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Empirical Evidence on the Relationship between Stock Market Volatility and Macroeconomics Volatility in Malaysia

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Abstract
The relationship between the volatility of stock market returns and macroeconomic volatilities has been a focus of many empirical studies. Many studies were conducted to examine this relationship based on the data from developed markets, and only few were carried out in the case of emerging market. Several methods have been used to measure volatility empirically. Recently, many studies have used conditional variance and GARCH models to estimate volatility. This paper examines the relationship between stock market returns volatility in Malaysia with five selected macroeconomic volatilities; GDP, inflation, exchange rate, interest rates, and money supply based on monthly data from January 2000 to June 2012. The volatility in this paper was estimated using GARCH(1,1) models, and the relationship between stock market volatility and macroeconomic volatilities has been examined using bi-variate and multivariate VAR Granger causality tests as well as through regression analysis. We found little support on the existence of the relationship between stock market volatility and macroeconomic volatilities. Only volatility in inflation was found to be Granger-caused stock market volatility, while out of five macroeconomic variables, only volatility in interest rates was found Granger-caused stock market volatility. The volatilities of macroeconomic variables as a group also does not Granger cause volatility in stock market returns. The result from regression analysis shows that only money supply volatility is significantly related to stock market volatility. The volatilities of macroeconomic variables as a group are also not significantly related to stock market volatility. The weak relationship between stock market volatility and macroeconomic volatilities is possible due to lack of institutional investors in the market, and may also indicate the existence of information asymmetry problem among investors.

Key words: Stock Market, Volatility, GARCH, VAR, Macroeconomic Variables, Malaysia

1.0 Introduction

Recently, many studies have been conducted to investigate the relationship between stock market and real economic activities. Interest in this area is mainly because stock market has been recognized to have a prominent role in a country's macroeconomic development. Theoretically, stock market should be closely related with the macroeconomic variables of the country, simply because stock prices are the discounted present value of expected future cash flows. Based on a simple discount model, the fundamental value of a corporate stock is equal to the present value of expected future dividends, thus the future dividend must eventually reflect the real economy activity. Similarly, the volatility of stock prices should also depend on the volatility of expected future cash flows and future discount rates. Since the value of corporate equity at the aggregate level depend on the state of economic activity, it is likely that any changes in the level of uncertainty of future macroeconomic conditions would cause a change in stock return volatility. In other words, stock markets may be volatile simply because real economic activities fluctuate.

Knowledge on the nexus between stock market volatility and macroeconomic variables volatility is crucial to the investors in the equity market as well as to the policy makers. For investors, discovering the macroeconomic variables volatility could help them to appropriately forecast stock prices movements. If the volatility of macroeconomics variables can be used as reliable indicators for the stock market volatility, it can also help them in managing their investment portfolios. Meanwhile, from the macroeconomic point of view, it is important for policymakers to be able to identify relationships between stock market volatility and macroeconomic volatility. If stock market volatility leads macroeconomic volatility, policymakers could use stock market volatility as a leading indicator to predict future macroeconomic volatility. On the other hand, if stock market volatility does not lead macroeconomic volatility, it is not wise for a policy maker to focus on stock market volatility in order to reduce macroeconomic volatility. Therefore, it is worthwhile to determine whether macroeconomic volatility can explain stock market volatility, or vice versa.

Since the nature of stock market volatility gives some important implications for policy makers, economic forecasters and investors, the purpose of this paper is to investigate the connection between stock market price volatility and a number of macroeconomic variables, based on Malaysia data. In other words, this paper examines the possibility that macroeconomic volatility can explain stock market volatility in Malaysia or vice versa. Specifically, the objective of this paper is to determine whether changes in Malaysian stock market volatility through time, as measured by the conditional variance, can be explained by time-varying conditional volatility in a number of macroeconomic variables, namely Gross Domestic Products (GDP), inflation, money supply, exchange rate and short-term interest rate. This is to determine whether or not conditional stock market volatility in Malaysia could be predicted by conditional macroeconomic volatility, also the ability of conditional stock market volatility to forecast conditional macroeconomic volatility. In investigating this issue, we will first use GARCH approaches to estimate conditional variance of each variables being studied, and then use this conditional variance as a measure for volatility to examine the bi-variate VAR causality between stock market returns volatility and the macroeconomic variables volatility in Malaysia. In addition, unlike previous studies, this paper investigates the causality between stock market returns volatility and macroeconomic volatilities as a group in multivariate VAR's framework. Because there has yet a study conducted on this matter based on Malaysian data, it has become a driving motivation to conduct this study.

