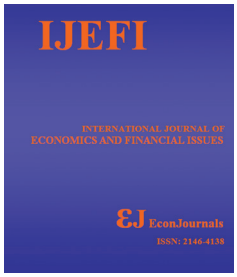

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2017, 7(1), 37-45.

Macroeconomic Variables and Stock Market Returns: Panel Analysis from Selected ASEAN Countries

Nurasyikin Jamaludin[1]*, Shahnaz Ismail[2], Syamimi Ab Manaf[3]

[1]School of Maritime Business and Management, Universiti Malaysia Terengganu, Malaysia, [2]School of Maritime Business and Management, Universiti Malaysia Terengganu, Malaysia, [3]School of Maritime Business and Management, Universiti Malaysia Terengganu, Malaysia. *Email: asyikin@umt.edu.my

ABSTRACT

This paper aims to examine the effect of macroeconomic variables namely inflation, money supply (MS), and exchange rate (ER) on both conventional and Islamic stock market returns in the three selected ASEAN countries (Singapore, Malaysia, Indonesia) by utilizing monthly data over the period of January 2005 to December 2015. Applying the panel least square regression techniques, the results show that both stock market returns are significantly affected by the ER and inflation rate. MS is found to be insignificant. The findings of this paper also conclude that inflation poses a greater effect and inversely related to the stock market returns. In this case, there is a need for amendment in monetary policy to ensure that inflation rate is set at a low level, since the results would be able to bring an impact to boost the capital market in the selected ASEAN countries.

Keywords: Macroeconomic Variables, Stock Market Returns, ASEAN
JEL Classifications: E03, E60, G10, G18, F62

1. INTRODUCTION

Understanding the empirical relationship between the macroeconomic variables as explanatory factors in the variation of stock market returns can be very useful to the market practitioners and policy makers. In fact, the dynamic relationship between both subjects is well documented and become an important issue of debate. Until recently, there has been a significant number of empirical studies (Bilson et al., 2001; Wongbangpo and Sharma, 2002) that modeled the relationship between stock market returns and real economic activities such as money supply (MS) (M2), exchange rate (ER) and inflation.

The tremendous growth in several ASEAN stock markets in the past two decades have drawn the researchers and also international investors' attention to raise some empirical questions regarding the interaction between economic role on stock prices (Sharma and Wongbangpo, 2002). Besides that, the argument on comparing the performance of both conventional and *Shariah* compliant stocks still become an open question (Reddy and Fu, 2014).

Investors generally believe that macroeconomic activities give a large impact to the volatility of the stock prices (Gan et al., 2006). Macroeconomic determinants can be a yardstick to the investors to forecast the performance of the stock market (Talla, 2013), as well as a perfect alternative to get additional information about the behavior of the stock market (Azeez and Yonezawa, 2003). This is due to the nature of ASEAN stock markets that tend to be sensitive to circumstances like the transition level of economic activities (Naik and Padhi, 2012). The nature of macroeconomic forces does provide some significant positive as well as negative effect, on the stock market performance reflected from the behavior of the variable itself (Kumar, 2013). In contrast, some researchers believed that macroeconomic changes do not give any impact on return especially in efficient market. According to efficient market hypothesis (EMH), investors would not be able to earn abnormal profit because all the information about the economic changes will reflect the stock prices in the stock market immediately. However, many scholars disagree with the conclusion drawn from EMH and suggest that overall economic activities do give an impact on stock returns (Naik and Padhi, 2012).

Due to the lack of previous studies discussed on comparing the conventional and Islamic stock indices with regard to the predictive power of selected macroeconomic determinants on

the stock performance, this study aims to perform a comparative analysis about the impact of macroeconomic variables (MS, ER, inflation) on both conventional and Islamic stock returns among the three selected ASEAN countries (Singapore, Malaysia and Indonesia). The analysis revealed that both stock returns are significantly affected by the ER and inflation thus supported the previous studies.

The remainder of the paper proceeds as follows. The next section discusses the literature review and hypothesis development. Section three describes the methodology. Section four presents the results and discussion. Section five provides a conclusion to the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The nexus between macroeconomic fundamentals and stock market returns has become an important debate subject within the financial economics circle (Ouma and Muriu, 2014). Many theoretical frameworks have been used by different scholars to simulate the fluctuations in macroeconomic determinants toward stock market performance. The current study adopts EMH, and arbitrage pricing theory (APT) to highlight the relationship between the macroeconomic variables and stock market returns.

The EMH, also known as random walk theory developed by Fama (1970) suggested that in an efficient market, all stock prices fully reflected all the information available in the market. Hence, investors would not be earned abnormal profits in such a market. On the other hand, the APT developed by Ross (1976) provides theoretical framework of the linkage between stock prices and macroeconomic fundamentals.

Past studies focused on the relationships between stock market returns and macroeconomic determinants, however, their focus mainly on conventional stock (Naseri and Masih, 2013; Wongbangpo and Sharma, 2002; Rahman et al., 2009; Maysami et al., 2004). The globalization and liberalization in capital market have recognized the importance of Islamic financial market as well. Most of the stock exchanges around the world start to establish the dual capital market systems which consist of conventional and *Shariah*-compliant stocks. Both stocks are traded side by side.

