



The Relationship between Stock Return and Trading Volume in Malaysian ACE Market

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ABSTRACT

The relationship between stock return and trading volume in Malaysian ACE market has been analysed in this study. There are two objectives of conducting the analysis; (1) to investigate the relationship between stock return and trading volume in Malaysian ACE market, and; (2) to conclude whether the relationship of trading volume and stock return on Malaysian ACE market is consistent with the weak-form of the efficient market hypothesis (EMH). The empirical result proves a significant positive contemporaneous relationship between stock return and trading volume. Thus, the first objective is satisfied. Second objective is proven that Malaysian ACE market is contradicted with the weak-form of e-EMH.

Keywords: Stock Return, Trading Volume, Malaysian ACE Market

JEL Classifications: G1, G12

1. INTRODUCTION

The slowdown in global economic, flatten in the earnings, collapse of commodities prices, and tighten in monetary policy are the critical indicators that the stock markets in 2016 are anticipated to bearish. Rapidly growing emerging stock markets such as Malaysian stock market would be most largely impacted. Emerging stock markets associate with highly volatility stock return due to low stock market volume (Attari et al., 2012; Hsieh, 2014). A study on trading volume and stock return volatility in developed versus emerging stock markets reports negative relation between expected volume and stock return volatility in several emerging markets, which is related to the inefficiency in those markets (Girard and Biswas, 2007).

Price and trading volume are intensively used in price-volume relationship analysis and found to be correlated in many literatures (Ying, 1966; Crouch 1970a; Westerfield 1977; Tauchen and Pitts, 1983; Chen et al., 2001; Sabri, 2008, Al-Jafari and Tliti, 2013). Chen et al. (2001) define trading volume as the daily number of shares traded and volume has predictive power for stock returns volatility regardless of the measure of volatility used (Léon, 2007). According to Al-Samman and Al-Jafari (2015),

many practitioners and academics consider trading volume as an important technical indicator to measure the strength of the market because trading volume contains useful information about stock behavior (Hsieh, 2014). Theoretically there are many reasons why market participants pay attention to trading volume. First, high price volatility is correlated with low volume indicating the market is illiquid. Second, low price volatility is corresponded with high volume implying that the market is highly liquid.

Moreover, a study by Attari et al. (2012), states that higher returns encourage the investors to invest and increase the capital inflow, whereas in volatile environments the returns are not certain and hard to predict effecting investment eventually. On the other hand, Fama (1970) states that current stock prices reflect all security market information including the historical sequence of prices, rates of return, and trading volume. He proposed the efficient market hypothesis (EMH) argues that investigating the relationship of trading volume and stock returns will not help investors in achieving abnormal rate of return.

Since the studies on such relation on Malaysian stock market are relatively small, this study is the first of its kind on examining the

price/returns-volume-volatility relationship on Malaysian stock market. After more than one decade of trading activities took place in Malaysian stock market, there is a potential to put into practice an investigation on the relationship of these fundamental financial variables. This study therefore intends to investigate empirically the price-volume-volatility relationship on Malaysian ACE market. ACE market was formerly known as MESDAQ, it is where new, young, and potential high growth companies get listed.

In general, this study fills the gap created by the scarcity of previous studies that investigated the price/returns-volume relationship on emerging stock markets such as Malaysian stock market. This study attempt to observe all listed companies in ACE Malaysian stock market but only 77 companies are selected due to some data constraint. The difference characteristics in this stock market provide different insight on how stock return will react towards the changes of volume and vice versa. Such study has not been done in Malaysia so far.

1.1. Problem Statement

In relation to that a number of studies have attempted to establish the empirical and theoretical structure on the relationship between stock return and trading volume such as Ying (1966), Crouch (1970b), Westerfield (1977), Rogalski (1978), Brailsford (1996), Tauchen and Pitts (1983), Karpoff (1987), Chen et al. (2001), Lee and Rui (2002), Kamath and Wang (2006), Sabri (2008), Pathirawasam (2011), Darwish (2012) and Al-Jafari and Tliti (2013) proved strong relationship (contemporaneous as well as dynamic) between stock return and trading volume. From prior literatures, there are huge amount of evidences on the relationship between stock return and trading volume observed by researchers that provide insight for more new researches to be taken in this area. However, the relationship is still indefinite particularly in emerging market due to some drawbacks. The drawbacks actually could be the factor of analysis and initiate for an innovation of the study.

Emerging stock market like Malaysia is subject to high risk and return, highly predictable and high volatility compared to the developed markets (Girard and Biswas, 2007). With a fair amount of empirical evidence on the returns volatility and volume relationship reported for developed countries, very few empirical studies have been documented from emerging markets and specifically from Malaysian stock market. Moreover, it has been observed that there are only few studies in Malaysian context looking at the price/returns-volume relationship. Given the mixed empirical results between price/return and trading volume in Malaysian context are as follows; Mohamad and Nassir (1995), Ahmed et al. (2005), Nor et al. (2010), McGowan and Junaina (2011); and Lau and Go (2012). Deeper empirical and dynamical research from other perspective of Malaysian stock market is needed for better understanding of the price/return volatility and volume relationship.

