

DETERMINANTS OF HERDING BEHAVIOR IN MALAYSIAN STOCK MARKET

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Abstract

This study examines the determinants of herd behaviour among investors in the Malaysian stock market for the period 1995-2016 by using daily data. Also, examines herd behaviour of the Shariah-compliant, conventional stocks and the whole market of Malaysia. Determinants of herding behaviour among Malaysian investors been examined by using three different market elements which are; market return, trading volume and market volatility. Multiple regression analysis employed to capture the determinants of herding behaviour. Results reveal that trading volume of the market is determining the herding behaviour for Shariah-compliant and conventional stocks and the whole sample of the market in Malaysia. Results support previous studies on the determinants of herding behaviour of investors on confirmation of trading volume as significant factor of herding behaviour of investors.

Keywords: behavioural finance, determinants, herd behaviour, Islamic behavioural finance, Shariah-compliant stocks, stock market.

Introduction

Studies have shown that investors are not always rational. For instance, investors that overestimate precision of information are overconfidence in their decision makings and stock market investment because they believe in their ability to perform well (Glaser and Weber 2004). The irrational behaviour of investors implies that investors sometimes disregard their private information in their making decisions which changes some payoffs from investment and that is why traditional finance theories failed to capture the real world situations for investors. Scholars and evidence have studied behavioural elements support the previous findings which stated the failures of traditional finance theories and these theories are inadequate to capture market pricing mechanism. Series of studies have shown that behavioural elements play a significant role in determining market prices, this view is contradicting to the traditional finance theories (Scharfstein and Stein 1990, Chen, Rui et al. 2003, Demirer and Kutan 2006).

Development of behavioural finance theories leads to the herding theory (mimicking other investor's actions) which has been investigated in different perspectives in the herding behaviour of investors. Thus many studies have examined herding behaviour to explain the investment decision-making of investors. Importance of studying herding behaviour of investors is the growth of sophistication of investors. Increase in sophistication could be captured by the fact that financial markets are in the path of advancing their technology that even small investors can also invest actively in the market which leads to the growth of small investors in the market (Odean 1998, Nassir 2002). Increase in the number of small investors have advantages which are; flexibility, less external pressure, ability to choose from different financial assets. The principal elements of stock markets like market return and trading volume and market volatility have effects on the herding behaviour of investors. The relations between herding behaviour of investors and principal elements of the market specifically with regards to Shariah-compliant stocks is a new era on the herding behaviour. Evidently, most of the studies have been conducted in developed countries, and evidence from less developed countries are still lacking.

Research Objective

To examine the determinants of herding behaviour in the stock market of Malaysia.

- a. To examine market return, trading volume and market volatility as determinants of herding behaviour for Shariah-compliant stocks in Malaysia.
- b. To examine market return, trading volume and market volatility as determinants of herding behaviour for conventional stocks in Malaysia.
- c. To examine market return, trading volume and market volatility as determinants of herding behaviour for whole market stocks in Malaysia.

Research Question

This study focuses on herd behaviour of investors in the stock market of Malaysia (which is covering Shariah-compliant, conventional stocks and the whole market of Malaysia) with the aspects on the factors influencing herding behaviour of investors from three principal elements of the market which are; market return, trading volume, and volatility of stock market of Malaysia. With regards to the objective of this study that involves the herding behaviour of investors, the research question is as following:

1. Does market return, trading volume and market volatility factors influence herding behaviours in Malaysia? (Among Shariah-compliant and conventional stocks and whole market of Malaysia).

Research contributions

The study contributes to the literature in the following:

1. Not existing study (to the best knowledge of researcher) conducted on the herding behaviour of investors on Shariah-compliant done before especially for Malaysia.
2. The current study examines the relationship between herding behaviour of investors and three principle elements of the market (return, trading volume, and volatility of market) for both Shariah-compliant and conventional stocks and the whole market of Malaysia. The influence of market elements on herding behaviour of investors are new are of investigations of herding behaviour. Therefore, this study implements this method for Islamic stocks and conventional stocks and the whole market of Malaysia to find a clearer picture on herding behaviour of investors.