Basically, *Shariah*-compliant stocks have been growing tremendously as an alternative to existing investment for both Muslim and non-Muslim investors (Saiti, 2015). In particular, conventional and *Shariah*-compliant stocks share many similarities; however, there is a specific requirement that *Shariah*-compliant stocks must comply to the *Shariah* principles.

From the Islamic point of view, company is required to meet all the *Shariah* investment principles and free from any prohibited activities such as *gharar* (ambiguity), *maisir* (gambling) and *riba* (usury). Islamic investors are prohibited to buy any stock from companies whose core activities considered to be contradicting with *Shariah* principles.

Basically, there are two major approaches used in screening process of selecting the *Shariah* compliant stocks namely the qualitative and the quantitative parameters (Sadeghi, 2008). The qualitative screen concentrates on the core activities of the company business. The company activities must be permissible according to *Shariah* principles (Saiti, 2015). On the other hand, the quantitative screen is used to consider the level of mixed contributions of both the permissible and non-permissible activities received by the company in term of revenue and profit. If the contributions of non-permissible activities exceed the permissible benchmark, the company is considered as non-*Shariah* compliant (Sadeghi, 2008).

Ali et al. (2015) categorised the reviewed literature on stock market returns and macroeconomic variables into three groups: Literature related to developed countries, literature related to developing countries, and literature related to group countries. They concluded that the mixture of findings and conclusions emanates from differences in methodology, variables used and the period of study. There is also disparity in study area that fundamentally affects the behavior of the macroeconomic variables.

Bilson et al. (2001) attempted to find some evidence about the explanatory power of local macroeconomic determinants in affecting the stock return in the case of emerging market. At the end of this study, the researchers concluded that the ER determinant has given a significant relation and impact toward stock returns in emerging market. Consistently with the previous studies, the dominant sign of the coefficients on the ER toward stock return are mostly negative. While the MS determinant also shown a significant relation in six markets among emerging countries and mostly positively related as expected.

Wongbangpo and Sharma (2002) investigated the role of selected macroeconomic determinants namely the MS, the ER and the consumer price index (CPI) on the stock prices in five selected ASEAN countries (Malaysia, Philippinees, Thailand, Indonesia and Singapore). Overall, the Granger causality test detected the connection between selected macroeconomic determinants toward the stock prices in all five ASEAN stock market.The results suggested that stock prices in Malaysia, Thailand and Singapore positively related to MS, yet negatively in Philippinees and Indonesia. In terms of ER, stock prices in Indonesia, Malaysia and Philippiness were positively related to ER, yet negatively in Singapore and Thailand.

Gan et al. (2006) examined the connection between New Zealand stock market index and selected macroeconomic determinants using monthly data from January 1990 to January 2003. The study revealed a negative relationship between CPI and stock index as well as MS determinant.

Gunasekarage (2004) used vector error correction models (VECM) to identify the influence of macroeconomic changes on the stock market from an emerging market in South Asia. They examined monthly data for all variables under the research covered from January 1985 to December 2001. The study revealed that the lagged values of macroeconomic determinants such as the MS

and CPI have shown significant influence on the share price index (SPI).

Rahman et al. (2009) employed the VECM approach and VAR framework to analyse the dynamic interaction between Kuala Lumpur Composite Index (KLCI) and selected macroeconomic determinants such as MS and ER. The study proved that both determinants; MS and ER were negatively affecting the stock prices in Malaysia.

Ozean (2012) used Johansen's cointegration to investigate the long run equilibrium interaction between selected macroeconomic determinants toward Istanbul Stock Exchange (ISE) index. The researcher employed montly data for all the determinants covering the period from January 2003 to Disember 2012. The study found that both determinants; MS and ER depicted a long run equilibrium interaction toward ISE index.

Naik and Padhi (2012) investigated relationship between stock market index, money suppy and ERs in the case of india. Reseachers used Johansen's co-integration and VECM to determine the long run equilibrium between variables. According to the results, there was a long run equlibrium relationship between the variables. The results showed a positive relationship between MS and stock market index. However, the study failed to show a significant relationship between stock market index and ER.

Talla (2013) used unit multivariate regression model computed on OLS method and Granger causality test to investigate the impact of macroeconomic changes on the stock prices of Stockholm Stock Exchange (OMXS30). The findings showed that the stock prices of Stockholm Stock Exchange (OMXS30) positively related to the MS but it was not significant. On the other hand, ER and CPI showed a negative and insignificant relationship on the stock prices.

Gul and Khan (2013) aimed to elaborate the stock return using Arbitrage Pricing Model by adressing the selected macroeconomic determinants such as MS and ER in the case of Pakistan. The analysis showed that both MS and ER have a significant relationship toward KSE 100 index and as expected, ER positively influenced the stock index while MS influenced the stock index negatively.

Khodaparasti (2014) examined the role and impact of macroeconomic variables on the Iranian stock market. Using historical data from 2007 to 2011, the paper showed evidence that ER pose a greater effect on the stock market compared to inflation and MS. However this paper failed to depict a significant relationship between MS and CPI towards the stock index except for ER that showed a significant positive relationship to Iranian stock index.

