

UNIVERSITI TEKNOLOGI MARA

**VOLATILITY AND PERFORMANCE OF
MALAYSIAN STOCK MARKET: A PARALLEL
MARKET EVIDENCE**

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**Bachelor of Business Administration (Hons)
Investment**

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Final Year Project Paper submitted in fulfillment
of the requirements for the degree of
Bachelor of Business Administration
(Investment)

Faculty of Business and Management

July 2020

AUTHOR'S DECLARATION

I declare that the work in this final year project paper was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Financial system consists of financial institutions and also financial market. Financial market is divided into four categories which are money and foreign exchange market, capital market, derivatives market and offshore market. As in Malaysia, the operation of capital market is quite unique. This is because the conventional capital market operated parallelly with the Islamic capital market. A little of contrast from the Islamic capital market Islamic market is referring to financial market transactions, operations and services that comply with Islamic rules, principles, philosophy and code of practices. The law and rules of the religion requires certain types of activities, risks or rewards to either be prohibited or promoted. This includes the Shariah investing activities conducted by investor. Meanwhile, conventional capital market is offer investment instruments for any profitable project whether it is beneficent to the society or not, the only important factor is how profitable and how risky is it. Thus, conventional financing is not bound by any restrictions, as this is opposite from Islamic law. What are fascinating in this financial market is Islamic market are widely accepted by world-wide because the differential that exists in Islamic product compare to conventional product that presence far before. Since existence of Islamic stock market, Muslim investors tend to choose it over conventional stock market as they are obligate to invest in Shariah compliant product as requirement of religion to avoid matters that contradictory with principles of Islam such as *riba*, *gharar*, *maysir* and other non-permissible activities. In addition, non-Muslim are welcome to invest in Islamic market as there is no prohibition.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Financial system consists of financial institutions and also financial market. Financial market is divided into four categories which are money and foreign exchange market, capital market, derivatives market and offshore market. As in Malaysia, the operation of capital market is quite unique. This is because the conventional capital market operated parallelly with the Islamic capital market. A little of contrast from the Islamic capital market, Islamic market is referring to financial market transactions, operations and services that comply with Islamic rules, principles, philosophy and code of practices. The law and rules of the religion requires certain types of activities, risks or rewards to either be prohibited or promoted. This includes the Shariah investing activities conducted by investor.

All transactions that carried out in Islamic capital market (ICM) obeys to the principle of Muslim and religion of Islam. Islamic capital market plays an important role for generating economic growth along conventional capital market. It is also plays a complementary role to Islamic banking system to broadening and deepening Islamic financial markets in Malaysia. The Securities Commission's giving a big supportive to Islamic Capital Market and dedicated to setting up infrastructure support that needed. Islamic Capital Market Department (ICMD) purpose is to carry out research and development (R&D) activities to strengthen the ICM in Malaysia for long term plan. The Shariah Advisory Council (SAC) was established in May 1996 as to advise the Commission on Shariah matters pertaining to the ICM. Members of the SAC are qualified individuals who can present Shariah opinions and have vast experience in the application of Shariah, particularly in the areas of Islamic economics and finance.

Meanwhile, conventional capital market is offer investment instruments for any profitable project whether it is beneficent to the society or not, the only important factor is how profitable and how risky is it. Thus, conventional financing is not bound by any restrictions, as this is opposite from Islamic law. What are fascinating in this financial

market is Islamic market are widely accepted by world-wide because the differential that exists in Islamic product compare to conventional product that presence far before. Since existence of Islamic stock market, Muslim investors tend to choose it over conventional stock market as they are obligate to invest in Shariah compliant product as requirement of religion to avoid matters that contradictory with principles of Islam such as *riba*, *gharar*, *maysir* and other non-permissible activities. If the company earn interest from other non-related to business activity there will be a purification process. The purification process is done be estimating the forbidden increment coming from interest and taking it out so whatever remains is Halal. In addition, non-Muslim are welcome to invest in Islamic market as there is no prohibition.

1.2 Research Background

Malaysia stock market are consisting of two different types of capital market which are conventional and Islamic. Used to, Malaysia is depending on only one index which is FBM Kuala Lumpur Composite Index, but now has change its name to FTSE Bursa Malaysia Kuala Lumpur Composite Index. Now, the introduction of new Islamic index which run parallely with the conventional index, are together contributing to Malaysia stock market. Each of the indices having advantages and disadvantages to their own depending on economic situation.

Based on previous study, Malaysia stock markets are affected by many determinants. Most of the determinants are from macroeconomic factors. Specifically, the optimal macroeconomic environment promotes business profitability and boosts economic growth (Pal and Mittal, 2011). The performance of countries' economies and stock markets are measured and determined by macroeconomic variables such as exchange rate (ER), inflation rate (INF), money supply (MS), trade balance (TB) and many other variables. However, several studies debated the influences of macroeconomic variables on matured and emerging stock markets indices. In the US stock market, Bjornald and Leitemo (2009) examined the influences of macroeconomic variables on S&P500 using vector autoregressive (VAR) Model and monthly time series data for the 1983-2002 period. They found that macroeconomic variables influenced S&P500 positively. On the other hand, Morelli (2002) scanned if the conditional volatility of macroeconomic variables explained the volatility of FTSE100 using generalized autoregressive

conditional heteroscedasticity (GARCH) Model and monthly time-series data for the 1967-1995 period. He found that the conditional volatility of the macroeconomic variables did not explain the volatility of FTSE100.

1.3 Problem statement

There are contradicts opinion between two different markets where past researchers said that Islamic market are performing better compared to conventional market and less volatility. Hakim and Rashidian (2005) finding explore that Dow Jones Islamic Market Index (DJIMI) presents unique risk returns characteristics compared to Wilshire 5000 Index (W5000). Also, Jawadi, Jawadi, and Louhichi (2014) find that Islamic indices outperformed their conventional indices. However, some of them argued that conventional market performance is well-turned compared to Islamic market and less volatility where Reddy and Fu (2014) fail to prove that performance of Islamic stocks listed on Australian Stock Exchange (ASX) outperform its conventional counterpart, even there is difference significant in term of risk. In order to fill in the gap that exists due to disagreement of ideas, since there is no majority of comprehension from past research. It triggers the researcher interest to do deeper investigation on the performance of two markets and decided to choose Malaysia because Malaysia has two markets that work parallely together and also known as hub of Islamic finance.

1.4 Research Questions

Based on this research, there are three research questions that need to be studied, which are:

- i) Which market is more volatile?
- ii) What are the determinants of the performance of Islamic Stock Market?
- iii) What are the determinants of the performance of Conventional Stock Market?

1.5 Research Objectives

For the objectives, it must be clearly related with the area of studies. There are five general objectives that must be achieved by in this studies.

- i) To identify whether Islamic Stock Market or Conventional Stock Market is more volatile
- ii) To investigate the determinants of performance for Islamic Stock Market
- iii) To investigate the determinants of performance for Conventional Stock Market

1.6 Significance of the Study

The significant of this study is beneficial to our country, Malaysia. With this study, government and economist able to get a big views factors that influence growth of economy. A lot of determinant of macroeconomic that could contribute to increase the probability successful of an economy by running the research. Economist could advise government on making decision regarding to make sure Malaysia able to compete fairly as same as the other developed countries. They can also take an appropriate strategies implementation not only for big sectors but as well as small sectors so all can contribute to the increase of economic growth in Malaysia.

Other than that, it also helps other researchers to get more new information especially for those who are pursuing in related field. This research could help and guide them as the reference for their research project. This study also can be contributed to academia. The research brings contribution to the literature by examining the factor of volatility and the performance of Malaysia stock market.

1.7 Scope of the Study

The study research area will be explored in the parallel stock market in Malaysia. The dependent variables for this research are and the Conventional Stock Markets (KLCI) and Islamic Stock Markets (FBMHS). Meanwhile for the independent

variables are The data sets consist of broad money supply (M2), interest rate (TBR), exchange rate (MYR), Industrial Production Index (IPI), Federal Fund Rate (FFR). This research used the time series data. The sample of data used is 182 observations, where the time horizon will start from 2004 to 2019 on monthly data. All the data collected are from World Bank Data, Thomson Reuters, Investing.com, Bank Negara Malaysia (BNM) and many more.

1.8 Limitation of the Study

i) Scope of discussions

The scope of discussion also limited as it only discussed about stock markets performance in Malaysia only without involving another country that experiences volatility as well. When the scope of discussion is limited, the data accuracy regarding to the topic also decrease.

ii) Lack of previous studies in the research area

In this research, there are some difficulty in finding information as there is lack of previous research regarding to this topic. The previous studies by researcher is used as guidelines in this studies.

iii) Lack of data collection method

The data for this research is gain based on the internet by using journal, articles and some websites. Plus, lack of knowledge and experience are contribute to inaccuracy some of this data.

1.9 Definition of key terms

1.9.1 Conventional Stock Markets (KLCI)

The FTSE Bursa Malaysia KLCI, also known as the FBM KLCI, is a capitalisation-weighted stock market index, composed of the 30 largest companies on the Bursa Malaysia by market capitalisation that meet the eligibility requirements of the FTSE Bursa Malaysia Index Ground Rules. The index is jointly operated by FTSE and Bursa Malaysia. Bursa Malaysia partnered with FTSE to provide a suite

of indices for the Malaysian market, to enhance the KLCI. FTSE Bursa Malaysia KLCI was one of the indices created to replace the KLCI. The enhancement will adopt the internationally recognised index calculation formula to increase transparency as well as making the index more tradable.

1.9.2 Islamic Stock Markets (FBMHS)

The FTSE Bursa Malaysia Hijrah Shariah Index is a tradable index which comprises the 30 largest companies in the FBM EMAS Index that meets the following triple screening process FTSE's global standards of free float, liquidity and investability. Yasaar's international Shariah screening methodology. Malaysian Securities Commission's Shariah Advisory Council (SAC) screening methodology.

1.9.3 Broad Money Supply (M2)

Broad money or M2 is a measure of the money supply that includes cash, checking deposits, and easily convertible near money. M2 is a broader measure of the money supply than M1, which just include cash and checking deposits. M2 is a calculation of the money supply that includes all elements of M1 as well as "near money." M1 includes cash and checking deposits, while near money refers to savings deposits, money market securities, mutual funds, and other time deposits. These assets are less liquid than M1 and not as suitable as exchange mediums, but they can be quickly converted into cash or checking deposits. M2 is a closely watched as an indicator of money supply and future inflation, and as a target of central bank monetary.

1.9.4 Interest Rate (TBR)

The interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. The interest rate is typically noted on an annual basis known as the **annual percentage rate (APR)**. The interest rate is the amount charged on top of the principal by a lender to a borrower for the use of assets.

1.9.5 Exchange Rate (MYR)

An exchange rate is the value of one nation's currency versus the currency of another nation or economic zone. Most exchange rates are free-floating and will rise or fall based on supply and demand in the market. Some currencies are not free-floating and have restrictions.

1.9.6 Industrial Production Index (IPI)

The industrial production index (IPI) is measures levels of production by monthly economic indicator measuring real output in the manufacturing, mining, electric and gas industries, relative to a base year. It also measures capacity, an estimate of the production levels that could be sustainably maintained; and capacity utilization, the ratio of actual output to capacity.

1.9.7 Federal Fund Rate (FFR)

Federal funds rate is the target interest rate set by the Federal Open Market Committee (FOMC) at which commercial banks borrow and lend their excess reserves to each other overnight. FOMC sets a target federal funds rate eight times a year, based on prevailing economic conditions. The federal funds rate can influence short-term rates on consumer loans and credit cards as well as impact the stock market.

1.10 Summary

To summarize, this chapter is purposely to show the relationship between the dependent variables and independent variables in Malaysia. It shows what areas are taken specifically in this research so that it would not deviate from original purpose of this study. With this information, readers and researchers could understand more and able to catch the main ideas and key point of this research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the study discussed the relationship between the dependant variables and independent variables of the journals that related to this research. Journal that have been analysed and narrowed down will be shown in this chapter to show the relationship between the dependent variables and independent variables. The research dependent variables will be the Conventional Stock Markets (KLCI) and Islamic Stock Markets (FBMHS) while the independent variables will be focusing in broad money supply (M2), interest rate (TBR), exchange rate (MYR), Industrial Production Index (IPI), Federal Fund Rate (FFR). The objectives of literature review are to focus on the problem area that related to research. It also helps to understand the concept in the research area. Besides that, literature review also enables to identify and review relevant information on the specific topic more clearly and precisely.

2.2 Literature Review On Parallel Markets

Albaity and Ahm (2008) discussed the risk and return performance of the Kuala Lumpur Shariah Index (KLSI) and the KLCI. The study was conducted around the year 1995 to 2005 and focuses on the overall KLCI and KLSI without diversification index in detail or make comparisons. These studies have shown that KLSI has good potential to be used as an option for investors to make investment in shares. Islamic capital market has experienced significant growth in the number of product launches, fund size, and number of participants since the introduction of the listed securities by the Syariah Advisory Council (SAC) of the Securities Commission. In 2003, three units trust funds was introduced and the industry now has more than 50 Islamic unit trust funds, representing 25% of the total funds in the country. Islamic equity index, known as Shariah Index Kuala Lumpur Stock Exchange (KLSE) was introduced in April 1999 to facilitate the investors to track and benchmark the performance of Syariah approved securities. In 2010, Securities Commission Malaysia has been classified a total of 846 Shariah compliant or 88% of Shariah-compliant stocks on Bursa Malaysia and is

encouraging or showed an increase in the growth of Islamic capital market in Malaysia Utusan (2009).

FTSE Bursa Malaysia EMAS Shariah index and the index has become a catalyst to enlarge Shariah-compliant equity market. This index has been regulated by the Syariah Advisory Council of Securities Commission and all shares must be traded through the Shariah screening process. On 21st May 2007 Bursa Malaysia has launched the FTSE Bursa Malaysia Hijrah Shariah index for international Islamic investors (Sadeghi, 2008). All shares must be through a rigorous screening process before grouped under this index. The development indices of the more promising Shariah in Malaysia has given a good impact and image of the Islamic capital market leading to the capital market in Malaysia.