Apart from its controversial listing issues, ACE market is where small-cap or new start-up companies that are looking for capital boost to list their companies public. Most of them are usually do not have large and high amount compared to the companies

in Main market but probably have strong product and service portfolio. Thus, this study attempt to investigate the relationship of trading volume and stock return volatility in the small-cap companies listed in the ACE market. Is the relationship would be consistent with other emerging stock markets? Or it will portray a total contradict evidence that contributes to the literatures. In order to do so, this study takes into account the Malaysian ACE market players in order to fill the scarcity of prior studies.

1.2. Research Objectives

The research comes in two-fold objectives:

1. To investigate the relationship between trading volume and stock return/stock return volatility in Malaysian ACE market.
2. To conclude whether the relationship of trading volume and stock return on Malaysian ACE market is consistent with the weak-form of the EMH (Modeling Mohamad and Nassir (1995) and Al-Samman and Al-Jafari (2015).

2. LITERATURE REVIEW

2.1. Research on Price/Return-Volume-Volatility Relationship: Prior Research and Theoretical Aspect

From a theoretical and practical standpoint, trading volume and stock returns (returns volatility) are jointly and simultaneously determined by the same market dynamics, and also are inextricably linked. Therefore the price-volume relationship has received remarkably huge attention by market practitioners and academics. Voluminous numbers of studies have been investigated the relationship between trading volume and stock price (returns) in various perspectives and a range of analytical techniques has been employed.

Karpoff (1987) listed four importance of price-volume relation. First, price-volume relation provides insight into the structure of financial markets. Second, it crucial to event studies' researchers to draw inferences because they use a combination of price and volume data. Third, it is critical to debate over the empirical distribution or speculative prices when using price-volume relation. Lastly, price-volume relation gives significant implications for research into futures markets. Therefore, Karpoff (1987) tested the asymmetric price-volume relation based on few hypotheses and he discovered that the relationship of volume/price is fundamentally different for positive and negative in price changes.

Some studies that inspected the price-volume relationship on China stock market. A study by Chen and Zhou (2001) detected three important issues on Chinese stock market comprises of the behavior of stock returns, volatility, and trading volume, the contemporaneous and causality of the three variables at the Shanghai and Shenzhen stock exchange, and lastly is the linkage between these two stock markets. They applied monthly time series of stock index returns, returns volatility, and trading volume volatility as well as daily stock indices and trading volume for Shanghai stock exchange and Shenzhen stock exchange. From vector auto regression analysis, they discovered a strong autocorrelation, a strong positive contemporaneous relationship and a positive simultaneous relationship between returns and volume volatility. A slight different study on volatility-volume

relationship based on trade size and trade frequency was took place by Song et al. (2005) where they discovered that number of trades explains volume-volatility relationship better than the size of trades.

Another study on emerging Brazilian (Bovespa) stock market by De Madeiros and Van Doornik Bernandus (2006) who attempted to evaluate the empirical relationship between stock returns, return volatility and trading volume for 57 firms in that particular stock market. From the analysis, they found a strong contemporaneous and dynamic relationship between stock returns, return volatility and trading volume that implied inter alia which means knowledge of one variable may improve other variables forecast. The strong contemporaneous relationship is consistent with study by Kamath (2008) in Chile.

Pisedtasalasai and Gunasekarage (2007) tested the causal and dynamic relationship among returns, return volatility and trading volume for the equity markets of Indonesia, Malaysia, the Philippines, Singapore, and Thailand. They justified a strong asymmetric relationship between stock returns and trading volume which explained that returns are important in predicting their future dynamics as well as those of trading volume. However, trading volume found to have a limited impact on the future of dynamics of stock returns.

Sabri (2008) interested to examine the impact of trading volume and stock price volatility in the Arab economy has employed a study on eight Arab stock markets using monthly data from 1994 to 2006. His objective is to determine how changes in trade volume could affect the volatility of stock prices as expressed by unified AMF stock price index. From the analysis, both trading volume and stock price volatility increased with the concern of a recent phenomenon in the majority of the Arab stock markets. On the other hand, the volume-stock price movements are found to be significantly integrated for all selected markets. Finally, the correlation between volume and price movement is higher in the oil Arab states than the non-oil Arab states stock markets.

Pathirawasam (2011) evaluated Colombo stock exchange for the year 2000-2008 in order to meet the objectives of the study which are to investigate the relationship between trading volume and stock returns, to empirically examine the contemporary relationship between the trading volume change and stock returns and to empirically examine the information content of past trading volume in predicting the future direction of stock returns. This study found a contemporary trading volume change is positively related with the stock returns. However, the relation between past period trading volume change and current period stock returns is negatively related.

Hsieh (2014) conducted a test in order to explore how information about trading volume is useful in estimating future stock return and return volatility. Thus, he has chosen daily data from seven Asian listed real estate markets; Hong Kong, Japan, Malaysia, Philippines, Singapore, Taiwan and Thailand to investigate the contemporaneous and causal relationships between stock return, return volatility and trading volume within and across these

countries' markets. Contemporaneous relations exhibited a positive and strongly significant relationship in all seven markets. A little contradict evidence reported for causality relations whereby volume Granger-causes stock returns in much lesser extent than stock returns Granger-causes volume.