With regards to Islamic stock market, Majid and Yusof (2009) explored the extent to which macroeconomic variables affect the Islamic stock market behavior in Malaysia in the post 1997 financial crisis period. They employed the latest estimation technique of autoregressive distributed lag model approach to cointegration. The results suggested that real effective ER (REER), MS M3, treasury bill rate (TBR) and federal fund rate (FFR) seem to be suitable targets for the government to focus on, in order to stabilize the Islamic stock market and to encourage more capital flows into the market. As for the interest rates and stock returns relationship, their study found that when interest rates rise either domestically (TBR) or internationally (FFR), the Muslim investors will buy more Shariah compliant stocks; thereby escalating the Islamic stock prices.

Hussin et al. (2012) investigated the relationship between Islamic stock market and macroeconomic variables in Malaysia. They concluded that the Islamic share prices (KLSI) shared a significant positive relationship with the economic growth rate (IPI) and inflation (CPI), but a negative relationship with MS (M3), and foreign ER (MYR).

Sakti and Harun (2013) analyzed the relationship between Jakarta Stock Exchange Islamic Index (JII) and selected macroeconomic variables namely ER, industrial production, inflation rate, and MS. They used monthly data from January 2000 to December 2010. The methodology used in this paper is time series techniques of co-integration and vector auto regression. The results revealed that there is co-integration between Islamic stock prices and macroeconomic variables. Specifically, Indonesian Islamic stock market are driven more by domestic factors. These macroeconomic factors considered to be emphasized as the policy instruments by the governments in order to stabilize Islamic stock prices.

Naseri and Masih (2013) employed vector error correction, long-run structural modeling and variance decomposition technique to examine the causality between FTSE Bursa Malaysia Emas Shariah Index as a proxy for Islamic stock market and three macroeconomic determinants namely MS, CPI and ER using monthly data from November 2016 to October 2013. The results indicated that the chosen macroeconomic determinants have given a big impact on the volatility of Islamic stock prices.

Another study by Vejzagic and Zarafat (2013) analyzed the relationship between macroeconomic determinants on the stock market index in the case of Malaysia. The researchers employed MS, ER and CPI to test the long-term equilibrium on FTSE Bursa Malaysia Hijrah Shariah Index. It is found that ER and MS have a significant impact to the stock market index. However, ER computed a negatively related result, while MS showed a positive influence toward dependent stock market index. On the other hand, CPI factor showed a not significant relationship in this model.

Ayub and Masih (2014) investigated the relationship between stock prices of Islamic banks and two macroeconomic variable namely ER and interest rate in 13 countries case using the panel data analysis. The results suggested that ER display a negative significant relationship on Islamic bank stock prices. When the ER increases by one percent, the bank stock prices will decrease by −0.25%. ER factor gives a direct impact and highly responsive to the change in Islamic stock market.

Miseman et al. (2013) studied the impact of macroeconomic forces on five ASEAN stock market movement including

Malaysia, Indonesia, Thailand, Singapore and the Philippines. Four macroeconomic influences (i.e., interest rate, broad MS, domestic output and inflation rate) were used to explain the variation of the stock market movement. Applying generalized least squares regressions, the results show strong and significant impact of interest rate, broad money and inflation rate on the stock market movement, while domestic output is found to be surprisingly insignificant. Rashid et al. (2014) investigated the level of exposure of conventional and Islamic stock prices indices in Malaysia to the relative changes in macroeconomic factor using macroeconomic determinants in quarterly time series framework. The results suggested that MS gave an important impact and positively significant to Islamic stock market in Malaysia.

Dewandaru et al. (2014) analyzed the impact of macroeconomic changes on Islamic and conventional indices for a large set of 37 countries and categorized them into two groups namely developed countries and emerging countries. The study revealed that MS has a lesser impact as compared to the impact on conventional counterpart. The empirical statistic proven that MS and CPI posed a less influential impact to the Islamic stock in emerging countries; however Islamic indices are better at adjusting to equilibrium compared to conventional counterparts.

Based upon the literature reviewed, the current study develops the following hypotheses:

H1: There is a significant association between MS and stock market returns using conventional indices in the selected ASEAN countries.
H2: There is a significant association between ER and stock market returns using conventional indices in the selected ASEAN countries.
H3: There is a significant association between CPI and stock market returns using conventional indices in the selected ASEAN countries.
H4: There is a significant association between MS and stock market returns using Islamic indices in the selected ASEAN countries.
H5: There is a significant association between ER and stock market returns using Islamic indices in the selected ASEAN countries.
H6: There is a significant association between CPI and stock market returns using Islamic indices in the selected ASEAN countries.

3. RESEARCH METHODOLOGY

3.1. Research Design

This research is a combination of cross-sectional and time series analysis over a period of 10 years and across the three selected ASEAN countries namely Singapore, Malaysia and Indonesia. The main data sources include DataStream. The data are provided in the form of panel data as it consists of observations for same cross-section over 10-year period. EViews software is used to conduct the analysis process in this research.