Literature Review

Measuring herding by empirical study has proved challenging. Besides some particular contexts or experimental settings, it is difficult to separate imitating behaviour from clustering of trades. In this regard, the study of Hachicha (2010) investigated the herding behaviour of investors of Toronto stock market and found the herding behaviour is always strongly significant for the main components of the stock prices dynamic like market return, trading volume (Hachicha 2010).

Additionally, the evidence of US market also there is a definite relationship between the market elements of trading volume and herding behaviour. The finding of Jlassi and Bendaïda (2014) reveals that herding is present and is a permanent phenomenon in the American financial market. They also stated that herding is stronger in the S&P 100 index than in the DJIA index and trading volume contributes increasing asymmetric herding (Jlassi and Bendaïda 2014). Duasa and Kassim (2008) used the estimation of vector error correction model of foreign portfolio investment to

capture the herding behaviour in their paper and found that there is a strong herd instinct prevailing among foreign investors in the Malaysian capital market (Duasa and Kassim 2008).

Study of Moatemirouarda et al. 2013 also employs three elements of market return, trading volume and volatility of the market in their investigation of herding behaviour for European markets. By analysing the sectoral data for the European market, they found that substantial volatility and trading volume is influenced the herding behaviour of investors during down market(Ouarda, Bouri et al. 2013).

Studies on the trading volume and market return on the emerging markets are rare to the knowledge of researcher, individually; the examination of the Shariah-complaint concerning the herding behaviour did not exist yet. Islamic finance and its expression also investigated in many different viewpoints like Islamic financing products, Islamic credit cards, attitude, perceived behavioural control and moral norms on investor's intention to invest in socially responsible investments and Islamic insurance. Hence, to the best knowledge of the researcher, there are no real investigations on which studies the herding behaviour of Shariah-compliant. This medium might be mainly due to the long history of traditional behavioural finance and the substantial number of empirical studies addressing these preferences. Hence, there is a crucial need for the growth of Islamic behavioural finance theory to establish a comprehensive framework for such studies based on Islamic principles(Musse, Echchabi et al. 2015).

Research Framework

Table1 shows the research framework of this study; this study divides the stock market of Malaysia into three different samples which namely are; a sample of conventional stocks, Shariah-compliant stocks and the whole market of Malaysia. This study investigates the determinants of herding behaviour of investors in Malaysia by using the modified version of Hachicha (2010). In this part, the determinants of herding behaviour of investors are investigated concerning three main market elements which namely are; market return, market volatility and trading volume of the market.

Table 1: Research Framework

Objective	Model	DV	IV
1	Hachicha	HM	Return, Volatility, Trading Volume

Table1 shows the dependent variable and independent variables (including common variables and dummy variables) which has been used for each objective of this study. In this table, HM refers to the herding measure of investors by following the model of research.

Methodology

Regarding the relationship between herding behaviour and market elements (market return, trading volume, and market volatility), this study follows the model presented by (Hachicha 2010) on which by using the following equation:

$$VH_t = \alpha + \beta_1 R_{m,t} + \beta_2 V_{m,t} + \beta_3 Vol_{m,t} + \varepsilon_t \quad (1)$$

Where, $R_{m,t}$ is the market return at time t , $V_{m,t}$ = trading volume of the market at time t , VH_t is the value of herding at time t and $Vol_{m,t}$ the volatility of the market at time t . For the herding measure, as stated by Hachicha (Hachicha 2010) the following expression is used;

$$H_{m,t}^* = \frac{1}{N_t} \sum_{i=1}^{N_t} \left(\frac{b_{i,m,t} - 1}{\frac{\sigma_{\varepsilon_{i,t}}}{\sigma_{m,t}}} \right)^2 \quad (2)$$

where:

$\sigma_{m,t}$ is the sample standard deviation of market volume at time t .

$\sigma_{\varepsilon_{i,t}}$ is the sample standard deviation of the OLS residuals.

$H_{m,t}^*$ is the Herding measure and VH_t is the value of herding and $b_{i,m,t}$ is the OLS estimator of $b_{i,m,t}^b$ for asset i at time t .