2.2.1 Literature Review On Conventional Stock Markets (KLCI)

Since the independence in 1957, Malaysia began its economic transition from being reliant on primary sectors (mining, quarrying, agriculture, forestry and fishing) to depend more on services, construction and manufacturing to imitate the four Asian Dragons economies; China, Singapore, South Korea, and Taiwan (Ghosh and Ariff, 2004). However, during the last three decades, many emerging countries followed financial and economic liberalization by opening their economies and domestic stock markets to international investors that led to enhance economic growth (Ortiz et al., 2006). In 1991, the economic and financial plan was coincided with the financial and economic liberalization. This plan improved productivity and employment in various economic and financial sectors by attracting FDI in Islamic finance, high technology industries, financial services and education system (Ghosh and Ariff, 2004) which boosted Malaysian economic growth rate. Malaysian stock market is known as Bursa Malaysia, and considered one of the largest stock markets in South East Asia with 829 listed companies offering a wide range of investment opportunities to domestic and international investors (Bursa Malaysia, 2012)

Past studies have been widely enriched by various empirical studies that explored the relationships between macroeconomic variables and stock market indices (Aburji, 2008; Adjasi, 2009; Beltratti and Morano, 2006; Hassapis and Kalyvitis, 2002;

Hatemi-J and Morgan, 2009; Humpe and Macmillan, 2009; Kizys and Pierdzioch, 2009; Liu and Shrestha, 2008; Pal and Mittal, 2011). As such, they noticeably argued that macroeconomic variables [GDP, IP, PPI, CPI, ER, M1, M2, M3, gross domestic saving (GDS), gold prices (GP), oil prices (OP), federal funds rate (FFR) and INT] influence stock market indices, and implied that macroeconomic variables affect investors' investment decisions. Nonetheless, several empirical studies debated the relationships between macroeconomic variables and stock market indices using equilibrium time-series models. The VAR equilibrium time-series model employed by many researchers (Araugo, 2009; Black et al., 2003; Buyuksalvarci and Abdioglu, 2010; Dritsaki, 2005; Li et al., 2010; Muradoglu et al., 2000; Ratanapakom and Sharma, 2007; Tsoukalas, 2003; Verma and Ozuna, 2005; Wongbangpo and Sharma, 2002) to examine the short-run equilibrium relationships between macroeconomic variables and stock market indices. The results found that macroeconomic variables significantly influence stock market indices.

However, the VEC equilibrium time-series model applied by others (Adeleke and Gbadebo, 2012; Agrawalla and Tuteja, 2008; Chaudhuri and Smiles, 2004; Filis, 2010; Herve et al., 2011; Hess, 2004; Hosseini et al., 2011; Karacaer and Kapusuzoglu, 2010; Kyereboah and Agyire, 2008; Maysami and Koh, 2000; Muradoglu et al., 2001; Nasseh and Strauss, 2000; Patra and Poshakwale, 2006; Wong et al., 2006) to explore the long-run and short-run equilibrium relationships between macroeconomic variables and stock market indices. These studies revealed that macroeconomic variables significantly change stock market indices. At the same time, numerous studies analyzed the relationships between macroeconomic variables and stock market indices using GARCH volatility time-series models (Bhar and Malliaris, 2011; Chen, 2009; Erdem et al., 2005; Hanousek and Kocenda, 2011; Hsing, 2011; Hsing and Hsieh, 2012; Kim et al., 2004; Nguyen, 2011; Rangel, 2011). Also, the results indicated that the conditional volatility of macroeconomic variables significantly influence stock market indices. One of the key objectives of this paper is to analyze the long-run and short-run equilibrium relationships between macroeconomic variables (GDP, PPI, CPI, ER and M3) and SMI by applying the equilibrium time-series bounds tests Approach developed by PSS (2001).

Nonetheless, several empirical studies debated the relationships between

macroeconomic variables and stock market indices using equilibrium time-series models. The VAR equilibrium time-series model employed by many researchers (Araugo, 2009; Black et al., 2003; Buyuksalvarci and Abdioglu, 2010; Dritsaki, 2005; Li et al., 2010; Muradoglu et al., 2000; Ratanapakom and Sharma, 2007; Tsoukalas, 2003; Verma and Ozuna, 2005; Wongbangpo and Sharma, 2002) to examine the short-run equilibrium relationships between macroeconomic variables and stock market indices. The results found that macroeconomic variables significantly influence stock market indices. However, the VEC equilibrium time-series model applied by others (Adeleke and Gbadebo, 2012; Agrawalla and Tuteja, 2008; Chaudhuri and Smiles, 2004; Filis, 2010; Herve et al., 2011; Hess, 2004; Hosseini et al., 2011; Karacaer and Kapusuzoglu, 2010; Kyereboah and Agyire, 2008; Maysami and Koh, 2000; Muradoglu et al., 2001; Nasseh and Strauss, 2000; Patra and Poshakwale, 2006; Wong et al., 2006) to explore the long-run and short-run equilibrium relationships between macroeconomic variables and stock market indices. These studies revealed that macroeconomic variables significantly change stock market indices. At the same time, numerous studies analyzed the relationships between macroeconomic variables and stock market indices using GARCH volatility time-series models (Bhar and Malliaris, 2011; Chen, 2009; Erdem et al., 2005; Hanousek and Kocenda, 2011; Hsing, 2011; Hsing and Hsieh, 2012; Kim et al., 2004; Nguyen, 2011; Rangel, 2011). Also, the results indicated that the conditional volatility of macroeconomic variables significantly influence stock market indices. One of the key objectives of this paper is to analyze the long-run and short-run equilibrium relationships between macroeconomic variables (GDP, PPI, CPI, ER and M3) and SMI by applying the equilibrium time-series bounds tests Approach developed by PSS (2001).

2.2.2 Literature Review On Islamic Stock Markets (FBMHS)

In Islamic capital market (ICM), market transactions are carried out in ways that do not conflict with the conscience of Muslims and the religion of Islam. There is assertion of religious law that the market is free from activities prohibited by Islam such as usury (riba), gambling (maisir) and ambiguity (gharar). Malaysia's ICM has contributed significantly to the development of the overall capital market through further broadening the capital market by providing an attractive alternative source of fund raising and investment. It has expanded in breadth and depth in many aspects

including its range of products and services, the number and diversity of its stakeholders, its infrastructure and capabilities, its geographical reach as well as its human capital development. The institutionalisation of a comprehensive legislative, regulatory, legal, tax and Shariah framework for the industry in Malaysia facilitates the development and growth of ICM. Islamic stock indices are designed to monitor the performance of some sectors of the financial markets, which the investment follows closely to the tenets of Islam.

According to Black (1976), volatilities and asset returns can be negatively correlated and this relationship is popularly known as the leverage effect. Brooks (2008) explains that leverage effect happens when a fall in the price of a firm's stock causes the firm's debt to equity ratio to increase. When the large decline in the equity price is not matched by the decline in the value of debt, the firm's debt to equity ratio will rise together with the financial risk of the firm's investors. Because of the higher risk, investors would expect the volatility of the stock return to rise also. Cheung and Ng (1992), Poon and Taylor (1992), Koutmos (1996) Koutmos and Booth (1995), Booth, Martikainen and Tse (1997) found that there is a significant leverage effect and bad news (i.e., decrease in stock prices) seem to have a greater influence on stock prices than good news (i.e., increase in stock price). In addition to that, the Islamic indices that yield low returns are expected to have higher risk and will not be compensated for the extra risk incur by screening. This study also examines whether the inclusion of debt ratio screen makes any difference. Finally, Koutoms (1996) strongly suggests that studies investigating the information transmission in the first moment and second moment can be done based on returns and volatility, respectively. Liao and Qi (2008) using daily data compared the risk and return in NYSE composite index and Shanghai stock index (SSI). They used ARCH, GARCH, TARCH, and EGARCH on both markets and found that the best model that fit SSI was EGARCH while TARCH was the best fit for NYSE composite index. In addition, they found that there is leverage effect in NYSE composite index but not in SSI. Moreover, they found that SSI volatility causes NYSE composite index but not vice versa.

2.3 Literature Review On Broad Money Supply (M2)

There is a positive correlation among previous month's US stock price, money supply, federal debt, tax-exempt government debt, long-term unemployment, the broad money supply and the federal were documented by Bulmash and Trivoli (1991). Ibrahim (2001) applied Vector autoregressive techniques in the Malaysian market before and during the Asian crisis. He used Kuala Lumpur composite index (KLCI), Money supply (M2), exchange rate, real activity (Industrial production) and inflation (consumer price index) from 1977 to 1997 and 1997 to 1998. He found that stock prices were more affected by money supply but not vice versa. Impulse response results suggested that KLCI responded positively to all the variables except exchange rates.

On Islamic perspective, an earlier study by Habibullah and Baharumshah (1996) applying econometric techniques, to test for the efficiency of the Malaysian market finds contrary results. They used Money supply (M1 and M2) and GDP with several stock price indices in Bursa Malaysia on a monthly basis from 1978 to 1992. They found that the Malaysian market with respect to these variables was informationally efficient, which means that all past information was reflected in the stock prices. Ibrahim and Yosoff (2001) studies that in Malaysia focused on a subset of the markets. The paper used Kuala Lumpur composite index and money supply (M2) from 1977 to 1998 on monthly basis. They concluded that variables were found to be cointegrated and in the long-term M2 were negatively related to composite index. Yuosof and Majid (2007) investigated whether there was a difference in the reaction towards macroeconomic variables between Islamically complaint and non-Islamically complaint indices returns in Malaysia. Using monetary (M1, M2, exchange rate, interest rate), real (industrial production index) and international (federal fund rate) variables from 1992 to 2000. They found that both indices reacted similarly to all the macroeconomic variables except interest rate about Islamic index where there was no significant influence.

2.4 Literature Review On Interest Rate (TBR)

Treasury bill or T-bill is a short-term financial instruments that being issued with maturity less than one year. T-bills are considered as one of the safest financial instruments as they are backed by government. When government issued T-bills meaning they are borrowing money from the investors. T-bill is a monetary policy instruments where governments use it to fulfil their short term requirements. The money

that been lend are uses for necessities such as to fund public projects, paying salaries and buying equipment needed. It is also one of a way for commercial banks to invest their surplus money by buying government bills.

The relationship between stock markets returns and interest rate have been studied by many researchers as it shows one of important determinants influencing economic development (Aydemir and Demirhan, 2009). Changes in interest rate could affect the value of company stocks, shares and returns. In conventional stock market, interest rate would affect the volatility and their performance as well. High interest rate resulting to contractionary money policy where eventually will effecting stock market return as it reducing value of equity. On contrast, expansionary monetary policy where lower interest rate will raise up the value of the stock market (Fama,1981; Geske and Roll, 1983).

The effect of interest rate using treasure bill rate has been studied over emerging markets (Al-Sharkas, 2004). It shows that it may not be a reflection of investment cost. Mahmudul and Gazi (2009) have found where interest rate exerts significant negative relationship with stock market from various countries. Humpe and Macmillan (2007) find that Japan and US stock prices are negatively correlated to long term interest rate. Adam and Tweneboah (2008) discover interrelation between stock prices and interest rates are negatives and statistically significant on Ghana stock market. More, Kyereboah Coleman and Agyire-Tettey (2008) and Anokye and Tweneboah (2008) summarize that interest rate used as proxy of treasury bill rate have significant effect and cointegrated with stock market returns. However, Kuwomu and Owusu-Nantwi (2011) reveals that Treasury bill rate is not significant towards stock market returns. Gan et al (2006) agree that opportunity costs of holding cash rises with increase in interest rate, and the trade-off to holding other interest bearing securities would lead to a decrease in share price. Theoretically, French et al. (1987) find negative relationship between stock returns and both the long term and short term interest rates. Bulmash and Trivoli (1991). On the other hand, the same study established a negative relationship between stock prices and the Treasury bill rate.

Since interest is forbidden under Islamic law and Muslim investors try to avoid it by demanding an Islamic index that excludes companies that earn interest as its main

business, therefore Islamic indices should not be affected by the change in the rate of interest. In other words, Islamic indices should be affected only by real factors in the economy and not by the fluctuations in the rate of interest. Meanwhile in Islamic stock market, it does not affect as it is free of interest rate. Ahmad (2005) has studied the relationship between Shariah index, index of gold and the national treasury bills. In this study, cointegration analysis is used to assess the diversity of investments between the stock market was applied in assessing whether the rate of return in the Islamic index, index of gold and treasury bills, give effect to the share of investment choices. Johansen cointegration tests and vector error correction model was used to analyze the relationship between the three items. In overall, the study found that in the short term, the gold index and the Islamic index has a significant relationship, while in the long run, the three variables have a significant relationship. Hakim and Rashidian (2005) and Mohd. Yusof and Majid (2007) and Mohd. Yusof and Abd. Majid (2006) found that interest rate does not have any impact on the Islamic stock market index in US and Malaysia respectively. Yuosof and Majid (2007) investigated whether there was a difference in the reaction towards macroeconomic variables between islamically complaint and non-Islamically complaint indices returns in Malaysia. Using monetary (M1, M2, exchange rate, interest rate), real (industrial production index) and international (federal fund rate) variables from 1992 to 2000. They found that both indices reacted similarly to all the macroeconomic variables except interest rate about Islamic index where there was no significant influence.

2.5 Literature Review On Exchange Rate (MYR)

Adjasi, Harvey and Ayapong (2008) studies correlation between stock markets and foreign exchange market and has founded that it is a negative relationship. Although Solnik (1987) proved that exchange rate is a non-significant factor in explaining development of stock prices, Jorion (1990) finds some relationship between stock returns of US multinational companies and the effective US dollar exchange rate for the period 1971-87. Aggarwal (1981) also finds a positive relationship between revaluation of the US dollar and stock prices. Mukherjee and Naka (1995) also find that exchange rate positively relates to stock prices in Japan and Indonesia. On the contrary, Soenen and Hennigar (1988) reported that US dollar effective exchange rate negatively affect US stock market index during 1980-86. Adler and Dumas (1984) argue that even firms

whose entire operations are domestic may be affected by exchange rates, if their input and output prices are influenced by currency movements. Other studies have argued that depreciation of the local currency increases export, and hence stock prices. Lueherman (1991) finds that although exchange rate movements affect stock prices depreciation of the local currency does not constitute competitive advantage for home companies as argued. Oyama (1997) pointed out that the risk premium for Venezuela stock market, Jordan and Pakistan declined sharply between 1990 and 1992 following liberalization of stock investment by foreigners in 1990, and increase of the amount of home currency and foreign exchange that could be taken abroad by residents and nonresidents. Ibrahim (2001) applied Vector autoregressive techniques in the Malaysian market before and during the Asian crisis. He used Kuala Lumpur composite index (KLCI), Money supply (M2), exchange rate, real activity (Industrial production) and inflation (consumer price index) from 1977 to 1997 and 1997 to 1998. He found that stock prices were more affected by money supply but not vice versa. Impulse response results suggested that KLCI responded positively to all the variables except exchange rates.