3.2. Data

The study is conducted in the context of three selected ASEAN countries namely Singapore, Malaysia and Indonesia. In this study, stock price indices for both conventional and Islamic are used as a proxy for stock market returns and are considered as the dependent variable. Since it is quite impossible to investigate every potential macroeconomic determinants to explain the variation in stock market return, the choice of determinants are based upon the previous studies, three macroeconomic determinants have been chosen to be independent variables in this study namely MS, ER and CPI.

The study uses monthly data for all the variables started from January 2005 to December 2015 (120 monthly observation) which are obtained from DataStream. The data description and its sources are outlined in Table 1.

3.3. Variables Description and Expectation

3.3.1. Dependent variable: Stock index

A stock market index can be based on all the stocks listed on the stock exchange or on only a sample of stocks. A stock market index is a measurement of the prices of selected stocks (typically a weighted average). Indices are used as indicator to measure the performance of the stock market as a whole. It is a useful tool used by the investors' fund managers to forecast the performance of the market. A stock market (both conventional and Islamic) index is used as a proxy for market returns.

The indices used are: For Singapore, the stock exchange index of Singapore (SES) and FTSE SGX Asia *Shariah* 100; for Malaysia, the FTSE Bursa Malaysia KLCI and FTSE Bursa Malaysia Emas *Shariah*; lastly for Indonesia, Jakarta Composite Index (JCSPI) and the JII. Note that SES and JCSPI are indices based on all stocks listed on the markets, while KLCI comprises the 30 largest companies in Malaysia.

3.3.2. Independent variable: MS

MS is one of monetary instruments used by the central bank to control the overall economy. Real broad MS (M2) is used as a proxy for MS. Usually, the components of broad money are very liquid although it also take into account the non-cash components. In the economic literature, the relationship between MS and stock market returns is widely discussed because of its ambiguous effects (Abbasy, 2012). The significant relationship between both variables have been documented, but the effect of changes in the MS towards the stock market returns is still debated (Vejzagic and Zarafat, 2013; Talla, 2013).

According Tobin's Q theory, people will start to spend when the MS grows. This situation will stimulate the demand for the stocks. When the demand for the stocks increases, the stock price (returns) would also increases, ceteris paribus (Ting, 2012). Moreover, an increase in MS will lead to the better credit access for the corporate sectors to expand their businesses and resulting in inclined earning of the companies. The strong financial stability will lead to the better dividend payment and finally will increase the price of the stock (Talla, 2013). On the other hand, an increase in MS also can be negatively affect stock prices by positively associated with inflation. The impact of inflation increases the nominal risk free rate (Fama, 1981). Therefore, it leads to the decline in return by increasing the discount rate. The MS is expected to be positively associated to the increase in stock market returns.

Table 1: Description of data

Acronym	Variable	Description	Source
R	Returns	Natural logarithm of the index of market-value for selected stock price index	Datastream
MS	Money Supply	M2: M1+time and saving deposit Natural logarithm of the month-end money supply (M2)	Datastream
ER	Exchange Rate	Natural logarithm of month-end real effective exchange rate	Datastream
CPI	Inflation (CPI)	Consumer price index (2005=100) Natural logarithm of the month-end consumer price index	Datastream

3.3.3. Independent variable: ER

The second macroeconomic determinant adopted in this paper is the ER. REER is used as a proxy for ER. The REER is measured as a weighted average of real ERs of the national currency to the currencies of its major trading partners. The weighted value also take into account the adjustment for changes in inflation.

When the ER of a country increase (depreciation), the stock prices tend to decrease because of the expectation of inflation going to happen in the future (Talla, 2013). Based on previous studies, in the open economy the depreciation of local currency gives a negative impact to the importer firms. They have to bear higher cost of production (Al-Mukit, 2012). As a result, stock prices (returns) of importer firms react negatively to the currency depreciation. On the other hand, exporter firms tend to have a positive impact from the depreciation of local currency by selling their product with cheaper price (Al-Mukit, 2012). To conclude, currency depreciation able to give either positive or negative impact towards stock prices depending on the situation.

3.3.4. Independent variable: CPI

The third macroeconomic determinant adopted in this paper is the CPI. CPI is used as a proxy for inflation rate. The CPI is calculated as the average change over time in the prices paid by consumers for a market basket of goods and services. CPI used as an economic indicator by the government to measure the inflation rate.

An increase in the inflation will result in reducing the market returns due to the fact that inflation will decrease the present value of net income by increasing the discount rate and the size of future cash flows (Abbasy, 2012; Paavola, 2006). Investors would shift their portfolios towards real assets investment (Fama, 1981).

Besides that, from the economic perspective, inflation will increase the cost of living; people will shift their investment capital to consumption (Talla, 2013). Therefore, CPI is expected to be negatively associated to stock market returns in this study.

3.4. Panel Data Regression Analysis

Panel data analysis is used in this paper in order to investigate the relationship between chosen macroeconomic determinants and the stock returns. Compared to the purely cross-sectional or purely time-series data sets, the panel data has several major advantages. First of all, by pooling the data, the panel analysis increases the accuracy of the parameter estimates and therefore allows the estimation procedure to have more degrees of freedom and sample variability (Ozturk and Yilma, 2015).