The difference in the methodology of this study with the method which is introduced by Hachicha 2010 is, this study employs multiple regressions to measure the determinant of herding behaviour of investors; however, Hachicha (2010) uses different linear regressions to investigate the relationship of herding behaviour and market elements. From equation 2, the negative and statistically significant amount of coefficient for the coefficients of b_1 , b_2 and each sample represents the influence of that variable on herd behaviour and shows that the particular variable determines the herding behaviour of investors for the sample of the study. To obtain the objective of the study, this relationship will be tested for the samples of Shariah-compliant and conventional stocks and the whole sample of Malaysia separately.

Hypothesis and Data

Based on the research questions and objectives of the study, the interpretation of current research developed as following;

H_a: Herding behaviour of Shariah-compliant has a direct relationship with a market (portfolio) return, trading volume and market (portfolio) volatility in Malaysia.

H_b: Herding behaviour of conventional stocks has a direct relationship with a market (portfolio) return, trading volume and market (portfolio) volatility in Malaysia.

H_c: Herding behaviour of the whole stocks of Malaysia has a direct relationship with a market (portfolio) return, trading volume and market (portfolio) volatility in Malaysia.

Data for the research collected from the data-stream of University Kebangsaan Malaysia (UKM) from 1995 to 2016. Analysis of data is done by employing the statistical software of E-view. Data of study contains the daily stock prices of listed companies in the stock market of Malaysia, the daily volume of trading of the publicly listed companies in the stock market of Malaysia, the daily market value of stocks of listed companies in Malaysia.

Results

Table 2 presents the descriptive statistics of the study for the sample of the whole market of Malaysia. For the return of the market (portfolio), because the amount of skewness is definite (0.579) it represents that during the period of study some positive returns are more frequent than negative returns. The Kurtosis amount of 29.697 shows that the return distribution has the fat tail

and it shows that during the period of study there are lots of extreme values of returns. For the period of study, the mean return of the market (portfolio) is -0.011 with the minimum number of -7.631 and maximum restitution of 8.532. Moreover, the median of the performance for the whole market is 0.000 with a standard deviation of 0.655. For the return of the market (portfolio) amount of Jarque- Bera rejects the assumption of rational distribution because its skewness is more than zero and kurtosis are more than 3. However, following CLT, based on the number of observation of market (portfolio) return which is 5703, the distribution of market (portfolio) return is reasonable.

For the volatility of market (portfolio) the negative amount of skewness by the number of -0.798 shows that during the period of study volatility of portfolio tends more to decrease rather than increase and it is logical because the period of study consists of two financial crises. However, mean the market volatility is 3.729, and its standard deviation is 0.307. During the period of study, market volatility decreased until the minimum value of 1.986 and increased until 4.795 with the median of 3.739. Kurtosis amount of 5.900 shows that market volatility had excessive kurtosis and based on the negative amount of its skewness, the Jarque- Bera rejects the assumption of normal distribution of market volatility. However, following the CLT and based on the number of market volatility's number of observations which is 5409 observations, its distribution is normal during the sample of the whole market of Malaysia.

Following, for the trading volume of the portfolio the negative amount of skewness (-1.467) shows that low volume stocks are more frequent than high volume stocks in the sample of the study. However, for the example of the whole market of Malaysia, trading volume has a certain mean of 3.274 with a standard deviation of 0.321. The minimum amount of the market volatility for the sample of the whole market of Malaysia is 1.340 and maximum is 4.144 with the median amount of 3.312. Based on the negative skewness value of -1.467 and kurtosis of 7.675 the number of Jarque-Bera rejects the assumption of normally distributed.