Sun and Li (2015) put together the three finance variables; stock return, volatility and trading volume in a simultaneous equation model in order to examine the dynamic effects. These three variables are found to be interrelated. However, only volatility has positive impact contemporaneous relationship on returns. The authors also tested the variables in single equation model and found that, (1) return is negatively affected by contemporaneous volatility, (2) volatility is negatively affected by contemporaneous returns and positively affected by contemporaneous volume and (3) volume is positively affected by contemporaneous volatility.

More recent, an analysis on empirical relationship between stock return and trading volume based on stock market cycles by using daily data for Jakarta composite index closing price and trading volume from 2010 to 2014 was performed by Christiana et al. (2016). Before they analyze the contemporaneous and dynamic relations between stock return and trading volume, they previously identify the bull and bear phases. Their findings are as follows; (1) a positive contemporaneous return-volume relationship in both bull and bear markets is existed (significant in bull markets only); (2) no evidence of asymmetry in contemporaneous relationship is found; and (3) positive unidirectional causality relationship from stock return to trading volume is reported.

2.2. Research on Price/Return-Volume-Volatility Relationship: Prior Research in the Malaysian Context

In a small emerging market such as Malaysia, few studies have documented important empirical evidence on such relations. In 1995, Mohamad and Nassir ran a study to provide evidence on the relationship between changes in price and trading volume of firms listed in Kuala Lumpur stock exchange for the period January 1985-December 1992. They discovered that price change has strong relationship and positive correlation with trading volume. Mohamad and Nassir (1995) found price changes cause volume changes but not vice versa and price volatility is persistently high due to large amount of volume traded. This support that KLSE is a weak-form efficient market.

Nor et al. (2010) investigated the dynamic relation between return, volatility and trading volume on Malaysian stock exchange. Empirical data used in this study consisted of the daily Kuala Lumpur composite index (KLCI) prices and trading volume during the period January 1999-September 2007. They utilized several techniques such as Granger causality test, VAR analysis, and generalized autoregressive conditional heteroscedasticity (GARCH) model. The authors reported the presence of long memory volatility with leverage effect in the KLCI and only a unidirectional causality from volume to return and volume to volatility which is not enough to support the sequential arrival of information hypothesis. It indicated that return has stronger role than volume in explaining volatility.

On the other side McGowan and Junaina (2011) analyzed the causality relationship between price index and trading volume for spot and next month contracts in the Malaysian stock index futures market by using daily data of the stock index futures (FKLI) closing price and the daily data of the stock index futures (FKLI) trading volume from December 15, 1995 to December 31, 2003. The data is divided into four detail sub-periods in order to analyze the variation in activity especially due to the 1997-1998 Asian financial crisis. Evidence for statistically significant Granger causality test is reported for sub-period 2, during crisis period, for Spot Month Contract from volume to price. The results of vector error correction model also showed the relationship from volume to price is statistically significant in all sub periods for both spot and next month contracts.

Last but not least, Lau and Go (2012) explored the dynamic causality between returns and trading volumes in KLOFFE futures based on the framework of AR-GARCH model. They found causal effect in mean from lag one of trading volume to return implying that significant shift in past volume may result in positive or negative shift of current price. Moreover, interaction between price and volume does not rely on the presence of information spillover because dependence causality in mean variance from volume to return has disappeared.

3. DATA AND METHODOLOGY

This study discusses the data collection and methodology or technique used to analysis the data. In order to achieve the objectives of the study, this study adopts contemporaneous relationship between stock return and trading volume in Malaysian ACE market. Figure 1 presents the theoretical framework of the study that consists of the dependent variable and independent variables. It explains that changes in stock return (R_t) will cause the changes in trading volume (V_t).

Equation (1) shows the theoretical model in this study, where V_t is the monthly stock return at month t ; α is a constant; β is a parameter; R_t is the monthly return for month t , and; δ is a noise variable.

$$\ln(V_t) = \alpha + \beta_1 \ln(R_t) + \delta_t \quad (1)$$

It imposes the relationship that might arise between the dependent and independent variable in this study.

3.1. Data Collection Method

Data collection method describes how the data were collected and treated. For the purpose of this study, the dataset comprises of monthly stock return and trading volume of 77 companies listed in the Malaysian ACE market starting from August 2009 to December 2015 which summed up a total of 5929 number of observations.

Monthly data were choosing in this study because of the small market size, thin trading and to avoid the day-of-the-week effect (Darwish, 2012). On the other hand, monthly returns are at least approximately normally distributed or the simplifying assumption of normality is much less difficult for monthly returns

Figure 1: Theoretical framework



than for daily returns. Some study in emerging stock markets such as Chen and Zhou (2001), Sabri (2008), Pathirawasam (2011), Al-Samman and Al-Jafari (2015) also employed monthly data in their study.