Secondly, the key element of using panel analysis over a cross section data set is it grants the researcher more flexibility in generating the differences in term of behavior across members of the panel (Greene, 2010). Last but not least, panel analysis is more reliable compared to the time series and cross section data sets as it possible to track the individual individual-specific characteristics and conduct Granger causality across variables simultaneously (Kunst, 2010).

Despite the fact that panel data analysis is not free from limitations, it is still used in this research since the advantages of the panel data analysis outweigh the disadvantages.

3.4.1. Panel least square regression analysis

The study employed a multiple regression model in undertaking the panel analysis as follows:

$$Y_{i,t} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + X_3 X_{3it} + e_{i,t} \quad (1)$$

Where t = 1……, T refers to the time period and i =1……, N refers to the members of the panel while k = 1……, K refers to the specific coefficient of variable. Y_{it} and X_{it} refer to the dependent and independent variable respectivelyfor country i at time t. Finally, e refers to the random error in the equation.

Through the use of panel data analysis, it was possible to investigate the impact of the macroeconomic determinants on the stock returns in three selected ASEAN countries. The specification models for both conventional and *Shariah* indices employed in this study be written as follows:

Conventional indices:

Panel I:

$$R_{i,t}=\alpha_0+\alpha_1 MS_{i,t}+\alpha_2 ER_{i,t}+\alpha_3 CPI_{i,t}+\in \quad (2)$$

Islamic indices:

Panel II:

$$IR_{i,t}=\alpha_0+\alpha_1 MS_{i,t}+\alpha_2 ER_{i,t}+\alpha_3 CPI_{i,t}+\in \quad (3)$$

Where, R is the natural logarithm of the market return, $[R=L_n\ (SP_t/SP_{t-1})]$; SP_t is the stock price index at period t; SP_{t-1} is the stock price index at period t_1; MS is the natural logarithm of the month-end M2 money supply; *ER* is natural logarithm of the monthly-end real effective exchange rate and lastly *CPI* is natural logarithm of the monthly-end consumer price index, i is the country selected, t is time series and lastly $\in$ and ε represent the error term for each model.

3.5. Test and Data Analysis Procedure

3.5.1. Descriptive analysis

Descriptive analysis allows the researcher to examine the distribution (frequency distribution), central tendency (mean, median and mode) and dispersion (variance and standard deviation).

3.5.2. Correlation analysis

It is a good to maintain a low degree of correlation among the explanatory variables. One reason behind this is to prevent multicollinearity problem among variable. The easiest way to examine collinearity problem is by Pearson correlation matrix. Hence, this research also adopts the correlation analysis to identify the Pearson correlation coefficients among the variables. According to the experts, high correlation that causes a serious multicollinearity problem refers to the value of the coefficient between two regressors that exceed value of 0.8.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistic

4.1.1. Descriptive statistic for Panel I: Conventional indices

This section focused on the summary of descriptive statistic of all variable included in this study. Table 2 illustrated the summary for descriptive statistic during the study periods. The results provided by descriptive statistic showed the average stock index for the period was 7.69 while the standard deviation of 0.49 shows that there was a small dispersion of the stock index around the mean. The highest stock index for the period of the study was 8.60 while the lowest index was 6.76. The stock index of 8.60 was an indication for the highest conventional stock index recorded in the selected ASEAN countries during the period of the study.

The MS analysis showed that there was an average rate of 13.75%. There was also small dispersion of the MS from the mean at 13.75 with the highest amount of 15.33% while the lowest rate was 12.23%. The average REER for the period of the study was 4.58. The highest rate of 4.76% while the lowest rate was 4.34. The implication was that the selected ASEAN countries attempt to control their currency at favorable rate to ensure the stability value of currency. The average CPI for the countries was 4.53. The highest rate recorded was 4.81% while the lowest rate was 4.09. There was minimal dispersion around the mean of 0.14. The implication of this is the selected ASEAN countries also making an effort to control their inflation rate and remain it at the lowest rate.

4.1.2. Descriptive statistic for Panel II: Islamic indices

As presented in Table 2, the results provided by descriptive statistic illustrated the average stock index for the period was 7.87 while the standard deviation of 1.43 shows that there was a small dispersion of the stock index around the mean. The highest stock index for the period of the study was 9.63 while the lowest index was 5.10. The stock index of 9.63 was an indication for the highest Islamic stock indices recorded in the three ASEAN countries during the period of the study.

The MS analysis showed that there was an average rate of 13.78%. There was also small dispersion of the MS from the mean at 13.78 with the highest amount of 15.32 while the lowest rate was 12.23. The average REER for the period of the study was 4.58. The highest rate of 4.76% while the lowest rate was 4.34%. The implication was that the countries attempt to control their currency at favorable rate to ensure the stability value of currency. The average CPI for the three selected ASEAN countries was 4.53. The highest rate recorded was 4.81% while the lowest rate was 4.09. There was minimal dispersion around the mean of 0.14. The implication of this is the all three countries also making an effort to control their inflation rate and remain it at the lowest rate.