Table 2: Descriptive statistics for the whole market of Malaysia

Variable	RETURN	VOLATILITY	TRADING VOLUME
Mean	-0.011	3.729	3.274
Median	0.000	3.739	3.312
Maximum	8.532	4.795	4.144
Minimum	-7.631	1.986	1.340
Std. Dev.	0.655	0.307	0.321
Skewness	0.579	-0.798	-1.467
Kurtosis	29.694	5.900	7.675
Jarque-Bera	169652.7	2472.020	6869.928
Sum	-67.150	20175.36	17712.95
Sum Sq. Dev.	2452.585	512.098	559.148
Observations	5703	5409	5409

However, based on the CLT and the number of observations for market (portfolio) trading volume which is 5409 observations, the assumption of normal distribution is accepted, and trading volume is normally distributed for the sample of the whole market of Malaysia during the period

of study. Since this study uses three different examples for analysing. Therefore, descriptive statistics for each sample discussed separately.

Unit Root Test is employed on the samples of the whole market and Shariah-compliant and Conventional stocks. Below is the result of unit root test for the sample of the entire market of Malaysia.

Table 3. Unit Root Test results

	ADF	Specification
Sample A Whole Market	Level (-8.810)*	Intercept
Sample B Shariah-Compliant	Level (-8.696)*	Intercept
Sample C Conventional Stocks	Level (-14.121)*	Intercept

* represents significant at 1%

As it presented by table 3 for the sample of the whole market of Malaysia, the results of Augmented Dickey-Fuller (ADF) is the amount of t-statistic is -8.810 and is significant at the 1% level because it is less than 0.01. Therefore, the null hypothesis that is the variables in the sample of the whole market sample is not stationary is rejected. Since the amount of t-statistic is significant at 1%, therefore, there is no requirement to run the first difference test. Thus, it confirms that the variables in the whole market samples are stationary.

For the sample of Shariah-compliant stocks also the ADF is at level is significant, and the amount of t-statistic is -8.696 and is significant at the 1% level because it is less than 0.01. Therefore, the null hypothesis that is the variables in the sample of the Shariah-compliant sample is not stationary is rejected. Since the amount of t-statistic is significant at 1%, therefore, there is no requirement to run the first difference test. Thus, it confirms that the variables in the Shariah-compliant samples are stationary. Similarly, for the example of conventional stocks also the ADF is at level is significant and the amount of t-statistic is -14.121 and is significant at the 1% level because it is less than 0.01. Therefore, the null hypothesis that is the variables in the sample of the conventional stock sample is not stationary is rejected. Since the amount of t-statistic is significant at 1%, therefore, there is no requirement to run the first difference test. Thus, it confirms that the variables in the conventional stock samples are stationary.

The objective of this study is to understand the determinants of herding behaviour of Malaysian investors by taking into the consideration of three essential market elements which are; market (portfolio) return, volatility of market (portfolio) and trading volume of the market (portfolio). To determine the herding behaviour of investors, this study employs the methodology introduced by Hachicha (2010) (Hachicha 2010). The difference of implementing the method in this study is that current research uses multiple regression analysis to capture the determinants of herding behaviour. Additionally, this study performed in the emerging market of Malaysia with daily nature of data for the period of study.

The multiple-regression has been adapted to the samples of Shariah-compliant stocks and conventional stocks and the example of the whole market of Malaysia separately. For the measurement of herding behaviour, as introduced by Hachicha (2010), the following expression has been used,

$$H_{m,t} = 1/N \sum (\gamma_{i,t-1})^2 \quad (3)$$

Where; the N = number of stocks and $\gamma_{i,t}$ trading volume of the market at time t and $H_{m,t}$ is the herding measure of investors at time t . Following their methodology, based on the availability of trading volume for the period of study Table 4 presents the number of stocks which have been used to investigate for the determinant of herding behaviour in Malaysia to get the result for the objective of the study.

Table 4: Sample size for the determinants of herding behaviour

Sample	Number of companies
Shariah-compliant	177
Conventional stocks	71
The whole market of Malaysia	248

Before presenting the analysis result, table 5 shows the correlations of the variables used in the sample for this objective.