In Islamic context, Mansor and Nazihah (2009) examined the relationship between stock prices and economic variables selected in Malaysia, Korea, Thailand, Hong Kong, Japan and Australia. The selected economic variables are foreign exchange rates, inflation and consumer price indices of industrial production. Data were used from 1993 to 2002. Based on the findings, they concluded that Japan, Korea, Hong Kong and Australia have a long-term equilibrium with variable-selected economic variables. Other countries like Hong Kong was significant related to the equilibrium stock prices and exchange rates. In addition, using three types of exchange rates. Ibrahim (2000) analyzed the interaction between stock prices and exchange rates in Malaysia. The paper used three exchange rates measures, real effective exchange rate, the nominal effective exchange rate, the RM/US\$ rate along with money supply broadly defined (M2), official reserve and Kuala Lumpur Composite Index. The period considered was from January 1979 to June 1997. The findings from bivariate models indicated no long run relationship between the stock market index and any of the exchange rates. However, in multivariate model, the results indicated the following. First, unidirectional causality from the stock market to the exchange rate, second, the exchange rate and stock index were caused by the money supply and the reserve, lastly,

the error correction coefficients indicated the stock index and the exchange rates adjusted to correct of deviation from long run relationships that 6 constrained the co-moves. Ibrahim and Yosoff (2001) asserted that previous studies stop at reporting cointegration and Granger causality while there were stronger techniques that should be used such as impulse response and variance decomposition. The paper used Kuala Lumpur composite index, exchange rate, industrial production, broad money supply (M2) and consumer price index from 1977 to 1998 on monthly basis. After applying cointegration, VAR, impulse response and variance decomposition, they concluded the following. Variables were found to be cointegrated and that in the long-term industrial production and inflation were positively related to composite index while it was the opposite for M2 and exchange rate. Yuosof and Majid (2007) investigated whether there was a difference in the reaction towards macroeconomic variables between islamically complaint and non-Islamically complaint indices returns in Malaysia. Using monetary (M1, M2, exchange rate, interest rate), real (industrial production index) and international (federal fund rate) variables from 1992 to 2000. They found that both indices reacted similarly to all the macroeconomic variables except interest rate about Islamic index where there was no significant influence.

2.6 Literature Review On Industrial Production Index (IPI)

Chen et al. (1986) used some macroeconomic variables to explain stock returns in the US stock markets. They show that industrial production, changes in risk premiums, and changes in the term structure are positively related to the expected stock returns. Moreover, impulse response confirmed the earlier results of cointegration, whereby innovations in industrial production and consumer price index caused positive response in composite index Ibrahim and Yosoff (2001). Ibrahim (2001) applied Vector autoregressive techniques in the Malaysian market before and during the Asian crisis. He used Kuala Lumpur composite index (KLCI), Money supply (M2), exchange rate, real activity (Industrial production) and inflation (consumer price index) from 1977 to 1997 and 1997 to 1998. He found that stock prices were more affected by money supply but not vice versa. Impulse response results suggested that KLCI responded positively to all the variables except exchange rates.

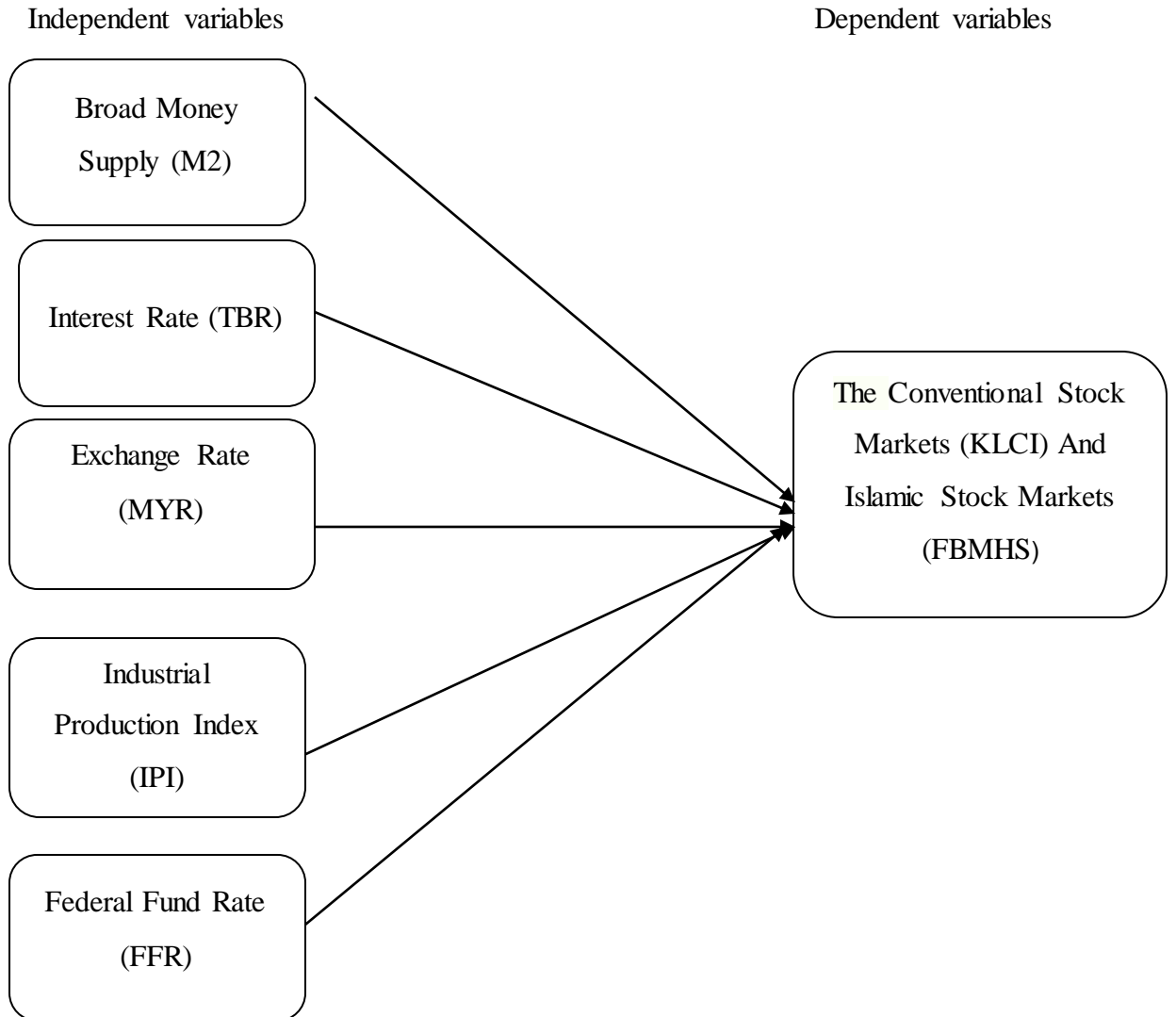
While in Islamic market, Ibrahim and Yosoff (2001) focused on a subset of the markets in Malaysia. The paper used Kuala Lumpur composite index, exchange rate, industrial production, broad money supply (M2) and consumer price index from 1977 to 1998 on monthly basis. After applying cointegration, VAR, impulse response and variance decomposition, they concluded the following. Variables were found to be cointegrated and that in the long-term industrial production and inflation were positively related to composite index while it was the opposite for M2 and exchange rate. Yuosof and Majid (2007) investigated whether there was a difference in the reaction towards macroeconomic variables between islamically complaint and non-Islamically complaint indices returns in Malaysia. Using monetary (M1, M2, exchange rate, interest rate), real (industrial production index) and international (federal fund rate) variables from 1992 to 2000. They found that both indices reacted similarly to all the macroeconomic variables except interest rate about Islamic index where there was no significant influence.

2.7 Literature Review On Federal Fund Rate (FFR)

On Islamic market, Yusof and Abd. Majid (2009) found that Malaysian Islamic index is affected positively by local interest rate and US federal fund rate. As when interest rate increases Muslim investors will invest more in Shariah compliant stock rather depositing their money in banks and getting higher interest rates. In this sense, Muslim investors are basically avoiding the excess interest rate return from bank deposits or interest-bearing securities. This means that Muslim investors actually observe the interest rate movement and react accordingly, which follow the concept of rational investor.

2.8 Research framework

Titles: Volatility and Performance of Malaysian Stock Market : A parallel market evidence



2.9 Summary

In the past, the conventional market index is the option that exists in the market. After the Islamic stock market index is introduced, the item has a big impact on the development of current stock market index. For example, Sadeghi (2008) indicate that, the market is composed of two periods, the effect of long-term and short-term impact. According to the study, in the short term, investors can experience a slight annoyance to the Shariah indices to see its potential. Nevertheless, in the longer term, the index of Shariah will be able to attract more Muslim investors who want the Islamic Syariah investments. After the introduction of Islamic Stock Market Indexes, many investors are keen to invest as they see the performance of the market regardless in economic situation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The analyst will show how the examination did include demonstrates all the method that utilizing in this research to illuminate the issue of this analysis on the chapter three. Along these lines, this research will have finished by using the source of data, data collection, types of variables, research methodology, research design, data analyst and constructed summary to be fused. There include the research method and the statistical technique utilized by the analyst in choosing the significant towards the picked element.

3.2 Sampling

Sampling is referring to selected of a few representatives which have same characteristics of the total population can be ascertain. In this research, we are using 192 observations, where the time horizon will start from 2004 to 2019 on monthly data. Moreover, the Malaysia Stock Markets will be the dependent variables while macroeconomic factors as the independent variables.

3.3 Data Collection

Data collection is a process of gathering information based on our interest from various resources that can be reliable on. This data collection can be used for seeking answer for our research questions. Data can be divided into two which are quantitative and also qualitative. In this research, quantitative data be chosen because involving numerical such as price, ratio and others. Data collection have two types which are primary data and secondary data. Primary data is data that is collected by a researcher using several methods such as questionnaires, interviews or experiments. On the other hand, secondary data refers as data from primary data

but uses by others who is not collector. This data common sources for social science where include information data collected from organizations or government.

This research is focusing on secondary data that been obtained from websites, Bursa Malaysia and data stream where we can find data for our variables. For literature review, the data collected from journal articles mostly are from emerald insight, academia and other various website. By using this data, we know that this data is reliable, trusted and valid for purpose of this studies.

3.4 Variables

For the variables, there are five independent variables used to investigate their relationship with the performance of Malaysia stock market.

3.4.1 Dependent variables

3.4.1.1 The Conventional Stock Markets (KLCI)

The FTSE Bursa Malaysia KLCI, also known as the FBM KLCI, is a capitalisation-weighted stock market index, composed of the 30 largest companies on the Bursa Malaysia by market capitalisation that meet the eligibility requirements of the FTSE Bursa Malaysia Index Ground Rules. The index is jointly operated by FTSE and Bursa Malaysia. Bursa Malaysia partnered with FTSE to provide a suite of indices for the Malaysian market, to enhance the KLCI. FTSE Bursa Malaysia KLCI was one of the indices created to replace the KLCI. The enhancement will adopt the internationally recognised index calculation formula to increase transparency as well as making the index more tradable.

3.4.1.2 Islamic Stock Markets (FBMHS)

The FTSE Bursa Malaysia Hijrah Shariah Index is a tradable index which comprises the 30 largest companies in the FBM EMAS Index that meets the following triple screening process FTSE's global standards of free float, liquidity and

investability. Yasaar's international Shariah screening methodology. Malaysian Securities Commission's Shariah Advisory Council (SAC) screening methodology.

3.4.2 Independent Variables

3.4.2.1 Broad Money Supply (M2)

Broad money or M2 is a measure of the money supply that includes cash, checking deposits, and easily convertible near money. M2 is a broader measure of the money supply than M1, which just includes cash and checking deposits. M2 is a calculation of the money supply that includes all elements of M1 as well as "near money." M1 includes cash and checking deposits, while near money refers to savings deposits, money market securities, mutual funds, and other time deposits. These assets are less liquid than M1 and not as suitable as exchange mediums, but they can be quickly converted into cash or checking deposits. M2 is closely watched as an indicator of money supply and future inflation, and as a target of central bank monetary.

3.4.2.2 Interest Rate (TBR)

The interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. The interest rate is typically noted on an annual basis known as the annual percentage rate (APR). The interest rate is the amount charged on top of the principal by a lender to a borrower for the use of assets.

3.4.2.3 Exchange Rate (MYR)

An exchange rate is the value of one nation's currency versus the currency of another nation or economic zone. Most exchange rates are free-floating and will rise or fall based on supply and demand in the market. Some currencies are not free-floating and have restrictions.

3.4.2.4 Industrial Production Index (IPI)

The industrial production index (IPI) is measures levels of production by monthly economic indicator measuring real output in the manufacturing, mining, electric and gas industries, relative to a base year. It also measures capacity, an estimate of the production levels that could be sustainably maintained; and capacity utilization, the ratio of actual output to capacity.

3.4.2.5 Federal Fund Rate (FFR)

Federal funds rate is the target interest rate set by the Federal Open Market Committee (FOMC) at which commercial banks borrow and lend their excess reserves to each other overnight. FOMC sets a target federal funds rate eight times a year, based on prevailing economic conditions. The federal funds rate can influence short-term rates on consumer loans and credit cards as well as impact the stock market.

3.5 Research Design

Research design is showing how does the performance of Malaysia stock market between conventional and Islamic markets. This also shows the volatility between two markets that run parallelly at the same. This research study is conducted to investigate the relationship between of broad money supply (M2), interest rate (TBR), exchange rate (MYR), Industrial Production Index (IPI), Federal Fund Rate (FFR) towards performance of Malaysia stock market. In this research, researchers use a secondary data. This research studies using time series data. In this research, it is using quantitative monthly data starting from the year 2004 until 2019. Total collections are 192 samples. All data that we use are taken from the official websites such Bank Negara Malaysia, Bursa Malaysia, World Bank Data and Investing.com. All data are accurate and valid as it is taken from reliable resources. Data will be analysed in the multiple regression model to study the relationship between the dependent variable and independent variables.