Bursa Saham Malaysia (formerly known as Kuala Lumpur Stock Exchange), as many other stock markets in Asia, have experienced considerable growth and turbulence. This process resulted in a profound change in Malaysia's economy. The Bursa Saham Malaysia is significantly important for the Malaysian economic development because it provides a mechanism for resource re-allocation between different sectors of the economy. As a rapidly developing emerging market, the Bursa Saham Malaysia also plays an important role in a worldwide context by affecting international capital flows into Malaysia. Therefore, an understanding of the mechanisms of the Malaysian stock market's dynamics is extremely vital. In addition, the unique features of the Malaysian stock market and economic structure may produce

a different pattern of relationship between stock price volatility and macroeconomic variables volatility either from the developed or other emerging economies. The rest of this paper is organized as follows: section 2 reviews several previous studies on the relationship between stock market volatility and macroeconomic variable volatility; section 3 provides a description of the data, estimation strategy and methodology used in this study; in Section 4, the empirical results are presented; and followed by the conclusion in Section 5.

2.0 Literature Review

The causal relationship between stock market price and macroeconomic variables has been studied extensively especially in the case of developed market. Several studies also have been carried out for emerging market. In Malaysia specifically, several studies have been conducted to investigate the nexus between these variables. Ibrahim (1999), for instance, has investigated the dynamic interactions between seven macroeconomic variables and the stock prices in Malaysia by using cointegration and Granger causality tests. He found that the stock prices are Granger-caused by changes in the official reserves and exchange rates in the short run. Habibullah and Baharumshah (1996a) used residual-based cointegration tests in their study, and found no evidence of cointegration between various stock indices, money supply and output in Malaysia. However, in another study, Habibullah and Baharumshah (1996b) did find evidence for information inefficiency in the Property Index with respect to money supply when an alternative test based on a restricted error-correction model is used. Cornelius (1993) examined the relationship between money supply changes and stock prices through bi-variate Granger causality tests. He found evidence against the informational-efficiency hypothesis for the Malaysian market. More recently, Rahman, et al., (2009) explored the interaction between selected macroeconomic variables and stock prices for the case of Malaysia in a VAR/VECM framework. They found that changes in Malaysia stock market index do perform a cointegrating relationship with changes in money supply, interest rate, exchange rate, reserves and industrial production index. Mohd Hussin, et al., (2012) examined the relationship between the development of Islamic stock market and macroeconomic variables in Malaysia, also using VECM framework. Their findings showed that Islamic stock price is positively and significantly related with Industrial production Index and Consumer Price Index but negatively related with money supply and exchange rates. However, none of these studies focused on the relationship between stock market price volatility and macroeconomic volatilities, thus this paper intends to fill this gap.

Since the introduction of ARCH and GARCH models by Engle (1982) and Bollersher (1986), there has been an explosion of empirical studies examining the dynamics of conditional stock market volatility empirically. Most of the studies, however, have been carried out in the context of developed markets. The well-liked literature on this topic is by Schwert (1989) which looked at the relationship between stock volatility and the volatility of real and nominal macroeconomic variables. Based on US data for several macroeconomic variables (namely inflation, industrial production, and money), Schwert found weak evidence that macroeconomic volatility can helpful in predicting stock return volatility. His study, however, point to a positive link between macroeconomic volatility and stock market volatility, with the direction of causality being stronger from the stock market volatility to macroeconomic variables. David and Kutan (2003) extended Schwert's study by accounting for volatility persistence in an international setting. Similar as Schwert, they also find the volatility of inflation and output growth rate has weak predictive power for conditional stock market volatility.

On the other hand, several studies did provide evidence for the impact of the overall health of the economy on unconditional stock market volatility. Officer (1973), for example, shows that aggregate stock volatility increased during the Great Depression, as the volatility of money and industrial production grew. His study showed that stock volatility was at similar levels before and after the depression. Liljeblom and Stenius (1997), using Finnish data, found that changes in conditional stock market volatility were related to conditional macroeconomic volatility (namely inflation, industrial production, and money supply). Morelli (2002) examined the relationship between the conditional

volatility in the UK stock market and a number of macroeconomic variables. He found a significant relationship between stock market and macroeconomic volatility with respect to the ability of macroeconomic volatility in predicting stock market volatility.

