CHAPTER 12

HERDING BEHAVIOR: EVIDENCE FROM SOUTHEAST ASIAN STOCK MARKETS

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ABSTRACT

This study aims to analyze the herding behavior in Southeast Asian stock markets. A cross-sectional absolute deviation of the returns approach is used to identify the presence of herding. Individual stocks and market returns were employed on each stock market on a daily basis during the period of January 2008 to December 2014 from five countries selected to obtain the necessary data. The samples observed consisted of stocks having higher liquidity and larger market capitalization for each stock market. The results suggest that there is significant evidence of herding behavior found in Kuala Lumpur and Philippines Stock Exchanges. In addition, there is no evidence of herding behavior in Indonesia, Singapore, and Thailand Stock Exchanges.

Keywords: Herding behavior; cross-sectional absolute deviation; stock market; Southeast Asian; behavioral finance; return

JEL Classifications: G41; G11

INTRODUCTION

Many studies have found indications that emotional factors play an important role for the market participants in making investment decisions in the stock market. For example, the occurrence of the global financial crisis has made the indices of several stock exchanges worldwide decrease drastically. The behavior of investors who sell stocks concurrently is thought to be a contributing factor to the event. Financial crises are a result of widespread herding among investors that can be explained better through the behavioral finance theory, which demands consideration of irrationality, such as panic (Mobarek, Mollah, & Keasey, 2014). Such condition in a rational economy and an efficient market theory should not occur because stock prices in stock exchanges ideally reflect the intrinsic value of the firms or the fundamental factors.

Investors who have rational characteristics will make their investment decisions by applying a variety of financial analyses. Meanwhile, investors who have irrational characteristics will be affected by panic and rumors or market sentiment. However, it is often found that investors act irrationally due to being influenced by psychological characteristics, such as fear, greed, regret, and herding (Sarana, Soekarni, & Lestari, 2008). Herding is an investor's behavior that follows the market consensus or other investors who are more skilled when making investment decisions (Lindhe, 2012). Christie and Huang (1995a) define herding behavior as an act of investors who suppress their analysis or personal opinions and copy the behavior of other investors and market sentiment as the basis of investment decisions. Those who engage in herding ignore fundamental analyses at the time they make investment decisions. This behavior often occurs when the market shows an unstable or stressed condition (Chang, Cheng, & Khorana, 2000).

Herding behavior has been studied in recent years showing varying results in different stock markets. Chandra (2012) does not find any evidence of herding behavior in Indonesia using the cross-sectional absolute deviation (CSAD) Model. Chiang and Zheng (2010), Tan, Chiang, Mason, and Nelling (2008), Wijayanto and Nur (2011), and Arjoon, Bhatnagar, and Ramlakhan (2020) find herding activity in Indonesia, Singapore, Malaysia, and Thailand stock exchanges. Loh and Araral (2013) report that there is no evidence of herding behavior in the Stock Exchange of Singapore. In contrast, Arjoon et al. (2020) find that herding behavior in Singapore is pronounced at market level. When viewed from the type of stock market developments, research on herding behavior also has controversial results. Christie and Huang (1995b) and Baur (2006) report that there is no herding found in developed stock markets. However, Chiang and Zheng (2010) and Economou, Kostakis, and Philippas (2011) find significant evidence of herding in developed stock markets.

A problem faced by investors when investing in stocks is the incidence of additional risks when they do not understand the character of the capital market, and hence, they can be mistaken in placing their investments in the market of their choice. These additional risks include herding behavior in a number of capital markets (Messis & Zapranis, 2014). Mobarek et al. (2014) argue that, in general, herding behavior done by market participants exacerbates market volatility and creates market instability.

Based on the phenomenon and a review of previous studies, the main purpose of this research is to analyze and detect herding behavior in five Southeast Asian stock exchanges (Indonesia, Singapore, Malaysia, the Philippines, and Thailand) from the period of January 2008–December 2014. Several reasons motivate this research to focus on emerging markets. Research conducted by Tan et al. (2008) show the main factors that lead to a high intensity of herding behavior in Asian stock markets is the lack of knowledge and experience in doing investment analyses of the market participants compared to the United States and Europe, which are more sophisticated and have good investment experiences. The next reason is it must be admitted that the economic performances of Indonesia, Singapore, Malaysia, the Philippines, and Thailand are better and more dominant compared to the other ASEAN countries (Schwab, 2014).