3.6 Hypothesis Statement

3.6.1 Conventional Stock Market

iv) Broad Money Supply (M2)

H₀: There is no significant relationship between Broad Money Supply (M2) and the Conventional Stock Markets (KLCI)

H_A: There is significant relationship between Broad Money Supply (M2) and the Conventional Stock Markets (KLCI)

v) Interest Rate (TBR)

H₀ : There is no significant relationship between Interest Rate (TBR) and the Conventional Stock Markets (KLCI)

H_A : There is significant relationship between Interest Rate (TBR) and the Conventional Stock Markets (KLCI)

vi) Exchange Rate (MYR)

H₀ : There is no significant relationship between Exchange Rate (MYR) and the Conventional Stock Markets (KLCI)

H_A : There is significant relationship between Exchange Rate (MYR) and the Conventional Stock Markets (KLCI)

vii) Industrial Production Index (IPI)

H₀ : There is no significant relationship between Industrial Production Index (IPI) and the Conventional Stock Markets (KLCI)

H_A : There is significant relationship between Industrial Production Index (IPI) and the Conventional Stock Markets (KLCI)

viii) Federal Fund Rate (FFR)

H₀ : There is no significant relationship between Federal Fund Rate (FFR) and the Conventional Stock Markets (KLCI)

H_A : There is significant relationship between Federal Fund Rate (FFR) and the Conventional Stock Markets (KLCI)

3.6.2 Islamic Stock Market

i) Broad Money Supply (M2)

H_0 : There is no significant relationship between Broad Money Supply (M2) and the Islamic Stock Markets (FBMHS)

H_A : There is significant relationship between Broad Money Supply (M2) and the Islamic Stock Markets (FBMHS)

ii) Interest Rate (TBR)

H_0 : There is no significant relationship between Interest Rate (TBR) and the Islamic Stock Markets (FBMHS)

H_A : There is significant relationship between Interest Rate (TBR) and the Islamic Stock Markets (FBMHS)

iii) Exchange Rate (MYR)

H_0 : There is no significant relationship between Exchange Rate (MYR)and the Islamic Stock Markets (FBMHS)

H_A : There is significant relationship between Exchange Rate (MYR)and the Islamic Stock Markets (FBMHS)

iv) Industrial Production Index (IPI)

H_0 : There is no significant relationship between Industrial Production Index (IPI) and the Islamic Stock Markets (FBMHS)

H_A : There is significant relationship between Industrial Production Index (IPI) and the Islamic Stock Markets (FBMHS)

v) Federal Fund Rate (FFR)

H_0 : There is no significant relationship between Federal Fund Rate (FFR)and the Islamic Stock Markets (FBMHS)

H_A : There is significant relationship between Federal Fund Rate (FFR)and the Islamic Stock Markets (FBMHS).

3.7 Research Methodology

3.7.1 Descriptive statistics

Descriptive statistics used to measure the quantitative description in a manageable type of forms. usually means are used in the descriptive statistics. Means is a measure of the tendency of average of scores. To calculate means, the values are added up and divided by number of values. Descriptive statistics provides a summary of the samples and the measurement used. Also, it can simplify a big amount of data into more simple summary.

3.7.2 Correlations

Correlations is used to measure the strength of relationship between two variables. It shows the significance of relationship each of variables that were measured at ratio level. Correlations test is aimed to observe either there is linear relationship or correlation that exist between determinant variables and the independent variables. There are two types of correlations which are the negative and positive sign. Positive sign refer to there is positive relationship between dependant variables and determinant variables while negative sign shows there is negative relationship between variables. The coefficient is measured by using range -1 until 1. By implementing coefficient test, it can give understanding about the relationship for every variable.

3.7.3 Multiple Regression Model

Multiple Regression analysis is a statistical approach that measure the relationship among variables which have reason and result relation. By using regression method, it enables us to estimates the regression equation and helps to understand how independent variable can affect the dependent variables. It also helps to predict and forecasted if it has substantial overlap of the data. Besides, this analysis helps to identify the problem and can be used to identify the strength of relationships between variables. Dependent variable refers to main topics that can be changed where it is the variables that need to be understand and to predict. While, independent variable refers to the determinants that give impact to dependent variable and change the dependant variables.

Model 1:

$$Y_t = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where,

Y_t = Performance of Conventional Stock Market $\varepsilon_t, t=1, 2, \dots, n$

X_1 = broad money supply (M2)

X_2 = interest rate (TBR)

X_3 = exchange rate (MYR)

X_4 = Industrial Production Index (IPI)

X_5 = Federal Fund Rate (FFR)

Model 2:

$$Z_t = \alpha_0 + P_1 X_{1t} + P_2 X_{2t} + P_3 X_{3t} + P_4 X_{4t} + P_5 X_{5t} + e_t$$

Where,

Z_t = Performance of Islamic Stock Market $\varepsilon_t, t=1, 2, \dots, n$

X_1 = broad money supply (M2)

X_2 = interest rate (TBR)

X_3 = exchange rate (MYR)

X_4 = Industrial Production Index (IPI)

X_5 = Federal Fund Rate (FFR)

3.7.4 F-Test

F-test is the test that is used to test a single or null hypothesis about a group of regression slope coefficients. The null hypothesis in F-test of overall that is all the slope coefficients in the equation equal zero simultaneously.

3.7.5 T-Test

T-test is the test that is used to check whether there is a significant relationship between the means of two groups in which it might be related in a certain feature. It is used for

the aims of testing the hypothesis.

3.7.6 Coefficient of Determination (R^2)

For the coefficient of determination, it refers to the proportion of variance in the dependant variable which is the bank failures that can be affected by the independent variables which is the capital, asset quality, liquidity, efficiency and earnings.

3.7.7 Adjusted (R^2)

Adjusted R^2 is measure the percentage of the variation of Y around its mean is explained by the regression model, adjusted for degrees of freedom. Adjusted R^2 can be used to compare the fits of regressions with the same dependent variable and different numbers of independent variables

3.7.8 Durbin Watson Test

It refers to a test that used to examine the correlation for every variables. the durbin Watson test can be measured by reading the statistics following its range which is a data that near to 2.0 shows there is n serial correlation between variables while a value near to 0 shows there is existence of correlation between variables.

3.7.9 Normality test

Normality test is a test to measure how a data of each variables is fit to a normal distribution. Any data that is going to resulting in a poor is because of the data does not meet the expectation of normality test.

3.7.10 Multicollinearity test

Multicollinearity test refer to a test where an dependent variable in multiple regression model can be forecasted by others variables with a certain level of accuracy. It does not decrease the predictive powers with the samples of data that were used in the research.

3.7.11 Autocorrelation test

Autocorrelation test refer to the analysis of similarities and correlation between the samples of data and variables. it also refers to the Pearson correlation between values of process in a different time.

3.7.12 Heteroskedasticity

Heteroskedasticity is caused by error in specification for example omitted variable or known as impure heteroskedasticity. Impure heteroskedasticity is similar to impure serial correlation.

3.8 Summary

In conclusion, this chapter explains about the research methodology between independent variables and dependant variables which shows the significant each of determinant variables to the performance of stock market. Next, TBR, FFR, IPI, MYR and M2 get a clear picture and understanding of performance of stock market in Malaysia and to examine whether there is a clear relationship between these variables.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter focusses on research finding, data analysis and research interpretation that is related to the topic of factor that affect the performance of Malaysia stock market from 2004 to 2019. In addition, there are empirical results that are handled and will be reviewed and analyzed. This research is designed to interpret the hypotheses and study the relationship between dependent variable and independent variable. Findings and analyzing research are using the multiple linear regression from E-Views.

4.2 Descriptive Analysis

	KLCI	EXC_RATE	IPI	M2	FFR	TBR
Mean	1460.492	0.281032	3.121311	7.736339	3.091530	2.971158
Median	1580.670	0.281700	3.750000	7.690000	3.000000	3.036000
Maximum	1882.710	0.337600	10.20000	14.63000	3.500000	3.434000
Minimum	860.73000	0.222900	-7.00000	2.680000	2.000000	2.053000
Std. Dev	322.7791	0.032443	3.224236	3.522105	0.392438	0.368221
Skewness	-0.609929	-0.039320	-1.674837	0.356124	-1.328323	-0.987392
Observation	183	183	183	183	183	183

Table 1.1: Descriptive Analysis for Conventional Market

Table 1.1 above show that the KLCI as the dependent variable while the EXC_RATE, IPI, M2, OPR and TBR as the independent variable. Based on the table above, it indicates that the mean of KLCI which refers to the average is 1460.492 and for median is 1580.670 while

the maximum is 1882.710. Furthermore, the skewness for KLCI, EXC_RATE, IPI, OPR and TBR are -0.609929, -0.039320, -1.674837, -1.328323 and -0.987392 respectively and it will skew to the left because the value is more than zero means that it has negative skewness to the left while M2 is 0.356124 will skew to the right because the value is more than zero means that it has positive skewness to the right.

	FBMHS	IPI	EXC_RATE	M2	FFR	TBR
Mean	11104.89	3.121311	0.281032	7.736339	3.091530	3.253770
Median	11660.06	3.750000	0.281700	7.690000	3.000000	3.090000
Maximum	15168.77	10.20000	0.337600	14.63000	3.500000	23.23000
Minimum	5439.970	-7.00000	0.222900	2.680000	2.000000	2.050000
Std. Dev	3037.613	3.224236	0.032443	3.522105	-1.328323	7.293161
Skewness	-0.492764	-1.674837	-0.039320	0.356124	-1.328323	7.293161
Observation	183	183	183	183	183	183

Table 1.2: Descriptive Analysis for Islamic Stock Market

Table 1.2 above show that the FBMHS as the dependent variable while the EXC_RATE, IPI, M2, FFR and TBR as the independent variable. Based on the table above, it indicates that the mean of FBMHS which refers to the average is 11104.89 and for median is 11660.06 while the maximum is 15168.77. Furthermore, the skewness for FBMHS, IPI, EXC_RATE and FFR are -0.492764, -1.674837, -0.039320 and -1.328323 respectively and it will skew to the left because the value is more than zero means that it has negative skewness to the left while M2 and TBR are 0.356124 and 7.293161 will skew to the right because the value is more than zero means that it has positive skewness to the right.

4.3 Stationary Test

	Adf test	1%	5%	10%	prob
DKLCI	-12.25940	-3.466580	-2.877363	-2.575284	0.0000
DEXC_RATE	-13.24830	-4.009558	-3.434844	-3.141399	0.0000

DIPI	-6.968096	-3.468980	-2.878413	-2.575844	0.0000
DM2	-13.41223	-3.466580	-2.877363	-2.575284	0.0000
DFFR	-6.061937	-3.466786	-2.877453	-2.575332	0.0000
DTBRC	-13.52648	-3.466580	-2.877363	-2.575284	0.0000

Table 2.1: Stationary test for conventional stock market

Stationary test is used to determine whether the raw data is stationary or not. If there is existence of non-stationary data, the regression model will not valid. It is presented as the unit root test.

The hypothesis are:

H_0 : The data is non-stationary

H_A : The data is stationary

The p-value refer to the probability in the table 2.1 for the measurement proxies for DKLCI, the P-value is 0.00. It shows that we reject the null hypothesis of non-stationary and it indicates that the DKLCI variable is a stationary data.

For the independent variables, firstly is the DIPI, the p-value is also 0.00. It means that the null hypothesis of non-stationary is rejected and DIPI variables is a stationary data. Secondly is DEXC_RATE, its p-value also amounting to 0.00 which means the null hypothesis of non-stationary is rejected and DEXC_RATE variables is a stationary data. Thirdly is DM2, it has a p-value of 0.00 which means the null hypothesis of non-stationary is also rejected and DM2 variables is a stationary data. Next is DFFR, its p-value is 0.00 which means the null hypothesis of non-stationary is rejected and DFFR variables is a stationary data. Lastly is DTBR, its p-value is 0.00 which means the null hypothesis of non-stationary is rejected and DTBR variables is a stationary data.

	Adf test	1%	5%	10%	prob
DFBMHS	-11.95673	-2.577801	-1.942594	-1.615534	0.0000
DM2	-13.41641	-2.577801	-1.942594	-1.615534	0.0000
DEXC_RATE	-13.18438	-3.466580	-2.877363	-2.575284	0.0000
IPI	-1.710193	-2.578636	-1.942710	-1.615460	0.0826
FFR	-2.633093	-3.466786	-2.877453	-2.575332	0.0882
TBRI	-12.97012	-3.466377	-2.877274	-2.57536	0.0000

Table 2.2: Stationary test for Islamic stock market

Stationary test is used to determine whether the raw data is stationary or not. If there is existence of non-stationary data, the regression model will not valid. It is presented as the unit root test. The hypothesis are:

H_0 : The data is non-stationary

H_A : The data is stationary

The p-value refer to the probability in the table 2.1 for the measurement proxies for DFBMHS, the P-value is 0.00. It shows that we reject the null hypothesis of non-stationary and it indicates that the DFBMHS variable is a stationary data.

For the independent variables, firstly is the IPI, the p-value is also 0.0826. It means that the null hypothesis of non-stationary is rejected and IPI variables is a stationary data. Secondly is DEXC_RATE, its p-value also amounting to 0.00 which means the null hypothesis of non-stationary is rejected and DEXC_RATE is a stationary data. Thirdly is DM2, it has a p-value of 0.00 which means the null hypothesis of non-stationary is also rejected and DM2 is a stationary data. Next is FFR, its p-value is 0.0882 which means the null hypothesis of non-stationary is rejected and FFR is a stationary data. Lastly is DTBR, its p-value is 0.00 which means the null hypothesis of non-stationary is rejected and DTBR is a stationary data.

4.4 Correlation Analysis

Correlation Probability	DEXC_RATE	DIPI	DKLCI	DM2	DFFR	DTBR
DEXC_RATE	1.000000 -					
DIPI	0.079877 0.2838	1.000000 -				
DKLCI	0.449875 0.0000	-.0047303 0.5260	1.000000 -			

DM2	0.037895 0.6115	-0.025138 0.7362	-0.031327 0.6746	1.000000 -		
DFFR	-0.008496 0.9094	-0.000940 0.9899	0.028325 0.7043	-0.001569 0.9832	1.000000 -	
DTBR	0.118933 0.1098	0.442096 0.0000	0.043181 0.5627	0.165898 0.0252	0.013598 0.8554	1.000000 -

Table 3.1: Correlation analysis for conventional stock market

The correlation analysis is used to see whether there is linear relationship or correlation between the dependent variable and independent variable. This can take any value between -1 and +1. A value of +1 represents the perfect positive correlation. The correlation is considered strong correlation when the value greater than 0.8 while value between 0.5 and 0.8 is considered moderate and lesser than 0.5 considered have weak correlation.

The result in the table 3.1 above show that there is negative weak correlation between the DKLCI with DM2 (-0.031327) and it is not significant because it more than 10% significant level. Other than that, there is a positive very weak correlation between the DKLCI and DFFR (0.028325) which also not significant. The correlation between the DKLCI and DTBR is found to be positive weak correlation at 0.043181 and it also not significant at any level.

Correlation Probability	DEXC_RATE	DFBMHS	DM2	IPI	FFR	TBRI
DEXC_RATE	1.000000 -					
DFBMHS	0.389306 0.0000	1.000000 -				
DM2	0.037895 0.6115	-0.033359 0.6548	1.000000 -			

IPI	0.064404 0.3877	-0.002326 0.9751	0.012622 0.8657	1.000000 -		
FFR	-0.094350 0.2052	-0.134019 0.0713	-0.019964 0.7891	0.508669 0.0000	1.000000 -	
TBRI	-0.047905 0.5208	0.032789 0.6604	0.009291 0.9009	0.039557 0.5960	0.004375 0.9533	1.000000 -

Table 3.2: Correlation analysis for Islamic stock market

The correlation analysis is used to see whether there is linear relationship or correlation between the dependent variable and independent variable. This can take any value between -1 and +1. A value of +1 represents the perfect positive correlation. The correlation is considered strong correlation when the value greater than 0.8 while value between 0.5 and 0.8 is considered moderate and lesser than 0.5 considered have weak correlation.