Several studies also have been conducted in the case of emerging markets. Engle and Rangel (2005) studied emerging markets, as well as developed market, by accounting for volatility clustering using Spline-GARCH model. They found that volatility in macroeconomic variables such as GDP growth, inflation and short-term interest rate are important explanatory variables that increased unconditional stock market volatility. Chowdhury and Rahman (2004) investigated the relationship between the volatility of macroeconomic variables and the stock returns in Bangladesh. By using VAR models, they found that macroeconomic volatility significantly cause stock market volatility.

More recently, Wang (2011) investigates the time-series relationship between stock market volatility and macroeconomic variable volatility for China using E-GARCH and lag-augmented VAR models. He found evidence on the existence of a bilateral relationship between inflation and stock prices, and an unidirectional relationship between the interest rate and stock prices. His study also found that the relationship between stock prices and real GDP is not significant. Oseni and Nwosa (2011) used the same methodology as Wang (2011), investigated the relationship between stock market volatility and macroeconomic variables volatility in Nigeria. They found a bi-causal relationship between market volatility and real GDP. However, they did not find evidences on the causal relationship between stock market volatility and the volatility in interest rate and inflation rate. Chinzara (2011) studied on the relationship between macroeconomic uncertainty and stock market volatility for South Africa and found that stock market volatility is significantly affected by macroeconomic uncertainty. The findings show that financial crisis raise stock market volatility, and the volatilities in exchange rates and short-term interest rates are the most influential variables in affecting stock market volatility, while volatilities in oil prices, gold prices and inflation play minor roles in affecting stock market volatility.

3.0 Methodology

Data

All variables used in this study are monthly observations spanning the time period from January 2000 to June 2012. Stock market variable considered in this paper is a stock return which is based on the Malaysian stock market index, the Bursa Malaysia Composite Index. Returns are calculated for the stock market index according to the formula: $RS_t = \ln(P_t) - \ln(P_{t-1})$, where RS_t is the stock market return in month t, ln is the logarithm, and p_t is the Bursa Malaysia price index at the end of month t. The macroeconomic variables used in this paper are Industrial Production Index, IP (a proxied for GDP), Consumer Price Index, CPI (a proxied for inflation rate), money supply, MS (measured by broad money, M2), exchange rate, EXC (Malaysia Ringgit/USD), and short-term interest rate, BLR (proxied by base lending rate). These macroeconomic variables have been used in various studies on stock returns (see Chen, et al., 1986; Clare and Thomas, 1994; Groenewold and Fraser, 1997). All data were obtained from the Bank Negara Malaysia (Central Bank of Malaysia) database. In the estimation process, all data are transformed in logarithm.

Measures for volatility

In this paper, the volatility in stock market return and macroeconomic variables is estimated by using GARCH models. The GARCH models introduced by Bollerslev (1986) have been the most commonly employed class of time series models in the recent finance literature for studying volatility. The appeal of the models is its ability to capture both volatility clustering and unconditional return distribution with heavy tails. Since the GARCH methodology is well known, this paper will only provide

a brief description of the models and their application to the variables being studied. In general, the GARCH (*p*,*q*) can be presented as follow:

$$y_t = \lambda_0 + \sum_{i=1}^{k} \lambda_i y_{t-i} + \varepsilon_t \; ; \qquad \varepsilon_t \sim N(0, \sigma_t^2) \tag{1}$$

$$\sigma_t^{\,2} = \varphi + \sum_{i=1}^{q} \alpha_i \varepsilon^2{}_{t-i} + \sum_{j=1}^{p} \beta_j \sigma^2{}_{t-j} \tag{2}$$

The estimation of GARCH model involves the joint estimation of a mean and conditional variance equation. Equation (1), the conditional mean equation, is an autoregressive process of order *k* (AR(*k*)). Parameter λ_0 is the constant, *k* is the lag length, ε_t is the heteroskedastic error term with its conditional variance (σ_t^2). Equation (2) is the conditional variance equation specified as the GARCH (*p*,*q*) model where *p* is the number of ARCH terms, and *q* is the number of GARCH terms.

Several literature show that (for instance, study by Akgiray, 1989; Connoly, 1989; Baillie and DeGennaro, 1990; Bera and Higgins, 1993; Floros, 2009, among others), a simple GARCH model is parsimonious and generally gives significant results. Therefore, this paper will use AR(1)-GARCH(1,1) models to estimate the predicted volatility of the stock market returns and all macroeconomic variables (industrial production, exchange rate, inflation rate, money supply, and base lending rate) being studied.

