + e_i$

R = 362.37 – 2.3M2 + 0.133INT – 275.74INF + 1.074EXRATE

Se  (459.70) (2.810)   (66.189)  (77.648)       (0.070)

t-stat  (0.7883) (-8.2328) (0.002)  (-3.5510)   (15.2504)

Prob. (0.4308) (0.0000) (0.9984)  (0.0004)  (0.0000)

n = 612
$R^2 = 0.437$
Adj $R^2 = 0.433$

This mean:

- When the $M_2$ increase by 1 % unit, stock return will decrease by 2.31000.

- When the interest rate increase by 1 % unit, stock return will increase by 0.133802.

- When the inflation increase by 1 % unit, stock return will decrease by 275.7361.

- When the ex rate increase by 1 % unit, stock return will increase by 1.074254.

The regression analysis showed that the F-statistics of the model are significant, implying that there is a relationship between the dependent variable (bank stock returns) and the sets of independent variables (money supply, interest rates, inflation rate, and foreign exchange rate). The value of the adjusted $R^2$ indicates that the regression model that comprises of money supply, interest rate, inflation rate, and foreign exchange rate explicate 43 percent (0.433398) variations in bank stock returns. Furthermore, the regression results show that all the independent variables are significant to bank stock return except for interest rate which is found to be insignificant. Among the three significant variables, exchange rate shows the highest coefficient value of beta (1.074254); implying the most robust contribution in elucidating the dependent variable. Though, it shows that both money supply and inflation rate have a negative relationship with bank stock return while foreign exchange rate has insignificant relationship with bank stock return.

**Table 4.5 Panel OLS Regression for ASEAN (Individual countries)**

| | Constant | M2 | INT | INF | FOREX | $R^2$ | Prob (F-Statistics |
|---|---|---|---|---|---|---|---|
| **Malaysia** | -2.460851 | -7.67000 | -0.182581 | -0.457338 | -13272.74 | 0.3566 | 0.000 |
| | 0.699 | 0.000*** | 0.1139 | 0.1965 | 0.7576 | | |
| **Singapore** | 12.49722 | 1.06000 | -0.117092 | 0.055955 | -1.868065 | 0.0739 | 0.695 |
| | 0.764 | 0.726 | 0.846 | 0.932 | 0.932 | | |
| **Thailand** | -41.34957 | 5.35000 | 2.082804 | 1.710048 | -0.475153 | 0.1065 | 0.030 |
| | 0.608 | 0.089* | 0.778 | 0.468 | 0.807 | | |
| **Indonesia** | -131.8293 | 7.21000 | -3.431673 | -9.700355 | -0.020723 | 0.1121 | 0.000 |
| | 0.9138 | 0.000*** | 0.947 | 0.888 | 0.855 | | |
| **Philippines** | 13.24992 | 6.60000 | -3.336708 | -4.909243 | 0.625117 | 0.3396 | 0.000 |
| | 0.717 | 0.003*** | 0.372 | 0.235 | 0.581 | | |
| **Vietnam** | 132440.5 | 3.11000 | -234.9537 | -1.572234 | -6.174746 | 0.3979 | 0.001 |
| | 0.000 | 0.304 | 0.886 | 0.999 | 0.004*** | | |

Note: ***, **, * indicate significant at 1%, 5% and 10% respectively.

Table 4.5 shows the regression analysis of each ASEAN countries used for this study applying OLS estimation. Based on the table, money supply (M2) has a positive influence on the bank stock returns in all the countries except for Vietnam and Singapore that are insignificantly related. It shows 1% significant level in Malaysia, Indonesia and Philippines while 10% significant level in Thailand.  Foreign exchange rate (FOREX) only influences the bank stock return of Vietnam at 1% significant level. Meanwhile, other macroeconomic variables such as interest rates, inflation and foreign exchange rate are insignificant to the bank stock returns of each country. This implies that only money supply explains the largest effect of macroeconomic variables on bank stock returns in each country except Singapore. Government of Malaysia impost more capital control as compared to other developed countries.