The result in the table 2 above show that there is negative weak correlation between the DFBMHS with IPI (-0.002326) and it is not significant because it more than 10% level. Other than that, there is a positive weak correlation between the DFBMHS and TBR (0.032789) which also not significant. However, there negative weak correlation between DFBMHS and FFR (-0.134019) and significant at 5% level of significant.

4.5 Regression Analysis

4.5.1 R-squared

R-squared	0.214499
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Table 4.1: R-squared for conventional stock market

The coefficient of multiple determination (R^2) indicates the degree of the goodness of

fit for estimated multiple regression equation. It can be interpreted as how good a predictor multiple regression equation is likely to be. It represents the proportion of the variability in the dependent variable that can be explained by multiple regression equation. For the table above the $R^2 = 0.214499$ which it means that only 21.44% of the dependent variables can be explained by independent variable while the other 78.56% are explain by other factors that not included in this research.

R-squared	0.166950
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Table 4.2: R-squared for Islamic stock market

The coefficient of multiple determination (R^2) indicates the degree of the goodness of fit for estimated multiple regression equation. It can be interpreted as how good a predictor multiple regression equation is likely to be. It represents the proportion of the variability in the dependent variable that can be explained by multiple regression equation. For the table above the $R^2 = 0.166950$ which it means that only 16.70% of the dependent variables can be explained by independent variable while the other 83.30 % are explain by other factors that not included in this research.

4.5.2 Significant level

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	4.073725	2.957096	1.377610	0.1701
DIPI	-3.208644	2.294330	-1.39510	0.1637
DFFR	15.93620	33.91571	0.469877	0.6390
DTBR	14.52448	24.80098	0.585641	0.5589
DM2	-2.329917	2.711846	-0.859163	0.3914

DEXC_RATE	3366.450	497.7328	6.763569	0.0000
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Note: For level significant indicate, *** at 1%, ** at 5% and * at 10%. Reject H_0 if p-value less than 5%.

Table 5.1: Coefficient for conventional stock market

i) Hypothesis 1: Industrial Production Index (IPI)

H_0 = There is no significant relationship between IPI and conventional stock market in Malaysia.

H_A = There is significant relationship between IPI and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the IPI is not significant at 10% level.

ii) Hypothesis 2: Federal Fund Rate (FFR)

H_0 = There is no significant relationship between FFR and conventional stock market in Malaysia.

H_A = There is significant relationship between FFR and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the FFR is not significant at 10% level.

iii) Hypothesis 3: Treasury Bill Rate (TBR)

H_0 = There is no significant relationship between TBR and conventional stock market in Malaysia.

H_A = There is significant relationship between TBR and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the TBR is not significant at 10% level.

iv) Hypothesis 4: Broad Money Supply (M2)

H_0 = There is no significant relationship between MYR and conventional stock market in Malaysia.

H_A = There is significant relationship between MYR and conventional stock market in Malaysia

Result:

Failed to reject H_0 because the M2 is not significant at 10% level.

v) Hypothesis 5: Exchange Rate (MYR)

H_0 = There is no significant relationship between MYR and conventional stock market in Malaysia.

H_A = There is significant relationship between MYR and conventional stock market in Malaysia.

Result:

Reject H_0 because the MYR is significant at 1% level.

Discussion:

Based on the result hypothesis 5, it show that the exchange rate has a significant effect on performance of stock market in Malaysia. This result is support by past research by Adjasi, Harvey and Ayapong (2008) studies correlation between stock markets and foreign exchange market and has founded that it is a negative relationship and Aggarwal (1981) also finds a positive relationship between revaluation of the US dollar and stock prices. Mukherjee and Naka (1995) also find that exchange rate positively relates to stock prices in Japan and Indonesia A unit increase in exchange rate, performance stock market will increase by 3366.450 per unit increase as well.

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	345.9903	227.6026	1.520151	0.1303
DEXC_RATE	23709.06	4347.549	5.453431	0.0000
DM2	-17.05704	23.06599	-0.739489	0.4606
IPI	3.510642	9.422607	0.372577	0.7099
FFR	-108.7707	76.72719	76.72719	0.1581
TBR	7.196912	9.766633	9.766633	0.4622

Note: For level significant indicate, *** at 1%, ** at 5% and * at 10%. Reject H_0 if p-value less than 5%.

Table 5.2: Coefficient for Islamic stock market

i) Hypothesis 1: Industrial Production Index (IPI)

H_0 = There is no significant relationship between IPI and conventional stock market in Malaysia.

H_A = There is significant relationship between IPI and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the IPI is not significant at 10% level.

ii) Hypothesis 2: Federal Fund Rate (FFR)

H_0 = There is no significant relationship between FFR and conventional stock market in Malaysia.

H_A = There is significant relationship between FFR and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the FFR is not significant at 10% level.

iii) Hypothesis 3: Treasury Bill Rate (TBR)

H_0 = There is no significant relationship between TBR and conventional stock market in Malaysia.

H_A = There is significant relationship between TBR and conventional stock market in Malaysia.

Result:

Failed to reject H_0 because the TBR is not significant at 10% level.

iv) Hypothesis 4: Broad Money Supply (M2)

H_0 = There is no significant relationship between MYR and conventional stock market in Malaysia.

H_A = There is significant relationship between MYR and conventional stock market in Malaysia

Result:

Failed to reject H_0 because the M2 is not significant at 10% level.

v) Hypothesis 5: Exchange Rate (MYR)

H_0 = There is no significant relationship between MYR and conventional stock market in Malaysia.

H_A = There is significant relationship between MYR and conventional stock market in Malaysia.

Result:

Reject H_0 because the MYR is significant at 1% level.

Discussion:

Based on the result above it show that the exchange rate has a significant effect on performance of stock market in Malaysia. This result is support by past research by Mansor and Nazihah (2009) examined the relationship between stock prices and economic variables selected in Malaysia, Korea, Thailand, Hong Kong, Japan and Australia. The selected economic variables are foreign exchange rates, inflation and consumer price indices of industrial production. Data were used from 1993 to 2002. Based on the findings, they concluded that Japan, Korea, Hong Kong and Australia have a long-term equilibrium with variable-selected economic variables. Other countries like Hong Kong was significant related to the equilibrium stock prices and exchange rates. A unit increase in population growth, unemployment rate will increase by 23709.06 per unit increase as well.

4.5.3 F-test.

Prob(F-statistic)	0.000000
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Table 6.1: F-test for conventional stock market

H_0 = The independent variables do not impact the dependent variable

H_A = The independent variables do impact the dependent variable

F-Statistically show the result of value of F-Statistic and its significant of regression test on the factor that influencing conventional stock market in Malaysia such as IPI, FFR, M2, EXC_RATE, and TBR. The p-value of the F-test is 0.000000 which is significant at 5%. This indicate that all the independent variable such as IPI, OPR, M2, EXC_RATE, and TBR can statistically influence the dependent variable which is conventional stock market (KLCI). The model is fit and overall it is significant. So it means that the H_0 is rejected as it states that the independent variable does not impact the dependent variable. Therefore, this model is significant and can be used.

Prob(F-statistic)	0.000005
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Table 6.2: F-test for Islamic stock market

H_0 = The independent variables do not impact the dependent variable

H_A = The independent variables do impact the dependent variable

F-Statistically show the result of value of F-Statistic and its significant of regression test on the factor that influencing conventional stock market in Malaysia such as IPI, FFR, M2, EXC_RATE, and TBR. The p-value of the F-test is 0.000005 which is significant at 5%. This indicate that all the independent variable such as as IPI, FFR, M2, EXC_RATE, and TBR can statistically influence the dependent variable which is Islamic stock market (FBMHS). The model is fit and overall it is significant. So it means that the H_0 is rejected as it states that the independent variable does not

impact the dependent variable. Therefore, this model is significant and can be used.

4.6 Hypothesis testing

4.6.1 Multiple Linear Regression Model (Conventional Stock Market)

Variable	Coefficient	Prob
C	4.073725	0.1701
DIPI	-3.208644	0.1637
DFFR	15.93620	0.6390
DTBR	14.52448	0.5589
DM2	-2.329917	0.3914
DEXC_RATE	3366.450	0.0000

Note: For level significant indicate, *** at 1%, ** at 5% and * at 10%. Reject H_0 if p-value less than 5%

Table 7.1: Multiple Linear Regression Model

Table above shows the result for linear regression using yearly data from year 2004 until 2019.

$$Y_t = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where,

Y_t = Performance of Conventional Stock Market $\epsilon_t, t=1, 2, \dots, n$

X_1 = Industrial Production Index (IPI)

X_2 = Federal Fund Rate (FFR)

X_3 = interest rate (TBR)

X_4 = exchange rate (MYR)

X_5 = broad money supply (M2)

$$Y_t = 4.073726 - 3.208644X_1 + 15.93620X_2 + 15.93620X_3 - 2.329917X_4 + 3366.45X_5 + e$$

- i. There is negative relationship between IPI and performance of Conventional Stock Market. The relation is statistically not significant.
- ii. There is positive relationship between FFR and performance of Conventional Stock Market. The relation is not statistically significant.
- iii. There is positive relationship between TBR and performance of Conventional Stock Market. The relation is not statistically significant.
- iv. There is negative relationship MYR and performance of Conventional Stock Market. The relation is statistically significant at 5% level.
- v. There is positive relationship between M2 and performance of Conventional Stock Market. The relation is statistically not significant at 5% level.

4.6.2 Multiple Linear Regression Model (Islamic Stock Market)

Variable	Coefficient	Prob
C	345.9903	0.1303
DEXC_RATE	23709.06	0.0000
DM2	-17.05704	0.4606
IPI	3.510642	0.7099
FFR	-108.7707	0.1581
TBR	7.196912	0.4622

Note: For level significant indicate, *** at 1%, ** at 5% and * at 10%. Reject H₀ if p-value less than 5%

Table 7.2: Multiple Linear Regression Model

Table above shows the result for linear regression using yearly data from year 1987 until 2018.

$$Z_t = \alpha_0 + P_1 X_1 + P_2 X_2 + P_3 X_3 + P_4 X_4 + P_5 X_5 + e$$

Where,

Z_t = Performance of Islamic Stock Market $\varepsilon_t, t=1, 2, \dots, n$

X_1 = exchange rate (MYR)

X_2 = broad money supply (M2)

X_3 = Industrial Production Index (IPI)

X_4 = Federal Fund Rate (FFR)

X_5 = interest rate (TBR)

$$Z_t = 345.9903 + 23709.06X_1 - 17.05704X_2 + 3.510642X_3 - 108.7707X_4 + 7.196912X_5 + e$$

i) There is positive relationship between MYR and performance of Islamic Stock Market.

The relation is statistically significant at 1%.

ii) There is negative relationship between M2 and performance of Islamic Stock Market.

The relation is not statistically not significant.

iii) There is positive relationship between IPI and performance of Islamic Stock Market.

The relation is statistically not significant.

iv) There is negative relationship FFR and performance of Islamic Stock Market. The relation is statistically not significant at 10% level.

v) There is positive relationship between TBR and performance of Islamic Stock Market.

The relation is statistically not significant at 10% level.

4.7 Test on Assumption

4.7.1 Normality Test

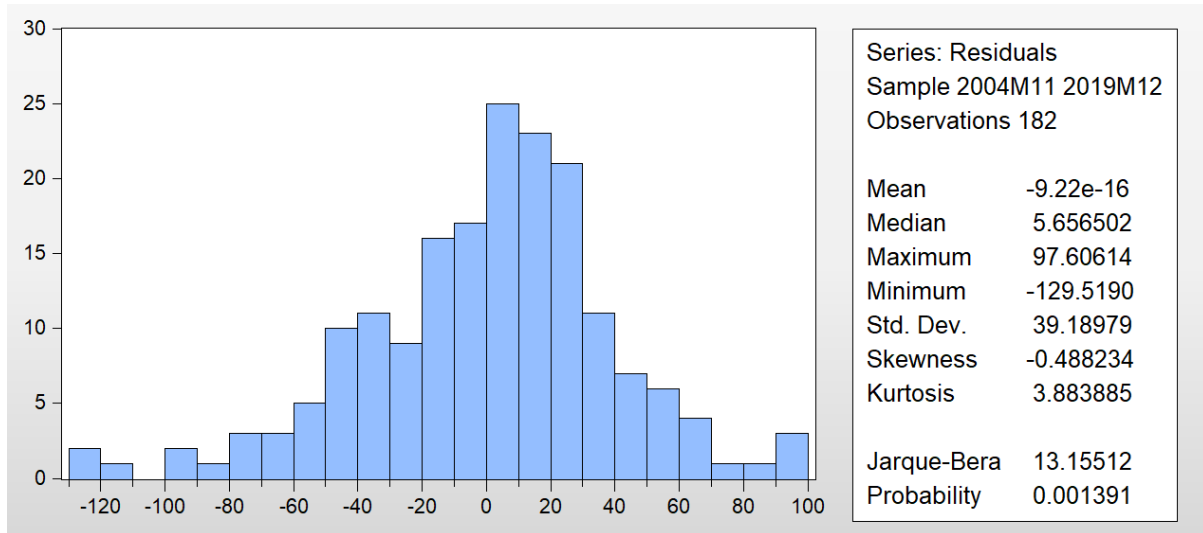


Figure 1.1: Normality test on Conventional stock mark

H_0 = Error terms is not normally distributed

H_A = Error term is normally distributed

The normality test is carried out to ensure for the compliance of normality assumption. Reject H_0 , if p-value is less than the significance level of 5%.

Based on the graph above, reject null hypothesis because the p-value is 0.001391 smaller than the significant level of 5%. The model has meet the normality assumption at 5% level of significant. Therefore, the error term is normally distributed.