The closing stock price and trading volume for those companies were collected directly from yahoo finance.com as the data from the website is always a free source of raw financial and economic data as well as specialized information. Moreover, the data provided in the website are up to date and reliable.

3.2. Descriptive Statistics Analysis

The first step is to calculate monthly stock returns where the stock return is defined as the natural logarithm of the first difference of closing stock price every month as shown in Equation (2) below:

$$R_t = \ln(P_t/P_{t-1}) \quad (2)$$

Where R_t represents the stock return in the month t ; P_t is the closing stock price at the end of month t , and; P_{t-1} is the closing stock price at the end of month $t-1$.

Trading volume is the most commonly used in literatures and has different interpretation and computation. For example, Jain and Joh (1988) and Lee and Rui (2002) measured raw value of trading volume. Saatcioglu and Starks (1998) utilized trading volume as market turnover and Chen and Zhou (2001) measured logarithm of raw volume. Thus, trading volume in this study is also utilized as natural logarithm of trading volume at time t as indicated in Equation (3). The utilization of natural logarithm on trading volume will improve the normality (Al-Jafari and Tliti, 2013).

$$V_t = \ln(V_t) \quad (3)$$

Where V_t is the trading volume at time t . Both variables stock return and trading volume must be converted into natural logarithm for statistical reason such as to avoid heterodascasity. The variables are estimating elasticity is they are in log form.

3.3. Correlation Test

The correlation between stock return and trading volume is tested in this study. If positive correlation is found to exist, there is also a possibility of causality to exist between the variables. The correlation is significant at 10% level.

3.4. Contemporaneous Test (Regression Analysis - Ordinary Least Square (OLS) Method)

The purpose of conducting the regression analysis using OLS method is to testing the contemporaneous as well as the lagged relationship between stock return (volatility) and trading volume. Adopting Lee and Rui (2000) multivariate model, the relationship

between trading volume and stock return is computed in the following formulas:

$$R_t = \beta_0 + \beta_1 V_t + \beta_2 V_{t-1} + \beta_3 R_{t-1} + \varepsilon_t \quad (4)$$

$$V_t = \alpha_0 + \alpha_1 R_t + \alpha_2 R_{t-1} + \alpha_3 V_{t-1} + \mu_t \quad (5)$$

Where R_t and V_t the stock return and trading volume at time t ; β_i and α_i is the model parameters ($i = 0, \dots, 3$), and; ε_t and μ_t is the noise variables. Fluctuation of stock price or stock return refers to a drastic change (increase or decrease) in value by a given stock within a given period. The drastic change in stock price or stock return usually occurs due to an imbalance in trade volume for a particular stock. For example, price fluctuation tends to increase with high trading volume. As a measurement of volatility, there are several measures proposed by past literatures. For example, Karpoff (1987) used absolute value of first difference, Rutledge (1984) used absolute log change from one trading day to the next, and Tauchen and Pitts (1983) used square of the first difference of future prices. Thus, this study follows Rutledge (1984) by using the definition of;

$$R_t = \ln R_t - \ln R_{t-1} \quad (6)$$

Where R_t is the monthly stock return. Next, this study extends the model proposed by Brailsford (1996) in assessing the relationship between stock return volatility and trading volume. Equation (7) provides the formula:

$$V_t = \alpha_0 + \beta_1 V_{t-1} + \beta_2 V_{t-2} + \alpha_1 R_t^2 + \alpha_2 D_t R_t^2 + \varepsilon_t \quad (7)$$

Where, D_t is the dummy variable ($D_t = 0$ when $R_t < 0$, $D_t = 1$ when $R_t \geq 0$); α_1 is the parameter that measures the stock return volatility and trading volume relationship, and; α_2 is the parameter that measures the degree of asymmetry relationship.

4. RESULTS AND DISCUSSIONS

This research discusses the results from the analysis for the relationship between trading volume and stock return in Malaysian ACE market. It comprises of the descriptive statistics analysis, correlation result and regression result.

The descriptive statistics result of stock return and trading volume of Malaysian ACE market are presented above (Table 1). It includes the mean, median, maximum and minimum value, standard deviation, skewness, kurtosis and Jarque-Bera (JB) test of normality (Figures 2 and 3).

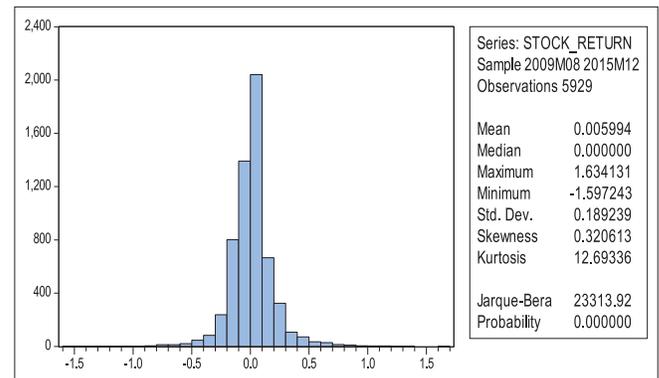
Positive and low stock return's mean of 0.5994% is associates with less volatility (Figure 4) of the series (consistent with low standard deviation; 18.9239%). The wide gap between maximum and minimum value (max; 1.634131, min; -1.597243) of stock return indicates that there is a high variability in stock return changes in the Malaysian ACE market. Meanwhile stock return portrays a positive skewness of 0.320613 indicating a right tail of distribution which interpreting that the data are fairly asymmetry. Kurtosis value is 12.69336 which is >3 ,