4.2. Panel Least Square Analysis

Table 3 summarized the results from fitting model as described in equation above. The results indicated that the value of R^2 is equal to 0.9888 which means that 98.88 percent variation of conventional stock market returns can be explained by total variation in selected explanatory variables, while coefficient of R^2 for Islamic indices is 99.85%, indicated that 99.85% variation of Islamic stock market returns can be explained by total variation in selected explanatory variable. Additionally, the presented models are free from the presence of autocorrelation as the value of Durbin Watson is close to two.

In order to study the relationship between macroeconomic determinants and stock market returns, six hypothesis have been developed. As shown in Table 3, the hypothesis testing analysis of H1 indicated that the relationship of stock market returns and MS is positively and statistically insignificant. Therefore, the alternate hypothesis, H1 is rejected. Means that MS does not

Table 2: Summary descriptive statistic

	Panel I: Conventional index				Panel II: Islamic index			
	R	MS	ER	CPI	IR	MS	ER	CPI
Mean	7.687266	13.75293	4.577792	4.531054	7.868187	13.78066	4.580867	4.533588
Median	7.741548	13.82465	4.587515	4.553698	8.535853	13.89195	4.595686	4.572749
Maximum	8.601001	15.32992	4.755313	4.812103	9.632558	15.32992	4.755313	4.812103
Minimum	6.757781	12.23320	4.343230	4.091173	5.095840	12.23320	4.343230	4.091173
Standard deviation	0.490714	0.822667	0.077883	0.142578	1.431561	0.843873	0.079524	0.147076
Skewness	−0.12325	0.049888	−0.5236	−0.596563	−0.5343	−0.0409	−0.625154	−0.631425
Kurtosis	1.994019	2.064687	2.860720	3.249572	1.687053	1.990977	2.892712	3.113552
Observations	396	396	396	396	370	370	370	370

The Table summarized the reports the result of mean, median, maximum and minimum value and standard deviation for all the variables. Where, R stands for natural logarithm of the index of market-value for selected stock price index, MS stands for natural logarithm of the month-end money supply (M2), ER stands for natural logarithm of month-end real effective exchange rate. Lastly CPI stands for natural logarithm of the month-end consumer price index

Table 3: Panel least square analysis

Panel I: Conventional indices					Panel II: Islamic indices				
Variable	Coefficient	Standard error	t-statistic	P	Variable	Coefficient	Standard error	t-statistic	P
C	5.798851	3.200387	1.811922	0.070800	C	9.568774	4.562326	2.097345	0.036700
LM2	0.289202	0.187395	1.543269	0.123600	LM2	0.179892	0.249032	0.722366	0.470500
LREER	1.125823	0.141578	7.951976	0.000000	LREER	1.180157	0.155091	7.609461	0.000000
LCPI	−1.387775	0.407599	−3.404754	0.000700	LCPI	−1.447739	0.446878	−3.239672	0.001300
R^2		0.9888			R^2		0.998482		
Adjusted R^2		0.9887			Adjusted R^2		0.998465		
Durbin-Watson stat		1.9605			Durbin-Watson Stat		2.006089		

*Significant at 1%

give any influence to the stock returns. This is consistent with the previous study of a positively and statistically insignificant linkage between MS and stock index. For instance Talla (2013) found that the stock market returns of Stockholm Stock Exchange (OMXS30) was positively related to the MS but failed to show a significant result.

The hypothesis testing analysis of H2 indicated that the relationship between ER and stock market returns is positively and statistically significant. Hence, the alternate hypothesis H2 is accepted. This result was quite similar to a research conducted by Wongbangpo and Sharma (2002) who revealed that stock prices in Indonesia, Malaysia and Philippiness were positively related to ER. Other studies in Pakistan by Gul and Khan (2013) and in Iran by Khodaparasti (2014) also found a positive significant relationship between ER and stock market returns.

The hypothesis testing analysis of H3 showed that there is a significant association between CPI and stock market returns in the selected ASEAN countries. The result revealed that there was a significant negative relationship between CPI as a proxy for inflation rate toward the stock market returns. Thus, the alternate hypothesis H3 is accepted. This finding was consistent with the previous researches (Gunasekarage et al., 2004; Talla, 2013).

The hypothesis testing analysis of H4 showed that there is a positive and statistically insignificant association between MS and stock market returns using Islamic indices in the selected ASEAN countries. Thus, the alternate hypothesis, H4 is rejected, meaning that MS not give any influence to the Islamic stock returns.

The hypothesis testing analysis of H5 revealed that there was a positive linkage between ER and Islamic stock market returns. The relationship between ER and Islamic stock market returns was significant, therefore, the alternate hypothesis H5 is accepted. This result is in contrast to Vejzagic and Zarafat (2013) and Hussin et al. (2012) who found a negative relationship.

The hypothesis testing analysis of H6 showed that there was a negative linkage between inflation rate and Islamic stock market returns. The relationship between ER and Islamic stock indices was significant, therefore, the alternate hypothesis H6 is accepted. This result is in contrast to Hussin et al. (2012) who found a positive linkage between the two variables.