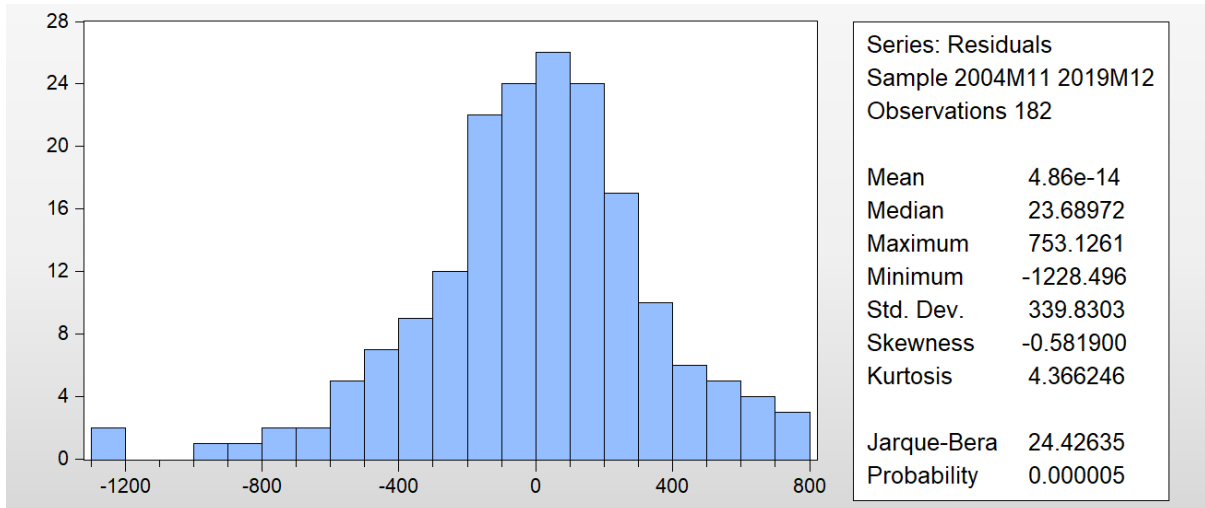


Figure 1.2: Normality test on Islamic stock market

H_0 = Error terms is not normally distributed

H_A = Error term is normally distributed

The normality test is carried out to ensure for the compliance of normality assumption. Reject H_0 , if p-value is less than the significance level of 5%.

Based on the graph above, reject null hypothesis because the p-value is 0.000005 smaller than the significant level of 5%. The model has meet the normality assumption at 5% level of significant. Therefore, the error term is normally distributed.

4.7.2 Test Autocorrelation

Durbin-Watson stat	1.933368
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Table 8.1: Durbin-Watson for conventional stock market

Durbin-Watson statistic can be used to discover whether the value of dependent variable is related to its value at the previous time period. This situation, known as autocorrelation or serial correlation, is important as it means that results of regression analysis

are less likely to be reliable. The Durbin-Watson statistic ranges in value from 0 to 4. So, from the table 4 above the Durbin-Watson which is 1.933368 shows no serious autocorrelation.

Durbin-Watson stat	1.905328
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Table 8.2: Durbin-Watson for Islamic stock market

Durbin-Watson statistic can be used to discover whether the value of dependent variable is related to its value at the previous time period. This situation, known as autocorrelation or serial correlation, is important as it means that results of regression analysis are less likely to be reliable. The Durbin-Watson statistic ranges in value from 0 to 4. So, from the table 4 above the Durbin-Watson which is 1.905328 shows no serious autocorrelation.

4.7.3 Heteroscedasticity Test

Heteroscedasticity Test (White Test)			
F-statistic	0.268478	Prob. F(5, 176)	0.9298
Obs*R-square	1.377648	Prob. Chi-Square (5)	0.8685

Table 9.1: Heteroscedasticity Test for conventional stock market

H_0 = Error term is Homoscedasticity

H_A = Error term is Heteroscedasticity

The heteroscedasticity test examines whether the variance of error term is not constant between one to the other observation in the regression model. Reject H_0 , if p-value is less than the significant level of 5%.

The probability value to be used here is the Obs.*R-squared. From the table 9.1 above

it indicates that p-value that presented by Prob. Chi-Square (5) is 0.8685 which is not significant and more than 0.05. Thus, failed to reject H_0 because the p-value is more 5% level significant. The model not meet homoscedasticity assumption at 5% level of significant.

Heteroscedasticity Test (White Test)			
F-statistic	1.884717	Prob. F(5, 176)	0.0992
Obs*R-square	9.249591	Prob. Chi-Square (5)	0.0124

Table 9.2: Heteroscedasticity Test for Islamic stock market

H_0 = Error term is Homoscedasticity

H_A = Error term is Heteroscedasticity

The heteroscedasticity test examines whether the variance of error team is not constant between one to the other observation in the regression model. Reject H_0 , if p-value is less than the significant level of 5%.

The probability value to be used here is the Obs.*R-squared. From the table 9.2 above it indicates that p-value that presented by Prob. Chi-Square (5) is 0.0124 which is significant and less than 0.05. Thus, reject H_0 because the p-value is less than 5% level significant. The model meet homoscedasticity assumption at 5% level of significant.

4.7.4 Multicollinearity Test (Variance Inflation Factor)

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	8.744415	1.007605	N/A
DEXC_RATE	247737.9	1.016198	1.015897
DIPI	5.263952	1.261088	1.259974
DM2	7.354110	1.044302	1.041738

DFFR	1150.275	1.001365	1.000365
DTBR	615.0885	1.304446	1.303666

Table 10.1: Variance Inflation Factor for conventional stock market

The variance inflation factor (VIF) is measuring the variance of estimated regression coefficient that are how much inflated as compared linearity related to predictor variable. Furthermore, it also used to explain the amount of multicollinearity that exist in regression analysis. A very small value (0.10 or below) or a large VIF value (10 or above) indicates high collinearity. Based on the table above at the centered VIF column, it shows that the VIF are at range 1 and 2 so it indicates that none of the independent variables show serious multicollinearity.

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	51802.93	79.38448	NA
DEXC_RATE	18901181	1.031090	1.030785
DM2	532.0399	1.004759	1.002293
IPI	88.78552	2.669477	1.376751
FFR	5887.062	87.47967	1.381067
TBR	95.38713	2.552442	1.004924

Table 10.2: Variance Inflation Factor for Islamic stock market

The variance inflation factor (VIF) is measuring the variance of estimated regression coefficient that are how much inflated as compared linearity related to predictor variable. Furthermore, it also used to explain the amount of multicollinearity that exist in regression analysis. A very small value (0.10 or below) or a large VIF value (10 or above) indicates high collinearity. Based on the table above at the centered VIF column, it shows that the VIF are at range 1 and 2 so it indicates that none of the independent variables show serious

multicollinearity.

4.8 Summary

The chapter has conducted diagnostic checking to detect whether the econometric problem of multicollinearity, autocorrelation, heteroscedasticity and normality error term exist in the model by using E-Views 10. The results of these test represent that the model specifications are correct, error term are normally distributed when there is no serious multicollinearity problem and heteroscedasticity.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Introduction

In this chapter, we will discuss and highlights the conclusion and results regarding to the research that had been done and the recommendation that needed to enhance the further studies related to the dependent variables and independent variables.

5.2 Conclusion 1

No	Hypothesis	Results	Support
M2	<p>H₀: There is no significant relationship between M2 and KLCI</p> <p>H_A: There is significant relationship between M2 and the KLCI</p>	Accept H ₀	Ibrahim and Yosoff (2001)
TBR	<p>H₀: There is no significant relationship between TBR and KLCI</p> <p>H_A : There is significant relationship between TBR and the KLCI</p>	Accept H ₀	Kuwomu and Owusu-Nantwi (2011)
MYR	<p>H₀: There is no significant relationship between MYR and KLCI</p> <p>H_A : There is significant relationship between</p>	Reject H ₀	Adjasi, Harvey and Ayapong (2008)

	Exchange Rate (MYR) and the Conventional Stock Markets (KLCI)		
IPI	<p>H₀: There is no significant relationship between IPI and KLCI</p> <p>H_A : There is significant relationship between IPI and KLCI</p>	Accept H ₀	Ibrahim and Yosoff (2001)
FFR	<p>H₀: There is no significant relationship between FFR and KLCI</p> <p>H_A : There is significant relationship between FFR and KLCI</p>	Accept H ₀	Yusof and Abd. Majid (2009)

Table 12.1 Summary of Analysis

Based on the multiple linear regression, we can conclude that each of the independent variables have correlation with the dependent variable even though most of them give slightly impact on it. As for Industrial Production Index (IPI) and Exchange Rate (MYR), both of them have negative correlation to the performance of the stock market while Federal Fund Rate (FFR), Interest Rate (TBR) and Broad Money Supply (M2) have positive correlation with the performance of stock market. The most significant variable among those are exchange rate where it is significant on 1 % of level of significant. However, the other variables are not significant based on level of significant of 10%.

5.3 Conclusion 2

No	Hypothesis	Results	Support
M2	H ₀ : There is no significant relationship between M2 and FBMHS	Accept H ₀	Yuosof and Majid (2007)

	<p>H_A: There is significant relationship between M2 and the FBMHS</p>		
TBR	<p>H₀: There is no significant relationship between TBR and FBMHS</p> <p>H_A : There is significant relationship between TBR and the FBMHS</p>	Accept H ₀	Hakim and Rashidian (2005) and Mohd. Yusof and Majid (2007) and Mohd. Yusof and Abd. Majid (2006)
MYR	<p>H₀: There is no significant relationship between MYR and FBMHS</p> <p>H_A : There is significant relationship between MYR and FBMHS</p>	Reject H ₀	Mansor and Nazihah (2009)
IPI	<p>H₀: There is no significant relationship between IPI and FBMHS</p> <p>H_A : There is significant relationship between IPI and FBMHS</p>	Accept H ₀	Ibrahim and Yosoff (2001)
FFR	<p>H₀: There is no significant relationship between FFR and FBMHS</p> <p>H_A : There is significant relationship between FFR and FBMHS</p>	Accept H ₀	Yusof and Abd. Majid (2009)

Table 12.2: Summary of Analysis

Based on the multiple linear regression in Islamic stock market, it can be concluded that each of the independent variables have correlation with the dependent variable. As for Federal Fund Rate (FFR), and Broad Money Supply (M2), both of them have negative correlation to the performance of the stock market while Industrial Production Index (IPI), Interest Rate (TBR) and Exchange Rate (MYR) have positive correlation with the performance of stock market. The most significant variable among those are exchange rate where it is significant on 1 % of level of significant. However, the other variables are not significant based on level of significant of 10%.

5.4 Recommendation

Based on the research that had been done, there are several recommendations for the future researchers that can be considered in order to make a research regarding to the performance of stock markets in Malaysia.

i) Add Independent Variables

From this studies, we only focused on five independent variables. Therefore, for the future researcher, they should add more the independent variables or use another independent variable that can affect the performance of stock markets in Malaysia. They can use other independent variables such as inflation, GDP and many more.

ii) Expand the Research Area

According to this research, our research area only focus at Malaysia. Therefore, future researchers should make a research regarding to the performance of stock markets in another developed and developing countries.

iii) Expand the amount of data

Since in this studies, the data collected is between 2004 to 2019, the future researchers should collect data from a recent years or increase the amount of years that they want to studies in order to access the performance of stock markets.

5.5 Summary

In conclusion, there is only one independent variables that has significant relationship with the dependant variables. From this research, the most significant independent variable is the exchange rate variables. Therefore, it can be concluded that the Malaysia Stock Market should improve other macroeconomics factors in order to increase the performance of Malaysia Stock Markets in the future. Meanwhile, for other independent variables such as interest rate, industrial production index, broad money supply and federal fund rate are less significant relationship with the dependant variables as accordance to the multiple regression model.

REFERENCES

- Adam, A. M., & Tweneboah, G. (2011). Macroeconomic Factors and Stock Market Movement: Evidence from Ghana. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.1289842>
- Adenomon, M. O., Okoro-Ugochukwu, N. A., & Adenomon, C. A. (2018). *On the Determinants of Unemployment Rate in Nigeria : Evidence from Fully Modified OLS and Error Correction Model*. 1–28. <https://doi.org/10.20944/preprints201812.0143.v1>
- Albaity, M., & Ahmad, R. (2011). Return performance, leverage effect, and volatility spillover in Islamic stock indices evidence from DJIMI, FTSEGII and KLSI. *Investment Management and Financial Innovations*, 8(3), 161–171.
- Albaity, M. S. (2012). Impact of the Monetary Policy Instruments on Islamic Stock Market Index Return. *SSRN Electronic Journal*, 0–29. <https://doi.org/10.2139/ssrn.1973469>
- Aqil, M., Qureshi, M. A., Ahmed, D. R. R., & Qadeer, S. (2014). DETERMINANTS OF UNEMPLOYMENT IN PAKISTAN. *International Journal of Physical and Social Sciences*, 4(4), 676–682.
- Arslan, M., & Zaman, R. (2014). Unemployment and its Determinants: A Study of Pakistan Economy (1999-2010). *SSRN Electronic Journal*, 5(13), 20–25.
<https://doi.org/10.2139/ssrn.2515075>
- Aye Khin, A., Yet Yee, C., Su Seng, L., Mei Wan, C., & Qi Xian, G. (2017). Exchange Rate Volatility on Macroeconomic Determinants in Malaysia: Vector Error Correction Method (VECM) Model. *Journal of Global Business and Social Entrepreneurship (GBSE)*, 3(5), 36–45. <http://gbse.com.my/v3no5may17/Paper-78-i.pdf>
- Bakare, A. S. (2011). An empirical study of the determinants of money supply growth and its effects on inflation rate in Nigeria. *Journal of Research in International Business and Management (ISSN:)*, 1(July), 124–129.
- Bekhet, H. A., & Mugableh, M. I. (2012). Investigating Equilibrium Relationship between Macroeconomic Variables and Malaysian Stock Market Index through Bounds Tests Approach. *International Journal of Economics and Finance*, 4(10).
<https://doi.org/10.5539/ijef.v4n10p69>
- Farzana, Y., & Karim, A. (2014). *Financial Distress and Performance Relationship of Banks in. March*, 675–683.
- Hakim, S., & Rashidian, M. (2002). Risk & Return of Islamic Stock Market Indexes. *9th Economic Research Forum Annual Meetings Sharjah UAE*, 2, 26–28.