Table 5: Correlations of variables for conventional stocks

	HM	RETURN	VOLATILITY	TRADING VOLUME
HM	1.000			
RETURN	-0.017	1.000		
VOLATILITY	0.284	0.0001	1.000	
TRADING VOLUME	-0.058	0.009	0.865	1.000

From the table of correlations, it captured that the highest relationship is for trading volume of the market (portfolio) and volatility of market (portfolio) which is 0.865. However, the lower association is between the volume of market and herding measurement of the sample. This fact reveals that volatility of market and trading volume are moving in the same direction. On the other hand, for the conventional stocks of Malaysia, trading volume and measurement of herding behaviour of investors are not moving in the same direction because the correlation between trading volume of market and herding measurement of the model is the most noticeable adverse amount among other variables (-0.058).

Table 6 shows the correlations between variables for the sample of Shariah-compliant.

Table 6: Correlation of variables for Shariah-compliant

	HM	RETURN	TRADING VOLUME	VOLATILITY
HM	1.000			
RETURN	-0.007	1.000		
TRADING VOLUME	0.022	0.021	1.000	
VOLATILIT Y	0.413	0.017	0.856	1.000

From the correlation table, it is observable that the herding measure is having the lowest and the only negative amount of correlation with the market return (0.007), however, the most significant association, like the common stocks are between the volatility of market and trading volume by the amount of 0.856.

Table 7 shows the correlation between variables for the sample of the whole market of Malaysia.

Table 7: Correlation of variables for the whole market of Malaysia

	HM	RETURN	VOLATILITY	TRADING VOLUME
HM	1.000			
RETURN	0.002	1.000		
VOLATILIT Y	0.156	0.028	1.000	
TRADING VOLUME	-0.147	0.0325	0.919	1.000

From the table of correlations for the sample of the whole market of Malaysia, it captured that the highest relationship is for trading volume of the market (portfolio) and volatility of market (portfolio) which is 0.919. However, the lower relationship is between the volume of market and herding measurement of the sample by the number of -0.147. This fact reveals that volatility of market and trading volume are moving in the same direction. On the other hand, for the sample of the whole market of Malaysia, trading volume and measurement of herding behaviour of investors are not moving in the same direction because the correlation between trading volume of demand and herding measurement of the model is negative amount among other variables. Following of this information, the results of the multiple regression analysis for determinants of herding behaviour of Malaysian investors are studies by employing equation 3. Additionally, to avoid the autocorrelation error, the heteroscedasticity autocorrelation test (HAC) is applied.

The result interpretation is if the negative and statistically significant amount of coefficient for the variables exists it shows that the particular variable determines the herding behaviour of investors. Table 8 presents the result of the determinants of herding behaviour among investors in Malaysia. For the sample of the whole market of Malaysia, trading volume of the market is determining the herding behaviour of investors because the negative coefficient of -67.149 with the significant level of 1% and standard error term of 3.215 exists in the model.

However, for the market (portfolio) volatility the coefficient is 68.230 with the standard error of 3.510 at the significance level of 1%, but, since the ratio is not negative therefore cannot determine the herding behaviour if investors for the sample of the whole Malaysia. On the other hand, the return of market (portfolio) has a definite amount of 0.179 with the standard error of 0.105 which is not statistically significant, and due to the reason of positive coefficient, market return is also not a determinant of herding behaviour of investors in the whole market of Malaysia. The model of herding behaviour for the sample of the entire market of Malaysia has the R-squared of 0.5769 and adjuster R-squared of 0.5767 for the period of study.

Following the analysis of the determinants of herding behaviour of Malaysia, the second sample of study is Shariah-compliant stocks of Malaysia. As presented in table 4.10, it shows that trading volume is also influences herding behaviour of investors among Shariah-compliant. The coefficient amount for trading volume of the market is -73.736 with a standard error of 1.960 and statistically significant level of 1%. However, volatility of the market is also statistically significant at the level of 1%, but its coefficient is 75.680, and its standard error is 2.160. Therefore, market volatility based on the exact amount of coefficient cannot influence herding behaviour of investors among Shariah-compliant during the period of study. On the other hand, market return also has a coefficient of 0.0732 with a standard error of 0.0687, and it is not statistically significant, therefore, for the reasons that are positive coefficient and not statistically significant, the market return does not determine the herding behaviour of investors among Shariah-compliant of Malaysia.