**4.4 Unit Root Tests**

**Table 4.6 Unit root test**

| Variables | Levin, Lin,ChU | | Im,Pesaran , Shn | |
|---|---|---|---|---|
| | *Level* | *Difference* | *Level* | *Difference* |
| M2 | 5.1794 1.0000 | -4.3995 0.0000*** | 12.8352 1.0000 | 2.2908 0.9890 |
| *Interest Rate* | -3.2990 0.0005*** | -27.6577 0.0000*** | -1.1208 0.1312 | -14.9778 0.0000*** |
| *Inflation* | -5.9831 0.0000*** | -21.4047 0.0000*** | -2.2864 0.0111** | -16.2981 0.0000*** |
| *F EX. Rate* | -13.3697 0.0000*** | -18.7171 0.0000*** | -6.2833 0.0000*** | -7.7936 0.000*** |

Note: ***, **, * indicate significant at 1%, 5% and 10% respectively.

The unit root tests under Levin, Lin, Chu show that all unit root test of the macroeconomic variables are significant at 1% significant level except for money supply (M2) under level that is insignificant. Meanwhile, the unit root tests using Im, Pesaran, Shn show that unit root tests of the independent variables are 1% significant under difference except for money supply that is insignificant. Under level, only inflation and foreign exchange rate that is significant at 5% and 1% level respectively. Both money supply and interest rate are insignificant under level.

## 4.5 Granger Causality Tests

**Table 4.7 Granger Causality Tests**

| Lags | Null Hypothesis (nh) | F-Statistics | Probability | = 0.05 |
|---|---|---|---|---|
| 2 | M2 does Granger Cause Stock Return | 38.4331 | 0.0000 | Reject |
| 2 | Stock Return does Granger Cause M2 | 74.2387 | 0.0000 | nh |
| 2 | Inflation Rate does Granger Cause Stock Return | 11.7728 | 0.0000 | Reject |
| 2 | Stock Return does Granger Cause Inflation Rate | 3.16055 | 0.0000 | nh |
| 2 | Interest Rate does Granger Cause Stock Return | 0.39046 | 0.0000 | Reject |
| 2 | Stock Return does Granger Cause Interest Rate | 2.56860 | 0.0000 | nh |
| 2 | FOREX Rate does Granger Cause Stock Return | 8.66842 | 0.0000 | Reject |
| 2 | Stock Return does Granger Cause FOREX Rate | 1.87662 | 0.0000 | nh |
| 2 | Inflation Rate does Granger Cause M2 | 81.5551 | 0.0000 | Reject |
| 2 | M2 does Granger Cause Inflation Rate | 25.2047 | 0.0000 | nh |
| 2 | Interest Rate does Granger Cause M2 | 57.7006 | 0.0000 | Reject |
| 2 | M2 does Granger Cause Interest Rate | 16.1652 | 0.0000 | nh |
| 2 | FOREX Rate does Granger Cause M2 | 97.8786 | 0.0000 | Reject |
| 2 | M2 does Granger Cause FOREX Rate | 93.3786 | 0.0000 | nh |
| 2 | Interest Rate does Granger Cause Inflation Rate | 43.6359 | 0.0000 | Reject |
| 2 | Inflation Rate does Granger Cause Interest Rate | 36.2883 | 0.0000 | nh |
| 2 | FOREX Rate does Granger Cause Inflation Rate | 54.1336 | 0.0000 | Reject |
| 2 | Inflation Rate does Granger Cause FOREX Rate | 29.0517 | 0.0000 | nh |
| 2 | FOREX Rate does Granger Cause Interest Rate | 22.6742 | 0.0000 | Reject |
| 2 | Interest Rate does Granger Cause FOREX Rate | 57.1127 | 0.0000 | nh |

\*nh (null hypothesis)

Table 4.7 represents the empirical results of the Granger causality test between bank stock return and macroeconomic variables. There exists at least one-way causality from money supply to bank stock returns. It was found that money supply caused bank stock returns. Therefore, money supply is not an indicator of bank stock return in ASEAN. In addition, bank stock return and interest rate indicating that an increase in interest rate does not increase bank stock returns. There is unidirectional causality between bank stock return and macroeconomic variables.