<http://www.iefpedia.com/english/wp-content/uploads/2009/09/Risk-Return-of-Islamic-Stock-Market-Indexes.pdf>

- Hamilton, J. D. (1989). The long-run behavior of the velocity of circulation. A review essay. *Journal of Monetary Economics*, 23(2), 335–344. [https://doi.org/10.1016/0304-3932\(89\)90055-X](https://doi.org/10.1016/0304-3932(89)90055-X)
- Johnny, N., Timipere, E. T., Krokeme, O., & Markjackson, D. (2018). Impact of Foreign Direct Investment on Unemployment rate in Nigeria (1980-2015). *International Journal of Academic Research in Business and Social Sciences*, 8(2), 57–69. <https://doi.org/10.6007/ijarbss/v8-i3/3905>
- Mehmet, M., & Demirsel, M. T. (2013). The Effect of Foreign Direct Investments on Unemployment : Evidence From Panel Data For Seven Developing Countries. *Journal of Business, Economics & Finance*, 2(3), 53–66.
- Muhd Irpan, H., Mat Saad, R., Shaari Md Nor, A. H., Md Noor, A. H., & Ibrahim, N. (2016). Impact of Foreign Direct Investment on the Unemployment Rate in Malaysia. *Journal of Physics: Conference Series*, 710(1). <https://doi.org/10.1088/1742-6596/710/1/012028>
- Nurhanani Romli,. (2012). Volatility analysis of FTSE Bursa Malaysia: Study of the problems of Islamic stock market speculation in the period 2007 to 2010. *African Journal of Business Management*, 6(29), 8490–8495. <https://doi.org/10.5897/ajbml1.1049>
- Polytechnic, K., Bill, T., Rate, I., & Returns, S. M. (2013). *Augustine addo*. 8(2).
- Ramli, S. F., Fidaus, M., Uzair, H., Khairi, M., & Zharif, A. (2018). Prediction of the Unemployment Rate in Malaysia. *International Journal of Modern Trends in Social Sciences*, 1(4), 38–44.
- Ridzuan, A. (2014). Monetary Instruments and Inflation: Econometric Analysis Based on Malaysia Economy. *Asian Journal of Agricultural Extension, Economics & Sociology*, 3(6), 473–487. <https://doi.org/10.9734/ajaees/2014/10429>
- Ritchie, D. F. (2016). Temperate Climate Fruit Crop Pest Management (Plant Pathogens). *Encyclopedia of Biotechnology in Agriculture and Food*, 1, 1–5. <https://doi.org/10.1081/e-ebaf-120009940>
- Sadeghi, M. (2008). Financial Performance of Syariah-Compliant Investment: Evidence from Malaysian Stock. *International Research Journal of Finance and Economics*, 20(20). <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Financial+Performance+of+Shariah-Compliant+Investment:+Evidence+from+Malaysian+Stock+Market#2>
- Shaari, M. S., Hussain, N. E., & Halim, M. S. bin A. (2012). Impact of Foreign Direct

- Investment on the Unemployment Rate and Economic Growth in Malaysia. *Journal of Applied Sciences Research*, 8(9), 4900–4906. <https://doi.org/10.1088/1742-6596/710/1/012028>
- Singh, R. (2018). Impact of GDP and Inflation on Unemployment Rate : " A Study of Indian Economy in 2011- 2018 ". *International Journal of Management, IT & Engineering*, 8(3), 329–340.
- Thayaparan, A. (2014). Impact of Inflation and Economic Growth on Unemployment in Sri Lanka: A Study of Time Series Analysis. *Global Journal of Management and Business Research: B Economics and Commerce Volume*, 13(5), 44–54.
- Yacob, N., & Shahnaz Mahdzan, N. (2014). The predictive ability of consumer sentiment's volatility to the Malaysian stock market's volatility. *Afro-Asian Journal of Finance and Accounting*, 4(4), 460–476. <https://doi.org/10.1504/AJFA.2014.067018>
- Yusof, R., & Majid, M. (2007). Stock Market Volatility Transmission in Malaysia: Islamic Versus Conventional Stock Market. *التقليدية البورصة سوق مقارنة: الماليزية البورصة في التقلبات تأثير بالإسلامية*. *Journal of King Abdulaziz University-Islamic Economics*, 20(2), 19–40. <https://doi.org/10.4197/islec.20-2.2>
- Zakaria, Z., & Shamsuddin, S. (2012). Empirical evidence on the relationship between stock market volatility and macroeconomics volatility in Malaysia. *Journal of Business Studies Quarterly*, 4(2), 61–71.

APPENDICES

APPENDIX 1

Table of Data that regress on E-Views

Descriptive Analysis for Conventional Stock Market

	KLCI	EXC_RATE	IPI	M2	OPR	TBRC
Mean	1460.492	0.281032	3.121311	7.736339	3.091530	2.971158
Median	1580.670	0.281700	3.750000	7.690000	3.000000	3.036000
Maximum	1882.710	0.337600	10.20000	14.63000	3.500000	3.434000
Minimum	860.7300	0.222900	-7.000000	2.680000	2.000000	2.053000
Std. Dev.	322.7791	0.032443	3.224236	3.522105	0.392438	0.368221
Skewness	-0.609929	-0.039320	-1.674837	0.356124	-1.328323	-0.987392
Kurtosis	2.012685	1.746972	7.108536	2.460322	4.672004	3.325047
Jarque-Bera	18.77918	12.01900	214.2654	6.088952	75.13187	30.54137
Probability	0.000084	0.002455	0.000000	0.047621	0.000000	0.000000
Sum	267270.0	51.42880	571.2000	1415.750	565.7500	543.7220
Sum Sq. Dev.	18961912	0.191558	1892.017	2257.751	28.02937	24.67674
Observations	183	183	183	183	183	183

Descriptive Analysis for Islamic Stock Market

	KLSI	IPI	EXC_RATE	M2	OPR	TBRI
Mean	11104.89	3.121311	0.281032	7.736339	3.091530	3.253770
Median	11660.06	3.750000	0.281700	7.690000	3.000000	3.090000
Maximum	15168.77	10.20000	0.337600	14.63000	3.500000	23.23000
Minimum	5439.970	-7.000000	0.222900	2.680000	2.000000	2.050000
Std. Dev.	3037.613	3.224236	0.032443	3.522105	0.392438	2.621991
Skewness	-0.492764	-1.674837	-0.039320	0.356124	-1.328323	7.293161
Kurtosis	1.889178	7.108536	1.746972	2.460322	4.672004	55.84836
Jarque-Bera	16.81458	214.2654	12.01900	6.088952	75.13187	22918.54
Probability	0.000223	0.000000	0.002455	0.047621	0.000000	0.000000
Sum	2032195.	571.2000	51.42880	1415.750	565.7500	595.4400
Sum Sq. Dev.	1.68E+09	1892.017	0.191558	2257.751	28.02937	1251.220
Observations	183	183	183	183	183	183

Unit Root Test for Conventional Stock Market

KLCI

Null Hypothesis: D(KLCI) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-12.25940	0.0000
Test critical values:		
1% level	-3.466580	
5% level	-2.877363	
10% level	-2.575284	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(KLCI,2)
 Method: Least Squares
 Date: 06/28/20 Time: 17:32
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(KLCI(-1))	-0.909710	0.074205	-12.25940	0.0000
C	3.360845	3.291292	1.021132	0.3086
R-squared	0.456411	Mean dependent var		-0.160387
Adjusted R-squared	0.453374	S.D. dependent var		59.66237
S.E. of regression	44.11087	Akaike info criterion		10.42228
Sum squared resid	348292.7	Schwarz criterion		10.45762
Log likelihood	-941.2162	Hannan-Quinn criter.		10.43661
F-statistic	150.2928	Durbin-Watson stat		2.001160
Prob(F-statistic)	0.000000			

EXC_RATE

Null Hypothesis: D(EXC_RATE) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.18438	0.0000
Test critical values:		
1% level	-3.466580	
5% level	-2.877363	
10% level	-2.575284	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(EXC_RATE,2)
 Method: Least Squares
 Date: 06/28/20 Time: 17:33
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXC_RATE(-1))	-0.987446	0.074895	-13.18438	0.0000
C	-0.000102	0.000447	-0.227341	0.8204
R-squared	0.492671	Mean dependent var		2.82E-05
Adjusted R-squared	0.489836	S.D. dependent var		0.008421
S.E. of regression	0.006015	Akaike info criterion		-7.378188
Sum squared resid	0.006476	Schwarz criterion		-7.342845
Log likelihood	669.7260	Hannan-Quinn criter.		-7.363859
F-statistic	173.8279	Durbin-Watson stat		1.996131
Prob(F-statistic)	0.000000			

IPI

Null Hypothesis: D(IPI) has a unit root

Exogenous: Constant

Lag Length: 11 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.968096	0.0000
Test critical values:		
1% level	-3.468980	
5% level	-2.878413	
10% level	-2.575844	

*Mackinnon (1996) one-sided p-values.

Dependent Variable: D(IPI,2)

Method: Least Squares

Date: 06/28/20 Time: 17:36

Sample (adjusted): 2005M11 2019M12

Included observations: 170 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IPI(-1))	-1.552975	0.222869	-6.968096	0.0000
D(IPI(-1),2)	0.552808	0.213136	2.593693	0.0104
D(IPI(-2),2)	0.552642	0.202937	2.723223	0.0072
D(IPI(-3),2)	0.552476	0.192198	2.874506	0.0046
D(IPI(-4),2)	0.552310	0.180825	3.054390	0.0027
D(IPI(-5),2)	0.552143	0.168687	3.273176	0.0013
D(IPI(-6),2)	0.551977	0.155607	3.547245	0.0005
D(IPI(-7),2)	0.551811	0.141323	3.904601	0.0001
D(IPI(-8),2)	0.551644	0.125424	4.398220	0.0000
D(IPI(-9),2)	0.551478	0.107195	5.144625	0.0000
D(IPI(-10),2)	0.550790	0.087490	6.295469	0.0000
D(IPI(-11),2)	0.550102	0.061850	8.894102	0.0000
C	-0.033377	0.092340	-0.361451	0.7182
R-squared	0.667537	Mean dependent var		0.000000
Adjusted R-squared	0.642126	S.D. dependent var		2.009401
S.E. of regression	1.202075	Akaike info criterion		3.279364
Sum squared resid	226.8624	Schwarz criterion		3.519160
Log likelihood	-265.7459	Hannan-Quinn criter.		3.376670
F-statistic	26.26947	Durbin-Watson stat		2.001333
Prob(F-statistic)	0.000000			

M2

Null Hypothesis: D(M2) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.41223	0.0000
Test critical values:		
1% level	-3.466580	
5% level	-2.877363	
10% level	-2.575284	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(M2,2)
 Method: Least Squares
 Date: 06/28/20 Time: 17:38
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1))	-1.002474	0.074743	-13.41223	0.0000
C	-0.055441	0.083203	-0.666334	0.5061
R-squared	0.501237	Mean dependent var		-2.37E-17
Adjusted R-squared	0.498451	S.D. dependent var		1.578638
S.E. of regression	1.117994	Akaike info criterion		3.071937
Sum squared resid	223.7339	Schwarz criterion		3.107280
Log likelihood	-276.0103	Hannan-Quinn criter.		3.086266
F-statistic	179.8880	Durbin-Watson stat		2.000012
Prob(F-statistic)	0.000000			

OPR

Null Hypothesis: D(OPR) has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.061937	0.0000
Test critical values:		
1% level	-3.466786	
5% level	-2.877453	
10% level	-2.575332	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(OPR,2)
 Method: Least Squares
 Date: 06/28/20 Time: 17:40
 Sample (adjusted): 2005M01 2019M12
 Included observations: 180 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPR(-1))	-0.560997	0.092544	-6.061937	0.0000
D(OPR(-1),2)	-0.351080	0.070380	-4.988351	0.0000
C	-0.001558	0.006097	-0.255594	0.7986
R-squared	0.502234	Mean dependent var		0.000000
Adjusted R-squared	0.496609	S.D. dependent var		0.115187
S.E. of regression	0.081726	Akaike info criterion		-2.154373
Sum squared resid	1.182195	Schwarz criterion		-2.101157
Log likelihood	196.8936	Hannan-Quinn criter.		-2.132797
F-statistic	89.29424	Durbin-Watson stat		2.008572
Prob(F-statistic)	0.000000			

TBRC

Null Hypothesis: D(TBRC) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.52648	0.0000
Test critical values: 1% level	-3.466580	
5% level	-2.877363	
10% level	-2.575284	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(TBRC,2)
 Method: Least Squares
 Date: 06/28/20 Time: 17:40
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TBRC(-1))	-1.011121	0.074751	-13.52648	0.0000
C	0.003376	0.010168	0.332030	0.7403
R-squared	0.505478	Mean dependent var		-0.000166
Adjusted R-squared	0.502715	S.D. dependent var		0.193916
S.E. of regression	0.136746	Akaike info criterion		-1.130388
Sum squared resid	3.347229	Schwarz criterion		-1.095045
Log likelihood	104.3001	Hannan-Quinn criter.		-1.116059
F-statistic	182.9655	Durbin-Watson stat		1.999938
Prob(F-statistic)	0.000000			

Unit Root Test for Islamic Stock Market

KLSI/ FBMHS

Null Hypothesis: D(KLSI) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.95673	0.0000
Test critical values: 1% level	-2.577801	
5% level	-1.942594	
10% level	-1.615534	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(KLSI,2)
 Method: Least Squares
 Date: 06/28/20 Time: 18:25
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(KLSI(-1))	-0.887038	0.074187	-11.95673	0.0000
R-squared	0.442660	Mean dependent var		0.654807
Adjusted R-squared	0.442660	S.D. dependent var		499.2749
S.E. of regression	372.7346	Akaike info criterion		14.68512
Sum squared resid	25007592	Schwarz criterion		14.70279
Log likelihood	-1328.003	Hannan-Quinn criter.		14.69228
Durbin-Watson stat	2.010610			

M2

Null Hypothesis: D(M2) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.41641	0.0000
Test critical values:		
1% level	-2.577801	
5% level	-1.942594	
10% level	-1.615534	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(M2,2)
 Method: Least Squares
 Date: 06/28/20 Time: 18:27
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1))	-1.000000	0.074536	-13.41641	0.0000
R-squared	0.500000	Mean dependent var		-2.37E-17
Adjusted R-squared	0.500000	S.D. dependent var		1.578638
S.E. of regression	1.116266	Akaike info criterion		3.063365
Sum squared resid	224.2889	Schwarz criterion		3.081036
Log likelihood	-276.2345	Hannan-Quinn criter.		3.070529
Durbin-Watson stat	2.000000			

EXC_RATE

Null Hypothesis: D(EXC_RATE) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-13.18438	0.0000
Test critical values:		
1% level	-3.466580	
5% level	-2.877363	
10% level	-2.575284	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(EXC_RATE,2)
 Method: Least Squares
 Date: 06/28/20 Time: 18:21
 Sample (adjusted): 2004M12 2019M12
 Included observations: 181 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXC_RATE(-1))	-0.987446	0.074895	-13.18438	0.0000
C	-0.000102	0.000447	-0.227341	0.8204
R-squared	0.492671	Mean dependent var		2.82E-05
Adjusted R-squared	0.489836	S.D. dependent var		0.008421
S.E. of regression	0.006015	Akaike info criterion		-7.378188
Sum squared resid	0.006476	Schwarz criterion		-7.342845
Log likelihood	669.7260	Hannan-Quinn criter.		-7.363859
F-statistic	173.8279	Durbin-Watson stat		1.996131
Prob(F-statistic)	0.000000			

OPR

Null Hypothesis: OPR has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.633093	0.0882
Test critical values:		
1% level	-3.466786	
5% level	-2.877453	
10% level	-2.575332	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPR)
Method: Least Squares
Date: 06/28/20 Time: 18:28
Sample (adjusted): 2005M01 2019M12
Included observations: 180 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPR(-1)	-0.040705	0.015459	-2.633093	0.0092
D(OPR(-1))	0.102977	0.069465	1.482434	0.1400
D(OPR(-2))	0.372562	0.069708	5.344587	0.0000
C	0.124221	0.048144	2.580216	0.0107
R-squared	0.171971	Mean dependent var		-0.002778
Adjusted R-squared	0.157857	S.D. dependent var		0.087600
S.E. of regression	0.080389	Akaike info criterion		-2.181899
Sum squared resid	1.137390	Schwarz criterion		-2.110945
Log likelihood	200.3709	Hannan-Quinn criter.		-2.153130
F-statistic	12.18431	Durbin-Watson stat		2.036707
Prob(F-statistic)	0.000000			

IPI

Null Hypothesis: IPI has a unit root
Exogenous: None
Lag Length: 12 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.710193	0.0826
Test critical values:		
1% level	-2.578636	
5% level	-1.942710	
10% level	-1.615460	

*MacKinnon (1996) one-sided p-values.