The specification models for both conventional and *Shariah* indexes employed in this study be written as follows:

Conventional indices:

Panel I:

$$R_{i,t}=5.78+0.2MS_{i,t}+1.13ER_{i,t}-1.387775CPI_{i,t}+\in$$

Islamic indices:

Panel II:

$$IR_{i,t}=9.57+0.18MS_{i,t}+1.18ER_{i,t}-1.45CPI_{i,t}+\varepsilon$$

Where, SI represent the return of stock at country *i* at year *t, MS* is broad-money supply (M2), *EX* is REER, *CPI* is consumer price index, *i* is the country selected, *t* is time series and lastly $\in$ and ε represent the error term for each model.

5. CONCLUSION AND IMPLICATIONS

5.1. Summary of the Finding

The findings of this study seem to suggest that both conventional and Islamic indices are affected by the macroeconomic variables with similar pattern. However, as predicted, the macroeconomic variables pose a greater effect on Islamic stock indices as compared to the conventional stock indices due to less risky behavior.

As illustrated in Table 3, the results revealed that Islamic stock indices are more responsive to the macroeconomic changes. The results also showed the evidence that CPI as proxy for inflation rate pose a greater effect on both indices compared to ER and MS. The negative interconnection between inflation rate and stock market returns can be explained by the fact that a surplus of money due to the inflation rate increase the supply of stock in stock exchange while the demand side remained unchanged.

Therefore, there is a need to evaluate the linkage between the inflation rate and both indices since the results would be able to bring an impact to boost the capital market segment in the three selected ASEAN countries. It is recommended that the government authorities should control and stabilize the inflation rate by introducing monetary policy which can control inflation rate at its lowest level, since the results would be able to bring an impact to the capital market in the ASEAN countries. At the same time, policymakers have to take timely action to minimize any vulnerability because of the inequality in term of market capitalization. Any unreasonable strategies will dwarf the other stock exchanges in the ASEAN countries (Security Commission, 2015).

5.2. Limitation of the Study

This study is subject to several limitations. First, the analysis of this research is mainly focused on the impact of macroeconomic variables to the stock market returns in the three selected ASEAN countries; Singapore, Malaysia and Indonesia. Thus, it would be worthwhile if the observation be extended to all countries in ASEAN economic block.

Second, the present study covered three selected macroeconomic variables; inflation, ER, and MS. Future studies may incorporate other macroeconomic variables that may possibly affect the stock market returns.

5.3. Suggestion for the Future Research

There are several suggestion for future research in order to overcome the limitation of the study. First, inclusion of many other factors with a longer time period of study may improve the results of the study. Extension of the study can be done by including more macroeconomic determinants such as index of industrial production, interest rate, bank credit, and also crude palm oil price.

Second, a more detailed econometric model such as fixed effect model and random effect model should be adopted to establish the best model to explain the relationship between stock market returns and macroeconomic determinants more precisely.

Third, to stimulate the stability model, the analysis also needs to consider the effect of time delays to the variables selected. In other words, the transmission and incorporation of macroeconomic movement into the variation of stock market returns is not always instantaneous.

It is possible to say that time delays have create a lag between the data of macroeconomic determinant and the incorporation of the news into the price of the stocks (Bilson et al., 2001). The specification models for both conventional and *Shariah* indexes employed in this study should consider the lags of independent variable to adjust the time delay in the release of the macroeconomic news (Bilson et al., 2001).

REFERENCES

Abbasy, A. (2012), Micro and macroeconomic determinants of NAV of Islamic equity unit trust funds in Malaysia: Qualitative approach. International Journal Economics and Business, 2(2), 19-37.

Ali, U.A., Abdullah, A., Sulong, Z., Ahmad, T.A. (2015), the review of stock returns and macroeconomic variables. International Journal of Academic Research in Business and Social Sciences, 5(5), 154-181.

Al-Mukit, D.M. (2012), Effects of interest rate and exchange rate on volatility of market index at dhaka stock exchange. Journal of Business and Technology, VII, 1-18.

Ayub, A., Masih, M. (2013), Interest rate, exchange rate, and stock prices of Islamic banks: A panel data analysis. Munich Personal RePE Archive, 66, 1-25.

Azeez, A.A., Yonezawa, Y. (2003), Macroeconomic factors and the empirical content of the arbitrage pricing theory in the Japanese stock market. Japan and the World Economy, 18(4), 568-591.

Bilson, C.M., Brailsford, T.J., Hooper, V.J. (2001), Selecting macroeconomic variables as explanatory factors of emerging stock market returns. Pacific-Basin Finance Journal, 9, 401-426.

Dewandaru, G., Rizvi, S.A., Sarkar, K., Obiyathulla, B., Masih, M. (2014), How do macroeconomic changes impact Islamic and coventional equity prices? Evidence frow developed and emerging countries. Munich Personal RePE Archive. p1-19.

Fama, E. (1970), Efficient capital markets: A review of theory and empirical work. Journal of Finance, 25, 383-417.

Fama, E. (1981), Stock returns, real activity, inflation, and money. The America Economic Review, 71, 545-565.

Gan, C., Lee, M., Yong, H.H.A., Zhang, J. (2006), Macroeconomic variables and stock market interactions: New Zealand evidence. Investment Management and Financial Innovations, 3(4), 89-101.