LITERATURE REVIEW

Behavioral Finance

The currently accepted theories in finance are referred to as traditional finance (Sowinski, Schnusenberg, & Materne, 2011). The foundation of traditional finance is associated with the asset pricing theory and the efficient market hypothesis (EMH) (Boortz, Jurkatis, Kremer, & Nautz, 2013; Najmudin, Syarif, Wahyudi, & Muharam, 2017). The EMH states that the price is efficient if it is fully and correctly reflects the relevant information and the current price of the stock or bond traded for today as its fair value (Robiyanto & Pangestuti, 2018). Traditional finance uses models in which the market participants are assumed to be rational. This means they are efficient and unbiased when processing relevant information, and their decisions are consistent with utility maximization (Byrne & Utkus, 2013).

The traditional theory also assumes that investors are not confused by how information is presented to them and not distracted by their emotions. But clearly, the reality does not match with this assumption. Previous researchers (i.e., DeBondt, Forbes, Hamalainen, & Gulnur Muradoglu, 2010; Ritter, 2003) found that traditional finance (i.e., EMH and capital asset pricing model (CAPM)) cannot explain the existence of anomalies in the stock market, which contradicts the traditional theory. The previous researchers realized that traditional finance cannot account for the phenomenon. Thus, the focus shifted from traditional financial theories to models connecting human psychology with the behavior of financial markets, which is behavioral finance.

Robiyanto and Puryandani (2015) and Sowinski et al. (2011) state that behavioral economics has a new branch called behavioral finance. Behavioral finance is trying to explain the behavior of markets (Albaity & Rahman, 2012). Behavioral finance studies the individual's irrational behavior in the economy. Pompian (2006) and Suganda, Sumargo, and Robiyanto (2018) states that behavioral finance is a science that explains and improves the understanding of investors' behavioral patterns.

Behavioral finance attempts to explain and improve the understanding of the reasoning patterns of investors, including the emotional processes involved and

the degrees to which they influence the decision-making processes (Beckmann, Menkhoff, & Suto, 2007; Pompian, 2006; Ricciardi & Simon, 2000; Statman, 2008). Behavioral finance uses models in which some agents are not fully rational, either because of preferences or because of mistaken beliefs or biases (Asebedo, Seay, Archuleta, & Brase, 2018; Ritter, 2003; Suganda et al., 2018). Research in psychology has documented a range of decision-making behaviors called biases. These biases can affect all types of decision-making, which may have particular implications related to money and investing (i.e., Khanthavit, 2019). The biases are related to how we process information to reach decisions and the preferences we have (Byrne & Utkus, 2013).

Schulmerich (2012) has documented several biases that affect all types of decision-making for group investors and private investors. The various known biases are overconfidence, cognitive dissonance, representativeness, regret aversion, and herding. In investments, the biases may lead the investor to make unhelpful or even hurtful decisions. In fact, nowadays the tendency of individuals to mimic the actions of others, that is, herding, as one of the several biases, has become a particular research interest (Demirer & Zhang, 2018; Lindhe, 2012; Setiyono, Hartono, & Hanafi, 2013).

Herding Behavior

A number of studies within the field of behavioral finance have concentrated on herding behavior in financial markets. In literature, herding behavior was introduced in the early 1990s. Banerjee (1992) and Demirer and Zhang (2018) explain herding behavior as everyone doing what everyone else is doing, even when their private information suggests doing something quite different. Bikhchandani and Sharma (2000) and Houda and Mohamed (2013) argue that herding behavior is similar to a situation when the investors attempt to redress their performances and their reputations by suppressing their own analyses and reproducing the actions of another manager who possesses a more reliable source of information or the analytical competencies of more eminent decisions. In brief, Mobarek et al. (2014) define herding as the tendency of market participants to mimic the market sentiment or the actions of other investors.