TBR

Null Hypothesis: TBR1 has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=13)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-12.97012	0.0000
Test critical values:		
1% level	-3.466377	
5% level	-2.877274	
10% level	-2.575236	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(TBR1)
 Method: Least Squares
 Date: 06/28/20 Time: 18:29
 Sample (adjusted): 2004M11 2019M12
 Included observations: 182 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TBR1(-1)	-0.966203	0.074495	-12.97012	0.0000
C	3.143726	0.311362	10.09669	0.0000
R-squared	0.483091	Mean dependent var		-0.001264
Adjusted R-squared	0.480220	S.D. dependent var		3.654874
S.E. of regression	2.635011	Akaike info criterion		4.786580
Sum squared resid	1249.791	Schwarz criterion		4.821789
Log likelihood	-433.5788	Hannan-Quinn criter.		4.800853
F-statistic	168.2240	Durbin-Watson stat		2.001454
Prob(F-statistic)	0.000000			

Correlation for Conventional Stock Market

Covariance Analysis: Ordinary
 Date: 06/28/20 Time: 18:15
 Sample: 2004M11 2019M12
 Included observations: 182
 Balanced sample (listwise missing value deletion)

Correlation Probability	DEXC_RATE	DIPI	DKLCI	DM2	DOPR	DTBRC
DEXC_RATE	1.000000 ----					
DIPI	0.079877 0.2838	1.000000 ----				
DKLCI	0.449875 0.0000	-0.047303 0.5260	1.000000 ----			
DM2	0.037895 0.6115	-0.025138 0.7362	-0.031327 0.6746	1.000000 ----		
DOPR	-0.008496 0.9094	-0.000940 0.9899	0.028325 0.7043	-0.001569 0.9832	1.000000 ----	
DTBRC	0.118933 0.1098	0.442096 0.0000	0.043181 0.5627	0.165898 0.0252	0.013598 0.8554	1.000000 ----

Correlation for Islamic Stock Market

Covariance Analysis: Ordinary
 Date: 06/28/20 Time: 18:40
 Sample: 2004M11 2019M12
 Included observations: 182
 Balanced sample (listwise missing value deletion)

Correlation Probability	DEXC_RATE	DKLSI	DM2	IPI	OPR	TBRI
DEXC_RATE	1.000000 ----					
DKLSI	0.389306 0.0000	1.000000 ----				
DM2	0.037895 0.6115	-0.033359 0.6548	1.000000 ----			
IPI	0.064404 0.3877	-0.002326 0.9751	0.012622 0.8657	1.000000 ----		
OPR	-0.094350 0.2052	-0.134019 0.0713	-0.019964 0.7891	0.508669 0.0000	1.000000 ----	
TBRI	-0.047905 0.5208	0.032789 0.6604	0.009291 0.9009	0.039557 0.5960	0.004375 0.9533	1.000000 ----

OLS for Conventional Stock Market

Dependent Variable: DKLCI
 Method: Least Squares
 Date: 06/28/20 Time: 17:51
 Sample (adjusted): 2004M11 2019M12
 Included observations: 182 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.073725	2.957096	1.377610	0.1701
DIPI	-3.208644	2.294330	-1.398510	0.1637
DOPR	15.93620	33.91571	0.469877	0.6390
DTBRC	14.52448	24.80098	0.585641	0.5589
DM2	-2.329917	2.711846	-0.859163	0.3914
DEXC_RATE	3366.450	497.7328	6.763569	0.0000
R-squared	0.214499	Mean dependent var		3.997912
Adjusted R-squared	0.192184	S.D. dependent var		44.21806
S.E. of regression	39.74257	Akaike info criterion		10.23513
Sum squared resid	277987.0	Schwarz criterion		10.34076
Log likelihood	-925.3972	Hannan-Quinn criter.		10.27795
F-statistic	9.612169	Durbin-Watson stat		1.933368
Prob(F-statistic)	0.000000			

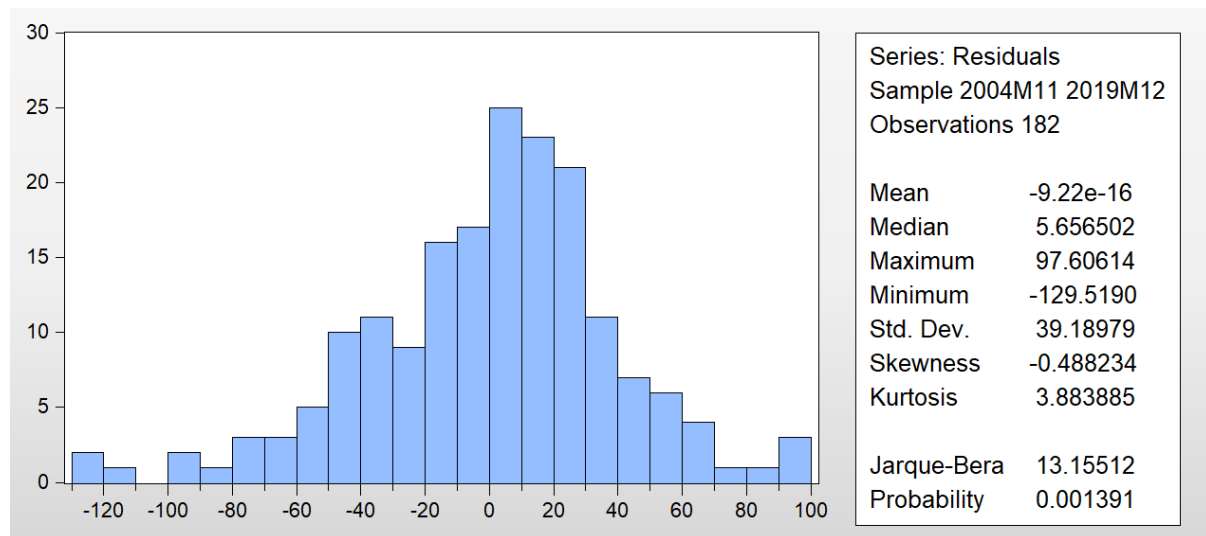
OLS for Islamic Stock Market

Dependent Variable: DKLSI
 Method: Least Squares
 Date: 06/28/20 Time: 18:34
 Sample (adjusted): 2004M11 2019M12
 Included observations: 182 after adjustments

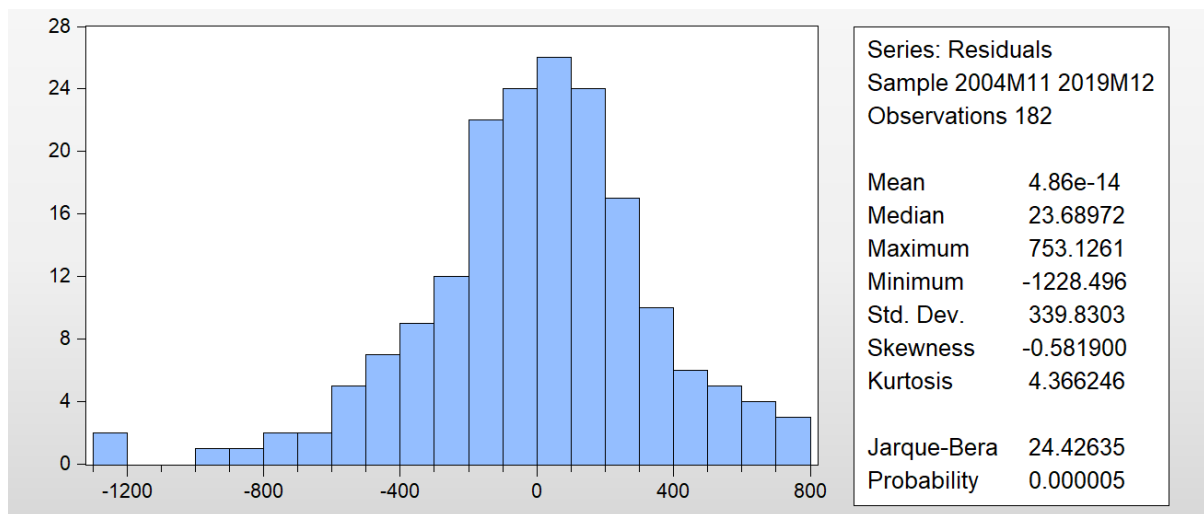
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	345.9903	227.6026	1.520151	0.1303
DEXC_RATE	23709.06	4347.549	5.453431	0.0000
DM2	-17.05704	23.06599	-0.739489	0.4606
IPI	3.510642	9.422607	0.372577	0.7099
OPR	-108.7707	76.72719	-1.417630	0.1581
TBRI	7.196912	9.766633	0.736888	0.4622

R-squared	0.166950	Mean dependent var	42.70665
Adjusted R-squared	0.143284	S.D. dependent var	372.3288
S.E. of regression	344.6236	Akaike info criterion	14.55519
Sum squared resid	20902717	Schwarz criterion	14.66082
Log likelihood	-1318.523	Hannan-Quinn criter.	14.59801
F-statistic	7.054386	Durbin-Watson stat	1.905328
Prob(F-statistic)	0.000005		

Normality for Conventional Stock Market



Normality for Islamic Stock Market



Multicollinearity for Conventional Stock Market

Variance Inflation Factors

Date: 06/28/20 Time: 18:13

Sample: 2004M10 2019M12

Included observations: 182

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	8.744415	1.007605	NA
DEXC_RATE	247737.9	1.016198	1.015897
DIPI	5.263952	1.261088	1.259974
DM2	7.354110	1.044302	1.041738
DOPR	1150.275	1.001365	1.000365
DTBRC	615.0885	1.304446	1.303666

Multicollinearity for Islamic Stock Market

Variance Inflation Factors

Date: 06/28/20 Time: 18:38

Sample: 2004M10 2019M12

Included observations: 182

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	51802.93	79.38448	NA
DEXC_RATE	18901181	1.031090	1.030785
DM2	532.0399	1.004759	1.002293
IPI	88.78552	2.669477	1.376751
OPR	5887.062	87.47967	1.381067
TBRI	95.38713	2.552442	1.004924

Covariance for Conventional Stock Market

Covariance Analysis: Ordinary
 Date: 06/28/20 Time: 18:15
 Sample: 2004M11 2019M12
 Included observations: 182
 Balanced sample (listwise missing value deletion)

Correlation Probability	DEXC_RATE	DIPI	DKLCI	DM2	DOPR	DTBRC
DEXC_RATE	1.000000 ----					
DIPI	0.079877 0.2838	1.000000 ----				
DKLCI	0.449875 0.0000	-0.047303 0.5260	1.000000 ----			
DM2	0.037895 0.6115	-0.025138 0.7362	-0.031327 0.6746	1.000000 ----		
DOPR	-0.008496 0.9094	-0.000940 0.9899	0.028325 0.7043	-0.001569 0.9832	1.000000 ----	
DTBRC	0.118933 0.1098	0.442096 0.0000	0.043181 0.5627	0.165898 0.0252	0.013598 0.8554	1.000000 ----

Covariance for Islamic Stock Market

Covariance Analysis: Ordinary
 Date: 06/28/20 Time: 18:40
 Sample: 2004M11 2019M12
 Included observations: 182
 Balanced sample (listwise missing value deletion)

Correlation Probability	DEXC_RATE	DKLSI	DM2	IPI	OPR	TBRI
DEXC_RATE	1.000000 ----					
DKLSI	0.389306 0.0000	1.000000 ----				
DM2	0.037895 0.6115	-0.033359 0.6548	1.000000 ----			
IPI	0.064404 0.3877	-0.002326 0.9751	0.012622 0.8657	1.000000 ----		
OPR	-0.094350 0.2052	-0.134019 0.0713	-0.019964 0.7891	0.508669 0.0000	1.000000 ----	
TBRI	-0.047905 0.5208	0.032789 0.6604	0.009291 0.9009	0.039557 0.5960	0.004375 0.9533	1.000000 ----

Heteroskedasticity for Conventional Stock Market

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.268478	Prob. F(5,176)	0.9298
Obs*R-squared	1.377648	Prob. Chi-Square(5)	0.9267
Scaled explained SS	1.857670	Prob. Chi-Square(5)	0.8685

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/28/20 Time: 18:07

Sample: 2004M11 2019M12

Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1516.529	195.5154	7.756568	0.0000
DIPI	-39.25552	151.6951	-0.258779	0.7961
DOPR	593.2666	2242.417	0.264566	0.7917
DTBRC	330.5383	1639.776	0.201575	0.8405
DM2	-125.6416	179.3002	-0.700733	0.4844
DEXC_RATE	-27376.72	32908.79	-0.831897	0.4066

R-squared	0.007569	Mean dependent var	1527.401
Adjusted R-squared	-0.020625	S.D. dependent var	2600.989
S.E. of regression	2627.674	Akaike info criterion	18.61800
Sum squared resid	1.22E+09	Schwarz criterion	18.72362
Log likelihood	-1688.238	Hannan-Quinn criter.	18.66082
F-statistic	0.268478	Durbin-Watson stat	1.907365
Prob(F-statistic)	0.929847		

Heteroskedasticity for Islamic Stock Market

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.884717	Prob. F(5,176)	0.0992
Obs*R-squared	9.249591	Prob. Chi-Square(5)	0.0995
Scaled explained SS	14.55865	Prob. Chi-Square(5)	0.0124

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/28/20 Time: 18:37

Sample: 2004M11 2019M12

Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-231593.4	137876.3	-1.679718	0.0948
DEXC_RATE	-824569.7	2633643.	-0.313091	0.7546
DM2	-9092.323	13972.84	-0.650714	0.5161
IPI	-13107.21	5707.994	-2.296290	0.0228
OPR	123108.4	46479.54	2.648658	0.0088
TBRI	1826.699	5916.398	0.308752	0.7579

R-squared	0.050822	Mean dependent var	114850.1
Adjusted R-squared	0.023857	S.D. dependent var	211300.6
S.E. of regression	208764.9	Akaike info criterion	27.36822
Sum squared resid	7.67E+12	Schwarz criterion	27.47384
Log likelihood	-2484.508	Hannan-Quinn criter.	27.41104
F-statistic	1.884717	Durbin-Watson stat	2.123337
Prob(F-statistic)	0.099220		