Estimation Strategy

After calculating the predicted volatility for all series, the relationship between the conditional volatility in the stock market and the macroeconomic variable will be examined by estimating a two-variable vector autoregressive (VAR) model as shown in the Equation (3) and Equation (4).

$$VSR_t = w_0 + \sum_{i=1}^{i} \vartheta_i VSR_{t-i} + \sum_{i=1}^{j} \varpi_i VM_{jt-i} + \mu_{1t} \tag{3}$$

$$VM_t = \phi_0 + \sum_{i=1}^{k} \varsigma_i VM_{t-i} + \sum_{i=1}^{l} \psi_i VRS_{t-i} + \mu_{2t} \tag{4}$$

In the equation above, VSR_t and VM_t are the conditional volatility in the stock market and macroeconomic variables, respectively. These regressions will determine whether or not conditional stock market volatility can be predicted by conditional macroeconomic volatility and also, the reverse: the ability of conditional stock market volatility to predict conditional macroeconomic volatility. For this purpose, VAR Granger causality tests will be conducted to test the causality relationship between stock market volatility and macroeconomic variables volatility individually. In all estimation processes, the lag length for VAR models will be determined using Akaike Information Criterion (AIC).

In addition to bi-variate VAR, the relationship between volatilities will also be examined in multivariate VAR framework. As in the case of bi-variate VAR, the lag lengths for multivariate VAR will also be determined using AIC. Based on the estimation of multivariate model, the VAR Granger causality tests will be conducted to examine the causality relationship between stock market volatility and macroeconomic volatilities, as a group. The Wald statistics will be used to test the following hypothesis; the volatilities of macroeconomic variables as a group do Granger cause stock market volatility in Malaysia.

In the final stage, the multiple regression analysis will be used to analyze the relationship between stock market volatility as dependent variable and all macroeconomic variables volatility as independent variables. The regression analysis is important in order to identify the direction of relationship between stock market volatility and the volatility of macroeconomic variables being studied, as well as to measure the magnitude of the impact of macroeconomic volatility on stock market volatility.

4.0 Findings and Discussion

Table 1 presents the parameter estimates and their corresponding p-value of AR(1)-GARCH(1,1) model for stock market return and five macroeconomic variables being studied. It can be seen that RS, GDP, CPI, and EXC follows a GARCH(1,1) model, while BLR and MS follows an ARCH(1) model. The Lagrange multiplier (LM) test for the presence of ARCH disturbances is also shown, and it shows the null hypothesis of no ARCH errors (i.e. homoscedastic process) is rejected at the 5% level for the exchange rate variable only. The Box–Ljung (Q) statistic of the residuals at 20 lags shows no evidence of autocorrelation in the ARCH/GARCH residuals except in the case of PI. However, the results from Q^2 tests show there is no autocorrelation up to order 20 for standardized residuals squared in all models. Therefore, it is concluded that the fitted ARCH/GARCH model is reasonably well specified.

Table 1: Estimation results of AR(1)-GARCH(1,1) model and diagnostics

	RS	GDP	CPI	EXC	BLR	MS
Mean Equation						
λ_0	0.0062 (0.0723)	0.2410 (0.0000)*	-0.0119 (0.2264)	0.0124 (0.0572)	0.0544 (0.0004)*	-0.0337 (0.6495)
λ_1	0.1161 (0.2394)	0.9497 (0.0000)*	1.0028 (0.0000)*	0.9906 (0.0000)*	0.9709 (0.0000)*	1.0030 (0.0000)*
Variance Equation						
Φ	0.0001 (0.2139)	-5.60E-05 (0.2704)	1.03E-06 (0.0014)*	6.72E-08 (0.0034)*	9.15E-05 (0.0000)*	0.0003 (0.0000)*
A	0.0888 (0.0393)*	-0.0241 (0.0000)*	0.8862 (0.0000)*	0.2849 (0.0000)*	1.1500 (0.0003)*	0.2039 (0.0156)*
B	0.8553 (0.0000)*	1.0582 (0.0000)*	0.4696 (0.0000)*	0.6693 (0.0000)*	0.1067 (0.1072)	-0.0644 (0.7332)
Diagnostic						
Q(20)	20.308 (0.439)	124.30 (0.0000)*	21.987 (0.341)	29.029 (0.087)	25.025 (0.200)	17.803 (0.600)
$Q^2(20)$	17.717 (0.606)	10.659 (0.955)	17.856 (0.597)	13.016 (0.877)	26.930 (0.137)	1.1383 (1.000)
LM	0.3781 (0.5395)	2.8561 (0.0931)	1.3402 (0.2488)	3.9536 (0.0486)*	0.2233 (0.6372)	0.2020 (0.6537)