Venezia, Nashikkar, and Shapira (2011) formulated three types of rational herding. The first one is information-based herding. Investors who observe other investors invest earlier in-stock may assume that the observed investors did so in a Bayesian updating manner. This argument corresponds to the study of cascades, such as Banerjee (1992) and Bikhchandani and Sharma (2000). Second, there is a reputation based on herding. A model developed by Froot, Scharfstein, and Stein (1992) concludes that managers imitate one another who do not want to suffer the risk of losing their reputations. Third, there is compensation-based herding. Since the compensation of investment managers is related to a number of market benchmarks, they use it to imitate actions taken by others (Najmudin et al., 2017). This is supported by Kabir and Shakur (2018) stating that higher return obtained by those who follow provides additional justification for herding behavior.

This collective investment behavior can be strongest during extreme market conditions where the volatility and information flow impede the reliability and accuracy of investment analyses. Hence, investors are more likely to disregard their private information and search for the market sentiment, which can be seen as an efficient cost solution rather than the cost of analyzing reliable information during a volatile period. According to Hwang and Salmon (2004) and Setiyono et al. (2013), the existence of herding behavior in a market is contradicts the assumptions of the EMH. They argue that herding behavior will drive asset prices away from the equilibrium proposed by the traditional financial theory, such as the CAPM, leading to prices that no longer reflect the true value of companies, and it leads to mispricing of the stocks. Additionally, it is often caused by irrationality, as investors might act on impulses and not analyses. This is why herding behavior is often used in the context of extreme market behaviors, especially in times of crashes and bubbles (i.e., Demirer & Zhang, 2018; Hoitash & Krishnan, 2008; Houda & Mohamed, 2013; Indārs, Savin, & Lublóy, 2019; Wahyudi, Najmudin, Laksana, & Rachmawati, 2018).

A number of authors argue that investors in emerging markets are more inclined to herd. Chang et al. (2000) argue that the behavior may be a result of incomplete information disclosure in emerging markets and the greater role of macroeconomics with regard to investor decision-making, in turn, making them more likely to herd around an aggregate market consensus. They report that there is evidence of herding behavior in South Korea and Taiwan. Tan et al. (2008) also investigated herding behavior in the Chinese stock market. Their results show that the Shanghai A-share market exhibits herding behavior, which is in line with Ye, Li, and Cao (2020) who state that herding is a common practice in China A-share market. Herding behavior has been linked to market inefficiencies, such as weak market regulations, frequent government, central bank interventions, less-educated investors, and lower requirements regarding listed companies' information disclosures. These inefficiencies are always characteristic of emerging markets. This evidence is consistent with the view that the relative scarcity of rapid and accurate firm-specific information in emerging financial markets may cause investors to focus more on macroeconomic information. The results showed that in emerging markets, the market participants are more inclined to herd.

Herding behavior can be studied through a market-wide approach since it focuses on cross-sectional correlations of the entire stock market (Economou et al., 2011). It can also include studies on the entire distribution of a larger subsample (Ohlson, 2010). If herding behavior is exhibited at the market-wide level, the returns of individual stocks will be more than usual, as they converge around the market return. This implies that investors ignore their private opinions and receive information in favor of the market consensus. In this study, the concept of herding behavior is measured, adopting the models developed by Chang et al. (2000). These methods are frequently used as measures to detect herding behavior with the market-wide approach. Since the approach only looks at the component of returns, it ignores other forms of herding behavior. This method will be explained more in the next section.

RESEARCH METHODS

Two pioneering studies have proposed methods to detect herding behavior using stock returns, such as those by Christie and Huang (1995a) through Cross-sectional standard deviation (CSSD) and Chang et al. (2000) through CSAD. Christie and Huang (1995a) suggest that a suitable measure of herding behavior is the return dispersion. The dispersion measures the average proximity of individual returns to the market returns. They also suggest that the investment decision-making process used by market participants depends on the overall market conditions. They suggest that during normal periods, rational asset pricing models predict that the dispersion in returns will increase with the absolute value of the market return since individual investors are trading based on their own private information, which is diverse.

However, during periods of extreme market fluctuations, individuals tend to suppress their own beliefs, and their investment decisions are more likely based on the collective actions in the market. Individual stock returns under these conditions tend to cluster around the overall market return. Then, a security return will not deviate too far from the overall market return. However, Chiang and Zheng (2010), Economou et al. (2011), and Ohlson (2010) suggest that the CSSD method developed by Christie and Huang (1995a) tends to be sensitive to outliers because of the calculation of the squared return deviations.