Greene, W.H., Hensher, D.A. (2010), Modelling Ordered Choice: A Primer. United Kingdom: Cambridge University Press.

Gul, A., Khan, N. (2013), An application of arbitrage pricing theory on KSE-100 index; A study from Pakistan (2000-2005). IOSR Journal of Business and Management (IOSR-JBM), 7(6), 78-84.

Gunasekarage, A., Pisedtasalasai, A., Power, D.M. (2004), Macro-Economic Influences on the Stock Market: Evidence from An Emerging Market in South Asia. p1-24.

Hussin, M.Y.M., Muhamad, F., Abu, M., Awang, S. (2012), Macroeconomic variables and Malaysian Islamic stock market: A time series analysis. Journal of Business Studies Quarterly, 3, 1-13.

Khodaparasti, R. (2014), The role of macroeconomic variables in the stock market in Iran. Polish Journal of Management Studies, 10(2), 54-64.

Kumar, R. (2013), The effect of mocroeconomic factor on Indian stock market performance: A factor analysis approach. IOSR Journal of Economics and Finance (IOSR-JER), 1, 14-21.

Kunst, R.M. (2010), Econometric Method for Panel Data. UK: University of Vienna.

Majid, M.A., Yusof, R.M. (2009), Long-run relationship between Islamic stock returns and macroeconomic variables: An application of the autoregressive distributed lag model. Humanomics, 5(2), 127-141.

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

Miseman, M., Ismail, F., Ahmad, W., Akit, F.M., Mohamad, R., Mahmood, W.W. (2013), The impact of macroeconomic forces on the ASEAN stock market movements. World Applied Sciences Journal, 23, 61-66.

Naik, P.K., Padhi, P. (2012), The impact of macroeconomic fundamentals on stock prices revisted: Evidence from Indian data. Eurasian Journal of Business and Economic, 5(10), 25-44.

Naseri, M., Masih, M. (2013), Causality Between Malaysia Islamic Stock Market and Macroeconomic Variables. Munich Personal RePE Archive. p21.

Ouma, W.N., Muriu, P. (2014), The impact of macroeconomic variables on stock market returns in Kenya. International Journal of Business and Commerce, 3(11), 1-31.

Ozean, A. (2012),] The relationship between macroeconomic variables and ISE industry index. International Journal of Economics and Financial Issues, 2(2), 184-189.

Ozturk, H., Yilma, A.A. (2015), Leverage and stock returns: Evidence from Istanbul stock exchange. Accounting and Finance Research, 4(4), 140-146.

Paavola, M. (2006), Test of the Arbitrage Pricing Theory Using Macroeconomic Variablrs in The Russian Equity Market. Bachelor's Thesis Lappeenranta University of Technology. p1-46.

Rahman, A.A., Sidek, N.M., Tafri, F. (2009), Macroeconomic determinants of Malaysian stock market. African Journal of Business Management, 3(3), 95-106.

Rashid, M., Hassan, M.K., Yein, N.Y. (2014), Macroeconomics, investor

sentiment, and Islamic stock price index in Malaysia. Journal of Economic Cooperation and Development, 35, 16.
Reddy, K., Fu, M. (2014), Does Shariah compliant stocks perform better than conventional stocks? A comparative study of stocks listed on the Australia stock exchange. Asian Journal of Finance and Accounting, 6(2), 155-170.
Ross, S. (1976), The arbitrage theory of capital asset pricing. Journal of Economic Theory, 13(3), 341-360.
Sadeghi, M. (2008), Financial performance of shariah-compliance investment: Evidence from Malaysia stock market. International Researche Journal of Finance and Economics, 1, 16-26.
Saiti, B. (2015), Cointegration of Islamic stock indices: Evidence from five ASEAN countries. International Journal of Scientific and Enineering Research, 6(7), 14.
Sakti, M., Harun, M. (2013), Relationship between Islamic stock prices and macroeconomic variables: Evidence from Jakarta stock exchange Islamic index. Global Review of Islamic Economics and Business, 1(1), 071-084.
Security Commission, M. (2015), Capital Market Malaysia, Financing the Future. Kuala Lumpur: Security Commision, Malaysia.
Sharma, S.C., Wongbangpo, P. (2002), Long-term trends and cycles in ASEAN stock markets. Review of Financial Economics, 11, 299-315.
Talla, J.T. (2013), Impact of Macroeconomic Variable on the Stock Market Prices of the Stockholm Stock Exchange (OMXS30). Master's Thesis of Jonkoping University. p1-48.
Ting, H.L. (2012), Macroeconomic Determinants of The Stock Market Return: The Case in Malaysia. p1-110.
Vejzagic, M., Zarafat, H. (2013), Relationship between macroeconomic variables and stock market index: Co-integration evidence from FTSE Bursa Malaysia Hijrah Shariah index. Asian Journal of Management Sciences and Education, 2(4), 94-108.
Wongbangpo, P., Sharma, S.C. (2002), Stock market and macroeconomic fundamental dynamic interaction: ASEAN-5 countries. Journal of Asian Economics, 13, 27-51.