Additionally, the model of herding behaviour for the sample of Shariah-compliant of Malaysia has the R-squared of 0.7857 and adjuster R-squared of 0.7856 for the period of study. The final example of survey for the determinants of herding behaviour of investors in Malaysia is the sample for conventional stocks. As presented in the table 8, the negative coefficient of trading volume of the market (-44.807) with statistical significance level of 1%, the trading volume is a determinant of herding behaviour of investors among conventional stocks of Malaysia for the period of study. Additionally, the negative amount of coefficient for trading volume shows that the herding behaviour of investors is increasing with the decreasing rate among the investors in Malaysia.

The volatility of market (portfolio) has a positive coefficient of 43.579 with a standard error term of 1.059 and statistically significant at level 1%. Even though market volatility is statistically significant, due to the positive amount of coefficient of market volatility, it cannot determine the herding behaviour of investors for the sample of conventional stocks for the period of study. Similarly, market returns for the sample of conventional stocks are statistically significant at the level of 10%. However, its coefficient is 0.096 with the standard error term of 0.050, therefore, due to the positive amount of coefficient; market return does not determine the herding behaviour of investors for the sample of conventional stocks during the period of study.

Additionally, the model of herding behaviour for the sample of conventional stocks of Malaysia has the R-squared of 0.8277 and adjuster R-squared of 0.8276 for the period of study.

Finding of this study is also in line with the real economic situation, because, herding behaviour of investors are more likely to exist among the investors while investors are looking into the trading volume of markets. As investors are more likely to maximise the profits from their investments, therefore, they might be taking into the consideration of the trading volume of the market before they make their decisions on investment. However, volatility of market might have the negative impact on the choice of investment on investors. That is why market volatility does not determine the herding behaviour among investors, even though market volatility is statistically significant.

Based on the findings of the analysis, the hypothesis 'Ha' which states that trading volume of the market (portfolio) determines the herding behaviour of investors among Shariah-compliant stocks of Malaysia be accepted. Additionally, hypothesis 'Hb' accepted by the finding of analysis on which states, trading volume of the market (portfolio) determines the herding behaviour of investors among conventional stocks of Malaysia. Finally, hypothesis 'Hc' accepted by the findings of an analysis on which states, trading volume of the market (portfolio) determines the herding behaviour of investors among investors of the sample of the whole stock market of Malaysia. However, unavailability of reliable information is another reason for the following other investor's actions. This reason is appearing to be an essential issue for the emerging markets like Malaysia. Findings of this study consist of conclusions of Hachicha 2010, on which herding behaviour of investors determined with a market element of trading volume(Hachicha 2010).

Table 8: Determinants of herding behaviour in Malaysia

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth=10.000)						
Sample	Model	Variable	Coefficient	Standard error	R-squared	Adjusted R-squared
Whole market	Hachicha	Return	(0.179)***	0.105	0.5769	0.5767
		Volatility	(68.230)*	3.510	0.5769	0.5767
		Trading Volume	(-67.149)*	3.215	0.5769	0.5767
Shariah-compliant	Hachicha	Return	0.073	0.068	0.7857	0.7856
		Volatility	(75.680)*	2.160	0.7857	0.7856
		Trading Volume	(-73.736)*	1.960	0.7857	0.7856
Conventional stocks	Hachicha	Return	(0.096)***	0.050	0.8277	0.08276
		Volatility	(43.579)*	1.059	0.8277	0.08276
		Trading Volume	(-44.807)*	0.979	0.8277	0.08276
*, **, *** represent significant at 1% , 5% and 10% levels						

Conclusion

The last objective of this study is to investigate the determinants of herding behaviour of investors in Malaysia. By following the methodology of Hachicha 2010, this study finds that trading volume of the market (portfolio) determines the herding behaviour of investors among the whole market of Malaysia for the period of study.

However, for the sample of Shariah-compliant also trading volume of the market influences the herding behaviour of investors on Islamic stocks of Malaysia. Similarly, for the example of conventional stocks of Malaysia, the trading volume also determines the herding behaviour of investors of conventional stocks for the period of study.

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