An alternative to the CSSD method for herding detection was developed by Chang et al. (2000). They extend the work of Christie and Huang (1995a) with a new and more powerful approach to detect herding behavior based on stock returns. Chang et al. (2000), as well as Christie and Huang (1995a), assume that rational asset pricing models suggest an increase in return dispersion during periods of market stress. In addition, they argue that rational asset pricing models would predict the relation between dispersions in individual assets and the market return to be linear. This means that dispersions are an increasing function of the market return. If market participants tend to follow aggregate market behavior and ignore their own prior behaviors during periods of large average price movements, then the linear and increasing relation between dispersion and market return will no longer hold. Instead, the relation can become a non-linearly increasing or even decreasing.

This study adopts the CSAD method proposed by Chang et al. (2000) to detect herding behavior in member countries of the ASEAN-5 (Indonesia, Singapore, Malaysia, the Philippines, and Thailand). The CSAD formula is detailed as follows:

$$\text{CSAD} = \frac{1}{N}\sum_{t=1}^{N}\left|R_{i,t} - R_{m,t}\right| \tag{1}$$

where $R_{i,t}$ is the observed stock returns of asset i at time t, and $R_{m,t}$ is the cross-sectional average of the N returns in the aggregate market portfolio at time t.

The non-linear framework for modeling the relationship between individual stock return dispersions and the market average is specified as follows:

$$\text{CSAD}_t = \gamma_0 + \gamma_1\left|R_{m,t}\right| + \gamma_2\,R^2_{m,t} + \varepsilon_t \tag{2}$$

During periods of relatively large market price movements, investors may react in a more uniform manner, exhibiting herding behavior. This behavior is likely to increase the correlation among asset returns and the corresponding dispersion among returns will decrease, or at least increase at a less-than-proportional rate with the market return. For this reason, a non-linear market return, $R^2_{m,t}$, is included in the testing equation and a significantly negative coefficient γ_2 in the empirical test would be consistent with the occurrence of herding behavior Chang et al. (2000). As the market exhibits large price swings, market participants tend to suppress their private information and engage in herding behavior regarding information from consensus or sentiment. Stock returns under this condition tend to converge, causing the return dispersion to either decrease or increase at a decreasing rate. Thus, if herding exists, it is expected that the γ_2 coefficient will be negative and statistically significant.

Data

This study employed the samples' daily closing prices of each stock and market index. A purposive sampling technique was used to select the sample, where the stocks observed are categorized into big and middle stocks' capitalization. Based on the purposive sampling, there were 43 samples for Indonesia, 21 samples for Singapore, 44 samples for Malaysia, 26 samples for the Philippines, and 53 samples for Thailand. The stock market indices used in this study were the Jakarta Composite Index (JCI Index) for Indonesia, the FSSTI Index (Strait Times Index) for Singapore, the FBMKLCI Index (Kuala Lumpur Composite Index) for Malaysia, the PSEI Index (Philippines Stock Exchange Index) for the Philippines, and the SET 100 Index (Stock Exchange of Thailand Index) for Thailand.

All the closing price data were taken from the Bloomberg Data Terminal. The data range was from January 2008 to December 2014. There were 1,704 daily stock returns and CSAD observations for Indonesia, 1,760 observations for Singapore, 1,723 observations for Malaysia, 1,706 observations for the Philippines, and 1,710 observations for Thailand. The individual stock returns are calculated as follows:

$$R_{i,t} = (P_{i,t} - P_{i,t-1})/P_{i,t-1} \tag{3}$$

where P_t denotes the stock (price) index.

EMPIRICAL RESULTS

Descriptive Statistics

Table 1 contains the descriptive statistics of daily market returns ($R_{m,t}$) and daily CSAD for Indonesia, Singapore, Malaysia, the Philippines, and Thailand. The number of sample companies ranges from 21 to 53. The statistics presented in Table 1 shows the maximum and minimum values of the market returns and CSAD value along with the corresponding event dates. For example, market

Table 1. Descriptive Statistics of CSAD and Market Returns (R_m) for Indonesia, Singapore, Malaysia, the Philippines, and Thailand.