Table 1: Summary of descriptive statistics for stock return and trading volume of Malaysian ACE market

Variables	Stock return	Trading volume
Mean	0.005994	12.66256
Median	0.000000	12.64948
Max. value	1.634131	18.82861
Min. value	-1.597243	0.000000
Standard deviation	0.189239	2.249220
Skewness	0.320613	-0.303815
Kurtosis	12.69336	3.281611
JB	23313.19	110.0180
Probability	0.000000	0.000000

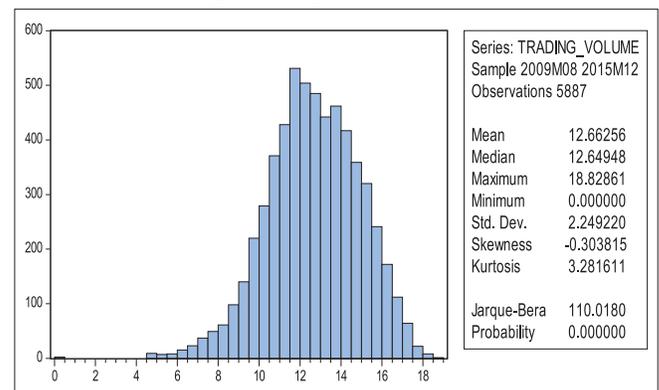
JB: Jarque-Bera

Figure 2: Normality distribution for stock return in Malaysian ACE market for the period August, 2009 to December, 2015



Source: Eviews

Figure 3: Normality distribution for trading volume of Malaysian ACE market for the period August, 2009 to December, 2015



Source: Eviews

showing that it is a leptokurtic distribution, sharper than a normal distribution, with values concentrated around the mean and thicker tails. Furthermore, significant JB value (23313.19) explains the deviation of normal distribution thus rejecting the null hypothesis.

On the other side, trading volume reports high standard deviation of 224.922% which relates to high mean of 1266.256% indicating highly volatility in trading volume series (Figure 4). Moreover, trading volume is left skewed (negative value of -0.303815) indicating the left tail is long relative to the right tail and kurtosis value is slightly higher than 3 implying that

volume series have fat tails than a normal distribution. It is consistent with JB test that shows the data is not normally distributed since both the skewness and kurtosis are not equal to zero. Thus, these two series reject null hypothesis that the series is normally distributed.

In conclusion, the descriptive statistics analysis reveals much more volatility in trading volume compared to stock return. The result proves that stock return is not normal with leptokurtic curves which in fact consistent with mixture of distributions (MDH) model. On the other hand, trading volume is closer to normality with high volatility. Referring to Figure 4, all companies in Malaysian ACE market has higher volatility in trading volume series than stock return series implying that smaller companies have larger stock price/return volatility (Song et al., 2005).

The correlation between stock return and trading volume in Malaysian ACE market for the given period is discussed based on Table 2. It clearly shows that stock return and trading volume are positively correlated at 0.070123%. This weak correlation suggests that the forecast of one variable cannot be improved by the knowledge of the other variable. However, to investigate in depth the relationship between stock return and trading volume in Malaysian ACE market, this study suggests for further analysis.

4.1. Contemporaneous Relationship

The regression results present the contemporaneous relationship between stock return and trading volume in Malaysian ACE market. The results were categorized into three sections; (1) the relationship between stock return and trading volume; (2) the relationship between trading volume and stock return, and; (3) the relationship between trading volume and stock return volatility.

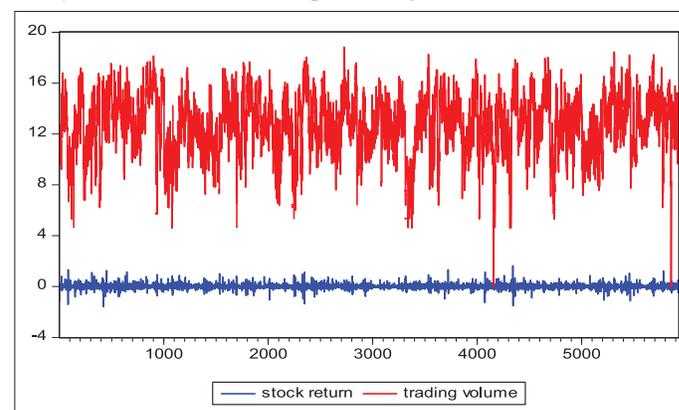
4.2. The Relationship between Stock Return and Trading Volume

Table 3 reports the evidence of contemporaneous relationship between current stock return (R_t) and current trading volume (V_t) as presented in Equation (4) above. It found a positive coefficient of 0.026246 which is significant at 2% level indicating that stock return has positive contemporaneous relationship with trading volume. On the other hand, current stock return (R_t) showed negative coefficient with lagged trading volume (V_{t-1}) and lagged stock return (R_{t-1}) of -0.025204 and -0.098360 indicating significant negative relationship at 2% and 10% level respectively.