*Significant at 5% level

Based on the parameters estimated according to the AR(1)-GARCH(1,1) model in Table 1, the volatility of RS, GDP, CPI, EXC, BLR and MS are calculated. Summary statistics for the conditional volatility that estimated based on the ARCH/GARCH models are shown in Table 2. Table 2 gives the mean, standard deviation (std. Dev.), skewness, kurtosis, Jarque-Bera statistics, and also its corresponding p-value. Statistics in Table 2 shows that the conditional variance for the stock market and the macroeconomics variables exhibit strong positive skewness and high levels of kurtosis. From the Jarque-Bera statistics and corresponding p-values, it is obvious that the null hypothesis of normal distribution is rejected at the 1% significance level for all of the variables.

Table 2: Summary statistics for the conditional variance series

Statistics	VRS	VGDP	VCPI	VEXC	VBLR	VMS
Mean	0.002132	0.002972	3.29E-05	0.000177	0.000353	0.000398
Std. Dev.	0.000901	0.002011	0.000121	0.000280	0.000960	0.000483
Skewness	0.667500	2.189676	7.968356	2.181798	5.399211	7.994073
Kurtosis	2.316607	7.190493	74.35207	7.794245	34.36189	68.00509
Jarque-Bera	13.87039	228.0876	33184.14	260.9099	6830.246	27821.30
p-value	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000

Note: VRS = conditional volatility of stock returns, VGDP = conditional volatility of GDP, VCPI = conditional volatility of inflation, VEXC = conditional volatility of exchange rate, VBLR = conditional volatility of interest rates, VMS = conditional volatility of money supply.

Table 3 shows the estimation results from the two-variable autoregressive model (VAR) stock market volatility and macroeconomic variables being studied. In the estimation process the Akaike information criterion (AIC) was used in determining the lag length of the respective VAR model. And, based on the estimated VAR model, the Granger causality tests have been carried out. Table 3 presents the Granger causality tests from the bi-variate VAR model for testing the extent to which conditional stock market volatility can predict conditional macroeconomic volatility. The Wald statistics for testing the power of the macroeconomic variables volatility in predicting stock market volatility is also presented. Based on Wald statistics, it is stated that only the volatility of two macroeconomic variables, VCPI and VBLR significantly Granger cause the volatility in stock market return in Malaysia. Meanwhile, in terms of the ability of stock market volatility to predict macroeconomic variables volatility, only one significant relationship was found at the 5% level. A significant macroeconomic variable is VEXC and the result suggests that the volatility in exchange rate is Granger cause the volatility in stock market return in Malaysia.

In addition to the bi-variate causality analysis, we have conducted a further analysis to investigate whether the possibility of the volatility of macroeconomic variables as a group could Granger cause the volatility in the stock market returns. The Granger causality tests was carried out based on multivariate VAR model which consists of all variables being studied (VRS, VGDP, VCPI, VEXC, VBLR, VMS). As in the case of bi-variate VAR, the lag length used in the multivariate VAR model was also determined using Akaike information criterion. The result at the bottom of Table 3 shows that the VAR Granger causality test is not significant at 5% level. The finding suggests that the volatility of all macroeconomic variables being studies as a group does not Granger-cause the volatility of stock market returns.

Table 3: Granger causality between stock market volatility and macroeconomic variables volatility

Null Hypothesis	Wald Statistics	Prob.
VGDP does not Granger cause VRS	0.351995	0.5530
VRS does not Granger cause VGDP	0.940430	0.3322
VCPI does not Granger cause VRS	74.34939	0.0000*
VRS does not Granger cause VCPI	4.107860	0.7673
VEXC does not Granger cause VRS	4.201988	0.7562
VRS does not Granger cause VEXC	10.03226	0.1868
VBLR does not Granger cause VRS	8.049563	0.3282
VRS does not Granger cause VBLR	35.08898	0.0000*
VMS does not Granger cause VRS	9.075085	0.2473
VRS does not Granger cause VMS	11.01374	0.1380
All macroeconomic volatilities do not Granger cause VRS[a]	1.696178	0.8894

*Significant at 5% level

[a]Based on multivariate VAR model: v'=[VRS,VGDP,VCPI,VEXC,VBLR, VMS]