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**4.6 Discussion of Findings**

**4.6.1   Money supply and bank stock return**

The money supply has a negative significant relationship with bank stock returns of ASEAN. The results imply that the lower the money supply, the lower is the bank stock returns. The plausible reasons for this is that change in money supply is a major sign of change in stock price because it has a direct influence on stock market and an indirect influence on bond market based on the adjustment of interest rates. When the increase in money supply leads to decrease in real interest rates, an increase in stock returns will be expected. However, stock prices will be affected negatively when the money supply increases excessively because it could induce inflation. Therefore, the stock market volatility can be increased by money supply.

Furthermore, the increase in money supply implies availability of excess liquidity for stock purchase, ultimately leading to higher stock prices because of the higher demand of both real good and common stocks markets. However, as Fisher's equation assumed that money supply could increase inflation and then increases the nominal interest rate; the increase in interest rate results in a higher expected rate of return, and then lower stock price. This finding is in line with the studies of Maghayereh (2002), Humpe and Macmillan (2007) and Abugri (2008). Thus, the hypothesis that assumed a significant relationship between money supply and bank stock return is rejected.

### 4.6.2 Interest rate and bank stock return

Interest rate is insignificant with bank stock returns of ASEAN. This implies that there is no relationship between interest rate and bank stock return. The plausible reason for this is that interest rate sensitivity does not exert a significant impact on the common stock of the banks, which could be caused by the effect of wealth distribution triggered by unexpected inflation when banks hold nominal assets and nominal liabilities. This result is consistent with the study of Booth and Officer (1985), Lynge and Zummwalt (1980), Scott and Peteerson (1986), and Bae (1990). Therefore, the hypothesis that suggests a significant relationship between interest and bank stock return is rejected.
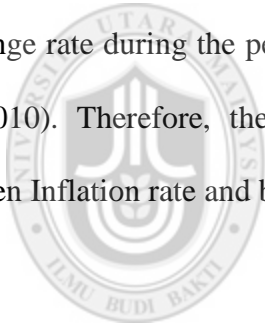
### 4.6.3 Inflation rate and bank stock return

Inflation has a significant relationship with bank stock returns of ASEAN. This indicates that the lower the inflation rate, the higher the bank stock returns. The plausible reason for this is that negative inflation –real activity induced the relationship through the money demand theory and the quantity theory of money, since stock returns have insignificant relationship with real variables such as output and expenditure as elucidated in the finance theory. Low inflation rate decreases both nominal risk-free rate and discount rate, which will then increase stock price since stock price could be regarded as the discounted value of the estimated dividends.

This result is consistent with the findings of Fama and Schwert (1977), Fama (1980), Gultekin (1983), Maghayereh (2002), Al-Sharkas (2004), and Nishat and Shaheen (2004). Thus, the hypothesis that proposed a significant relationship between Inflation rate and bank stock return is accepted.

### 4.6.4  Foreign exchange rate and bank stock return

Foreign exchange rate as a positive significant relationship with bank stock returns of ASEAN. This implies that the foreign exchange exposures of ASEAN banks influence their stock returns since most part of the stock returns are sensitive to the changes in exchange rate during the periods. This finding is consistent with the study of Agrawal et al. (2010). Therefore, the hypothesis that stated a negative significant relationship between Inflation rate and bank stock return is rejected.

Table 4.8 shows the summary of the hypotheses testing findings of money supply, interest rate, inflation rate and foreign exchange rate on bank stock returns.

**Table 4.8: Summary of Hypotheses**

| HYPOTHESES | BANK STOCK RETURNS |
|---|---|
| **H1**: There is a significant relationship between money supply and bank stock returns. | Hypothesis is not supported |
| **H2**: There is a significant relationship between interest rate and bank stock returns. | Hypothesis is not supported |
| **H3**: There is a significant relationship between inflation rate and bank stock returns. | Hypothesis is supported |
| **H4**: There is a significant relationship between foreign exchange rate and bank stock returns. | Hypothesis is not supported |

**4.7 Concluding Remarks**

The findings of this study are explained in this chapter. It elucidates on the findings of the descriptive statistics of the variables, correlation matrix, panel data analysis, and the regression analysis. Furthermore, this chapter clearly construes the outcomes of the regression through discussion of the findings.