On the other hand, negative T-test value that explains that one single variable is not significant to interpret the other one single variable. F-test is not significant and reliable as the value is lower than 2 (0.057430) explaining that the variables are not jointly significant. In addition to that, adjusted R-squared is also very small at 5.6952% only. The P-value is significant at 1% level for all variables suggesting that this study rejecting the Hypothesis 1 that there is no statistical significant positive relationship between stock return and trading volume.

In conclusion, the result confirms the evidence of positive and significant contemporaneous relationship between stock return and

Figure 4: The movement of stock return and trading volume in Malaysian ACE market for the period August, 2009 to December, 2015



Source: Eviews

Table 2: Correlation between stock return and trading volume

Variables	Stock return	Trading volume
Stock return	1.000000	0.070123*
Trading volume	0.070123*	1.000000

*Correlation is significance at 10% level

Table 3: Regression result for Equation (4)

$$R_t = \beta_0 + \beta_1 V_t + \beta_2 V_{t-1} + \beta_3 R_{t-1} + \varepsilon_t$$

Variables	Coefficient	t-stats	P-value	F-stats	Adjusted R ²
V_t	0.026246**	16.02650	0.0000*	0.057430	0.056952
V_{t-1}	-0.025204 **	-15.59465	0.0000 *		
R_{t-1}	-0.098360 ***	-9.662311	0.0000 *		
C	-0.007562	-0.577702	0.5635		

*****Significant at 1%, 2%, and 10% level

trading volume which corroborates past findings by Tauchen and Pitts (1983), Chen et al. (2001), Kamath and Wang (2006), and Attari et al. (2012) and that rising market goes with rising volume and *vice versa*. However, the relation between current stock return and past period trading volume is significantly negative suggesting that an increase in trading volume is usually accompanied by a fall in stock price/return. The finding is in line with Ying (1966) and Pathirawasam (2011).

4.3. The Relationship between Trading Volume and Stock Return

For trading volume-stock return relationship as illustrated in Equation (5), all coefficient are positive at 1.585378, 0.495493, and 0.798554 for R_t , R_{t-1} , and V_{t-1} respectively but not statistically significant suggesting that there are only positive relationship between trading volume and stock return and also between trading volume and lagged stock return (Table 4). The result is consistent with Grammatikos and Saunders (1986), Pathirawasam (2011). Significant $P=0.0000$ proved that all variables are jointly significant at 1% level.

On the other hand, the F-test is 3840.057 which is greater and significant as well as the adjusted R-squared is relatively higher at 0.660533 indicating that 66.0533% total variation in trading volume is explained by this model. Nevertheless, still this study

cannot reject Hypothesis 1 because none of the coefficient are significant in the above model.

4.4. The Relationship between Trading Volume and Stock Return Volatility

Equation (7) aims to test the relationship between trading volume and stock return volatility as well as the asymmetry relationship between the two variables. From Table 5, it presents that coefficient for stock return volatility (R_t^2) is -0.107877 which is negatively significant at 10% level. It suggests that the increase in stock return volatility is associated with the decrease in trading volume. Meanwhile dummy stock return volatility (DR_t^2) reports positive insignificant coefficient of 0.414403 indicating that higher volume is associated more with price increase rather than with price decrease (Al-Deehani, 2007). An asymmetry relationship between trading volume and stock return volatility is exists.

F-statistics is significant and reliable at 3053.079 and adjusted R-squared is 67.3551% which explained that regression model is significant and the variation of trading volume is relatively higher proved by the model. P-value also statistically significant at 1% level for all variables except for stock return volatility (R_t^2).

To sum up, negative coefficient of stock return volatility (R_t^2) pointing out that there is negative relationship between trading volume and stock return volatility. The result proves that bad news (negative stock return) tend to impose greater impact to volatility than good news (positive stock return). Meanwhile the insignificant positive coefficient of dummy stock return volatility (DR_t^2) proved the asymmetry relationship between stock return volatility and trading volume is existed in Malaysian ACE market. Thus, again Hypothesis 2 is rejected that there is no statistical relationship between stock return volatility and trading volume.