	Indonesia		Singapore		Malaysia		Thailand		The Philippines	
	$CSAD_t$	R_{mt}	$CSAD_t$	R_{mt}	$CSAD_t$	R_{mt}	$CSAD_t$	R_{mt}	$CSAD_t$	R_{mt}
Mean	0.01754	0.00049	0.01091	0.00006	0.00972	0.00015	0.01445	0.00042	0.01362	0.00050
Median	0.01585	0.00121	0.00932	0.00031	0.00885	0.00043	0.01325	0.00090	0.01257	0.00097
Maximum	0.08292	0.07921	0.06987	0.07822	0.03818	0.04138	0.05594	0.09140	0.04359	0.07311
Minimum	0.00725	−0.10375	0.00282	−0.08329	0.00377	−0.09497	0.00608	−0.11918	0.00479	−0.12268
SD	0.00706	0.01493	0.00583	0.01238	0.00377	0.00771	0.00502	0.01533	0.00536	0.01330
Skewness	2.28498	−0.45293	2.79184	−0.00688	1.92311	−1.19603	2.51054	−0.41733	1.38119	−0.80422
Kurtosis	13.23851	9.88022	16.36986	9.58084	9.80510	19.22912	14.92024	9.62515	6.02307	10.81316
Jarque-Bera	8,925.525	3,419.222	15,386.170	3,174.085	4,386.668	19,319.590	11,920.360	3,176.987	1,193.441	4,528.515
Probability	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Sum	29.89551	0.84017	19.19465	0.11160	16.75334	0.25588	24.71523	0.71321	23.26821	0.84485
Sum Sq. Dev.	0.08480	0.37983	0.05966	0.26963	0.02448	0.10234	0.04302	0.40185	0.04909	0.30197
Observations	1,704	1,704	1,759	1,759	1,723	1,723	1,710	1,710	1,708	1,708

Table 1 lists the descriptive statistics of daily R_{mt} and equally weighted CSAD for the ASEAN-5 stock markets which includes Indonesia, Singapore, Malaysia, Thailand, and the Philippines. The data range for Indonesia is 1/2/2008 to 12/30/2014, for Singapore is 1/2/2008 to 12/31/2014, for Malaysia is 1/2/2008 to 12/31/2014, for the Philippines is 1/2/2008 to 12/29/2014, and for Thailand is 1/2/2008 to 12/30/2014.

returns in Indonesia dropped to -0.10375, Singapore sank to -0.08329, Malaysia fell to -0.09497, the Philippines reduced to -0.12268, and Thailand went down to -0.11918 points. This condition occurred in 2008 because of the subprime mortgages in the United States.

The standard deviation for daily market returns also varies. The standard deviation for Indonesia is 1.49%, Singapore 1.24%, Malaysia 0.77%, the Philippines 1.33%, and Thailand 1.53%. The standard deviation is used as an alternative tool to calculate the risk of an asset. In the context of the market returns, standard deviation values are high due to the high volatility of the market returns. A greater volatility would result in a greater risk.

The mean and standard deviation of CSAD for Indonesia is 0.01754 and 0.71%, Singapore is 0.01091 and 0.58%, Malaysia is 0.00972 and 0.38%, Thailand is 0.01445 and 0.50%, and the Philippines is 0.01362 and 0.54%. According to Chiang and Zheng (2010), a higher mean and standard deviation value of CSAD suggests that the market had unusual cross-sectional variations. This could be due to unexpected news or a shock.

Estimates of Herding Behavior in Each Market

One of the statistical properties of OLS is that the estimator needs to have a BLUE characteristic and stationary time-series data. Hence, the data will have valid estimation results.

A Standard Error HAC Newey-West method was used in the hypothesis test to fix the standard error caused by heteroscedasticity and autocorrelation. First, Equation (2) was estimated to investigate if the market participants in Indonesia, Singapore, Malaysia, the Philippines, and Thailand exhibited a herding behavior. As mentioned before, a negative and statistically significant value of the coefficient squared market returns (R^2_{mt}) indicates the occurrence of herding behavior in the stock market. Based on the estimates, the results show significantly positive coefficients in the linear term ($|R_{mt}|$) for all countries. This confirm the rational asset pricing model that predicts the CSAD of returns increase along with the magnitude of the market returns (Chang et al., 2000; Christie & Huang, 1995b). On the other side, the R^2_{mt} in the models allowed for the research to test whether the dispersion (CSAD) increased at a decreasing rate during extreme market fluctuations.