# CHAPTER FIVE

# CONCLUSION AND RECOMMENDATION

## 5.0 Introduction

The overall conclusion on the money supply and bank stock returns is provided in this chapter. The chapter starts with the overview of the study and followed by the contribution of the study to various interested parties. Lastly, limitations are elucidated and suggestion for future studies is deliberated.

## 5.1  Overview of the Research Process

This study investigates money supply and bank stock returns in ASEAN through a panel data approach. The data used for this study is the World Bank data archive and the DataStream.  The sample covers 58 listed banks in ASEAN. The period of study is from 2004-2014, resulting in 612 firm-years. This study found that money supply has a negative significant relationship with bank stock returns of ASEAN, indicating that the lower the money supply, the lower is the bank stock returns in other hand, when the money supply increase by 1 unit the bank stock return will decrease about 2.3 units. This indicates that changes in money supply are a major signal for change in stock price because it has a direct influence on stock market and an indirect influence on bond market based on the adjustment of interest rates. Interest rate is insignificant with bank stock returns of ASEAN, implying that there is no relationship between interest rate and bank stock return. This shows that interest rate sensitivity does not exert a significant impact on the common stock of the banks, which could be caused by the effect of wealth

distribution triggered by unexpected inflation when banks hold nominal assets and nominal liabilities. Inflation has a significant negative relationship with bank stock returns of ASEAN, indicating that the lower the inflation rate, the higher the bank stock returns. The reason is that negative inflation –real activity induced the relationship through the money demand theory and the quantity theory of money, since stock returns have a positive relationship with real variables such as output and expenditure as elucidated in the finance theory. Foreign exchange rate as a positive significant relationship with bank stock returns of ASEAN. This implies that the foreign exchange exposures of ASEAN banks influence their stock returns since most part of the stock returns are sensitive to the changes in exchange rates during the periods.

## 5.2 Implication of the study

### 5.2.1 Body of Knowledge

The result of this empirical research is useful to other researchers. It is advantageous due to its contribution to the body of knowledge, especially on the association between macroeconomic variables and bank stock return. This study also provides evidence of the relationship between money supply, interest rate, inflation rate and foreign exchange rate with bank stock returns in ASEAN.

### 5.2.2 Policy Implications

The research is also of significance to policy makers want research findings that are robust (and the methodology is relatively uncontested), are accessible to wider audiences, more new ideas, more willingness to question inherited ways of doing things, better use of evidence and research in policy making and better focus on policies that will deliver long-term goals. This resource studies is meant to help connect policymakers with tools, information, and insights to enhance financial education efforts. In ASEAN and other countries as it will enhance policies formulation relating to the management of macroeconomic variables in banking, by implementing the execution of an efficient risk management for banks in order to create measures that will prevent high inflation, bankruptcy, high foreign exchange rate, financial distress, shortage of money supply and unemployment, and control the investment that will affect the economic performance.

### 5.2.3 Practical implications

It is of significance to banking practitioners since it shows the value of macroeconomic variables to bank stock returns, and facilitates their improvement on the practice of risk management and involve in various off-balance sheet transactions. ASEAN banks should always embark on improving risk measurement systems and comprehensive practices for managing their risks, mostly during fast development in new markets or products. Failure of banks in adhering to simple principles of risk management, it could affect their evaluation macroeconomic factors that may hinder their improvement in bank stock returns.

**5.3 Limitations of the Study**

This study is restricted to the macroeconomic variables and bank stock returns of banks in ASEAN from the period 2004-2014. However, data of some countries are not included in the data because of lack of stock markets in the countries. These countries include: Brunei Darussalam, Cambodia, Laos and Myanmar. Moreover, most of the data collected from all the countries started from 2004 except for data from Vietnam that started from 2007 because of non-availability of bank stock return from previous years.

**5.4 Suggestions for Future Research**

Future studies on macroeconomic factors and bank stock returns should try to focus on the influence of macroeconomic factors on the stock returns of other types of banks such as Islamic banks and investment banks. Furthermore, future research can also concentrate on other macroeconomic factors such as crude oil rate, market index and so on. Moreover, future studies may also examine this relationship from other regions or countries, so as to show more reliable findings on the association between macroeconomic variables and bank stock returns.

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