Table 4: Regression result for Equation (5)

$$V_t = \alpha_0 + \alpha_1 R_t + \alpha_2 R_{t-1} + \alpha_3 V_{t-1} + \mu_t$$

Variables	Coefficient	t-stats	P-value	F-stats	Adjusted R ²
R_t	1.585378	16.02650	0.0000*	3840.057	0.660533
R_{t-1}	0.495493	6.234273	0.0000*		
V_{t-1}	0.798554	106.2616	0.0000*		
C	2.553870	26.55473	0.0000*		

*Significant at 1% level

Table 5: Regression result for Equation (7)

$$V_t = \alpha_0 + \beta_1 V_{t-1} + \beta_2 V_{t-2} + \alpha_1 R_t^2 + \alpha_2 D_t R_t^2 + \varepsilon_t$$

Variables	Coefficient	t-Stats	P-value	F-stats	Adjusted R ²
V_{t-1}	0.603709	49.34882	0.0000*	3053.079	0.673551
V_{t-2}	0.244957	20.10370	0.0000*		
R_t^2	-0.107877^{***}	-1.663590	0.0962^{***}		
DR_t^2	0.414403	10.11470	0.0000*		
C	1.706828	16.63425	0.0000*		

*,***Significant at 1% and 10% level

To conclude, the three model developed in examining the contemporaneous relationship between stock return, stock return volatility and trading volume resulting in this following ways;

1. There is a strong statistically significant contemporaneous relationship between stock return and trading volume;
2. There is only positive insignificant relationship between trading volume and stock return;
3. The contemporaneous relationship between stock return and trading volume is not simultaneous because the parameter in Eq. (3.8) is significant but parameter in Eq. (3.9) is insignificant which mean R depends on V but V does not depends on R;
4. Trading volume and stock return volatility exhibits a significant negative relationship and;
5. Asymmetry relation is proved to exist between trading volume and stock return volatility indicating that news is having impact on trading volume. Good news will increase the stock return volatility thus increase the trading volume and bad news will reduce stock return volatility as well as reducing the trading volume.

In conclusion, a weak correlation is found between the variables suggesting that the variables may have causal effect. Mixed results are obtained from the above regression analysis. Positive significant contemporaneous relationship is found to exist between stock return and trading volume meanwhile only positive relationship exhibited between trading volume and stock return. In contrast, stock return volatility and trading volume has negative significant relationship and also found to be asymmetric.

5. CONCLUSION

Studying the price/return-volume relationship has long been used by market practitioners in order to understand the market reactions as well as to gain excess return in their investment. As Karpoff (1987) has provided the four importance to acquaint the price/return-volume relationship, this relationship is also subject to the randomness in price movement (random walk theory). Efficient weak-form market hypothesis proposes that the market is efficient where past information on stock price and trading volume cannot be used in predicting future stock price thus there is no form of technical analysis can be effectively utilized to assist investors in making trading decisions.

It has been observed that past studies investigate the price/return-volume relationship in various aspects such as empirical relation and asymmetry relation. Therefore this study attempts to examine the relationship between stock return and trading volume in Malaysian ACE market for the period of August 2009 to December 2015. Mixed findings are documented in this study. It concludes that there is a strong significant positive contemporaneous relationship between stock return and trading volume, meanwhile there is a significant negative contemporaneous relationship between stock return and past period trading volume. In addition, there is only positive insignificant relationship between trading volume and stock return.

Moreover, trading volume and stock return volatility exhibits a significant negative relationship, and asymmetry relation is proved to exist between trading volume and stock return volatility

indicating that news is having impact on trading volume. Good news will increase the stock return volatility thus increase the trading volume and bad news will reduce stock return volatility as well as reducing the trading volume. To draw a conclusion, price/return-volume relationship is fundamentally different for positive and negative price changes (Karpoff, 1987).