The limitation of Granger causality test is that it does not provide the sign of relationship, which is very important in order to have a clear perception on the direction and the significant of the relationships between the variables. To overcome this, further analysis was conducted using regression analysis. In the regression analysis, the volatility of stock market returns estimated from GARCH model are regressed with all macroeconomic volatilities as independent variables. Table 4 presents the finding from the regression analysis of conditional stock market volatility on all the macroeconomic volatilities. We found that only one macroeconomic variables volatility is statistical significance at 5% level. In contrast with the Granger causality tests, we found that VCPI is not statistically important for VRS. As expected, all coefficients of macroeconomic volatilities are positive except VEXC. However, the coefficient of VEXC is not significant at 5% level. In term of size, the coefficient of VMS is relatively large compared to other coefficients that are not significance. This indicates that VMS volatility is an important factor in determining the volatility in stock market returns in Malaysia. Meanwhile, in term of explanatory power, the result shows that 5.8% of the variation of stock market volatility in Malaysia can be explained by macroeconomic volatilities used in the regression. Based on the F-statistics, it is also not significant at 5% level. The low level of explanatory power is consistent with a study in the US by Schwert (1989), who found levels of explanatory power are between 2.2% and 5%.

Table 4: Estimation results on the regression between stock market volatility and macroeconomic volatilities

Independent Variables	Coefficient	t-Statistics	Prob.
Constant	0.001958	11.19702	0.0000*
VGDP	0.012893	0.330080	0.7418
VCPI	0.396292	0.653443	0.5145
VEXC	-0.244242	-0.853861	0.3946
VBLR	0.036097	0.447250	0.6554
VMS	0.384337	2.438057	0.0160*

R^2 = 0.058770; Adjusted R^2 = 0.025628; F-statistics = 1.773286 (Prob. = 0.122058)
*Significant at 5% level

5.0 Conclusion

The objective of this paper is to empirically examine the relationship between the stock market volatility in Malaysia and the volatility in selected macroeconomic variables. The macroeconomics variables are GDP which proxied by Industrial Production Index, Consumer Price Index, exchange rates, interest rate that proxied by Base Lending Rates, and money supply which measured by broad money, M2. In this paper, the volatility of each variables were measured by GARCH(1,1) model, and the Granger causality tests have been conducted in bi-variate VAR and multivariate VAR models. In the final analysis, a multiple regression analysis was estimated in order to determine the direction and to measure the impact of the macroeconomic volatilities on stock market volatility.

The results from bi-variate VAR Granger causality tests show that out of five macroeconomic volatilities being examined, only volatility in CPI and BLR significantly Granger-caused the volatility in stock market returns. Between the two variables that were found significant, only in the case of VCPI, the causality relationship runs from VCPI to VRS. In the case of VBLR, the direction of causality is from interest rate volatility to stock market volatility. Both of the causality directions are uni-directional. The result of Granger causality tests based on multivariate VAR model between the volatilities of macroeconomic variables as a group and stock market volatility also show no evidence of causality relationship between them.

Consistent with Granger causality tests, the results from regression analysis also found that only one out of five macroeconomic volatilities being studied is statistically significant at 5% level. Based on the regression analysis, the variable which has a significant relationship with stock market volatility in

Malaysia is money supply volatility. The relationship between stock market volatility and money supply volatility is positive and the size of the coefficient is relatively high indicating a significant influence of money supply volatility on stock market volatility in Malaysia. The low explanatory power from the regression analysis indicates that the volatilities of all macroeconomic variables used in regression played very minor role in the volatility of stock market in Malaysia.

In conclusion, the finding from this paper provides further evidence to support the existence of the relationship between stock market volatility and macroeconomic volatilities in the case of emerging market. However, the finding from this paper is far from conclusive, since only two out of five macroeconomic volatilities being studied have a relationship with stock market volatility. The volatility in GDP and exchange rates were not found to be Granger-caused, and not significantly related to stock market returns volatility. Only volatility in inflation does Granger cause stock market volatility; while from the regression analysis, only interest rate volatility is significantly related to stock market volatility. As a group, all macroeconomic volatilities were found nor casually or significantly related with stock market volatility. This finding is justifiable in the case of emerging market mainly due to the dominance of non-institutional investors and the existence of information asymmetry problem among investors. These factors could contribute to the weak relationship between stock market volatility and macroeconomic volatilities in the emerging market especially in Malaysia.

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