REFERENCES

- Ahmed, H.J.A., Hassan, A., Nassir, M.D.A. (2005), The relationship between trading volume, volatility and stock market returns: A test of mixed distribution hypothesis for A pre-and post-crisis on Kuala Lumpur stock exchange. *Investment Management and Financial Innovations*, 3, 146-157.
- Al-Deehani, T.M. (2007), Modelling asymmetry in the price-volume relation: Evidence from nine stock markets. *Investment Management and Financial Innovations*, 4(4), 8-15.
- Al-Samman, H., Al-Jafari, M.K. (2015), Trading volume and stock return volatility: Evidence from industrial firms of Oman. *Asian Social Science*, 11(24), 139-145.
- Al-Jafari, M.K., Tliti, M. (2013), An empirical investigation of the relationship between stock return and trading volume: Evidence from the Jordanian banking sector. *Journal of Applied Finance and Banking*, 3(3), 45-64.
- Attari, M.I.J., Rafiq, S., Awan, H.M. (2012), The dynamic relationship between stock volatility and trading volume. *Asian Economic Financial Review*, 2(8), 1085-1097.
- Brailsford, T.J. (1996), The empirical relationship between trading volume, returns, and volatility. *Accounting and Finance*, 36(1), 89-111.
- Chen, C., Zhou, Z.G. (2001), Stock returns, volatility, and trading volume: Evidence from the Chinese stock markets. *International Journal of Business*, 6(2), 68-85.
- Chen, G., Firth, M., Rui, O. (2001), The dynamic relation between stock returns, trading volume, and volatility. *The Financial Review*, 36(3), 153-174.
- Christiana, A.M., Septiana, E., Mamdich, M. (2016), The empirical relationship between stock return and trading volume based on stock market cycles. *Indonesian Capital Market Review*, 8, 46-57.
- Crouch, R.L. (1970a), A nonlinear test of the random walk hypothesis. *American Economic Review*, 60(1), 199-202.
- Crouch, R.L. (1970b), The volume of transactions and price changes on the New York stock exchange. *Financial Analysts Journal*, 26(4), 104-109.
- Darwish, M.J. (2012), Testing the contemporaneous and causal relationship between trading volume and return in the Palestine exchange. *Interdisciplinary Journal of Contemporary Research in Business*, 3(10), 55-62.
- De Madeiros, O.R., Van Doornik Bernandus, F.N. (2006), The Empirical Relationship between Stock Returns, Return Volatility and Trading Volume in the Brazilian Stock Market. *Social Sciences Research Network*.
- Fama, E.F. (1970), Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383-417.
- Girard, E., Biswas, R. (2007), Trading volume and market volatility: Developed versus emerging stock markets. *The Financial Review*, 42, 429-459.
- Grammatikos, T., Saunders, A. (1986), Futures price variability: A test of maturity and volume effects. *Journal of Business*, 59(2), 319-330.
- Hsieh, H.C.S. (2014), The causal relationship between stock returns, trading volume and volatility. *International Journal of Managerial Finance*, 10(2), 218-240.
- Jain, P.C., Joh, G. (1986), The dependence between hourly prices and trading volume. *The Journal of Financial and Quantitative Analysis*, 23(3), 269-283.
- Kamath, R.R. (2008), The price-volume relationship in the Chilean stock market. *International Business & Economics Research Journal*, 7(10), 7-14.
- Kamath, R., Wang, Y. (2006), The causality between stock index returns and volumes in the Asian equity markets. *Journal of International Business Research*, 5, 63-74.
- Karpoff, J.M. (1987), The relation between price changes and trading volume: A survey. *Journal of Financial and Quantitative Analysis*, 22(1), 109-125.
- Lau, W.Y., Go, Y.H. (2012), Information flow between return and trading volume in Malaysian futures market. *African Journal of Business Management*, 6(32), 9326-9334.
- Lee, B.S., Rui, O.M. (2002), The dynamic relationship between stock return and trading volume: Domestic and cross-country evidence. *Journal of Banking and Finance*, 26(1), 51-78.
- Lee, C., Rui, O.M. (2000), Does trading volume contain information to predict stock returns? evidence from China's stock markets. *Review of Quantitative Finance and Accounting*, 14(4), 341-360.
- Léon, N. (2007), An empirical study of the relation between stock return volatility and trading volume in the BRVM. *African Journal of Business Management*, 1(7), 176-184.
- McGowan, C.B.Jr., Junaina, M. (2011), The price-volume relationship of the Malaysian stock index futures market. *Journal of Finance and Accountancy*, 8(1), 1-15.
- Mohamad, S., Nassir, M.D.A. (1995), Price changes and trading volume relationship: Some preliminary evidence from Kuala Lumpur stock exchange. *Pertanika Journal of Social Sciences and Humanities*, 3(2), 147-154.
- Pathirawasam, C. (2011), The relationship between trading volume and stock returns. *Journal of Competiveness*, 3, 41-49.
- Pisedtasalasai, A., Gunasekarage, A. (2007), Causal and dynamic relationships among stock returns, return volatility and trading volume: Evidence from emerging markets in South-East Asia. *Asia-Pacific Finance Markets*, 14(4), 277-297.
- Rogalski, R.J. (1978), The dependence of prices and volume. *The Review of Economics and Statistics*, 60(2), 268-274.
- Rutledge, D.J.S. (1984), Trading volume and price variability: New evidence on the price effects of speculation. In: *Selected Writings on Futures Markets: Research Directions in Commodity Markets*. Chicago: Chicago Board of Trade. p237-251.
- Saatcioglu, K., Starks, L.T. (1998), The stock price-volume relationship in emerging stock markets: The case of Latin America. *International Journal of Forecasting*, 14(2), 215-225.
- Sabri, N. (2008), The impact of trading volume on stock price volatility in the Arab economy. *Journal of Derivatives and Hedge Funds*, 14(3-4), 285-298.
- Nor, A.H.S., Cheong, C.W., Isa, Z. (2010), A structural return-volatility-volume analysis of Malaysian stock market. *International Review of Applied Financial Issues and Economics*, 2(3), 447-460.
- Song, F.F., Tan, H., Wu, Y. (2005), Trade size, trade frequency, and the volatility volume relation. *The Journal of Risk Finance*, 6(5), 424-437.
- Sun, M.Y., Li, J.F. (2015), A simultaneous equations model of returns, volatility, and volume with intraday trading dynamics. *Accounting and Finance Research*, 4(2), 50-59.
- Tauchen, G., Pitts, M. (1983), The price variability-volume relationship on speculative markets. *Econometrica*, 51(2), 485-505.
- Westerfield, R. (1977), The distribution of common stock price changes: An application of transactions time and subordinated stochastic models. *The Journal of Financial and Quantitative Analysis*, 12(5), 743-765.
- Ying, C.C. (1966), Stock market prices and volumes of sales. *Econometrica*, 34(3), 676-686.