Based on Table 2, Indonesia, Singapore, and Thailand have a significantly positive value of R^2_{mt}. This means that the dispersions are an increasing function of the market returns, as the rational asset pricing model predicted (Chang et al., 2000; Christie & Huang, 1995b). Hence, this indicates there was no significant evidence of herding behavior present in Indonesia, Singapore, and Thailand stock markets during the time period under investigation. This result is consistent with the results of Chandra (2012) as well as Loh and Araral (2013), who report that there is insignificant evidence of herding behavior in Indonesia and Singapore. However, this result is inconsistent with the results of Chiang and Zheng (2010) and Tan et al. (2008), who suggest that there is significant evidence of herding behavior in Indonesia, Singapore, and Thailand.

Table 2. Regression Estimates of Herding Behavior for Indonesia, Singapore, Malaysia, the Philippines, and Thailand.

Var	Indonesia	Singapore	Malaysia	Thailand	The Philippines
C	0.01443***	0.00785***	0.00729***	0.01195***	0.01023***
	(42.91989)	(34.79847)	(50.1755)	(54.4641)	(41.50705)
$|R_{mt}|$	0.25318***	0.32749***	0.48939***	0.19681***	0.38828***
	(6.68516)	(7.73204)	(17.25266)	(7.17804)	(16.39635)
R^2_{mt}	2.49503***	2.4008***	−1.43931***	1.72497***	−1.31961***
	(2.75491)	(3.2034)	(−2.60894)	(4.09752)	(−4.22943)
Adjusted R^2	0.37263	0.47425	0.45399	0.41757	0.33414

Table 2 reports the estimated coefficients for the model in equation (2). The sample period is from January 2008 to December 2014. A standard error HAC Newey-West correction is applied to estimate standard errors.
Note: *t*-Statistic is in parentheses.
Significant levels at ***1%, **5%, *10%, respectively.

Chang et al. (2000) propose that herding behavior is caused by the poor quantity and quality of information about macroeconomics and microeconomics, especially the fundamentals of the firm. Meanwhile, when the information about macroeconomics and microeconomics, especially firm fundamentals, has been shared with the public in a good way by the financial authority of a country, the herding behavior will not be found. Investors will make an investment decision based on microeconomics and macroeconomics information. They will not just follow the market sentiment or behavior of other investors. Another factor is the increase of investors' quality and knowledge (Chiang & Zheng, 2010). Better knowledge and quality of investors will lead to more heterogeneous investment decisions in the stock market. If investment decisions are more heterogeneous, it will decrease the herding behavior or more grouped investment decisions in the market.

According to Table 2, Malaysia and the Philippines have a significantly negative value of R^2_{mt}. This means that the dispersion is not an increasing function of the market returns, as predicted by the rational asset pricing model, which is contradicts the assumption. This indicates that during the investigated time period, investors in Malaysia and Philippines stock markets followed the performance or sentiment of the market and ignore the individual characteristics of the stocks. Hence, there is significant evidence of herding behavior in Malaysia and Philippines stock markets during the entire time frame. This result is consistent with the results of Chang et al. (2000), Chiang and Zheng (2010), and Wijayanto and Nur (2011), who claim that there is significant evidence of herding behavior in Malaysia and the Philippines.

The indications of herding behavior are caused by the high level of government or central bank intervention in a country (Chang et al., 2000; Venezia et al., 2011), such as monetary policy (interest rate policy). The second one is due to the poor quantity and quality of macroeconomics and microeconomics information. It is known that herding will likely happen in an inefficient market, thus, poor quantity and quality of macroeconomics and microeconomics information will lead investors to tend to focus only on macroeconomic signals as the

Table 3. Regression Estimates of Herding Behavior as a Whole.

Variables	Whole Market Model
C	0.00999***
	(59.82085)
$|R_{mt}|$	0.30472***
	(14.72659)
R^2_{mt}	0.53056
	(1.27203)
Adjusted R^2	0.355611

Table 3 reports the estimated coefficients for the model of equation (2) as a whole. All of the currencies in each market are converted to USD. A Standard Error HAC Newey-West correction is applied to estimate the standard errors.
Note: *t*-Statistic is within parentheses.
Significant levels at ***1%, **5%, *10%, respectively.

basis of information to make investment decisions. The third one is due to poor experience and knowledge on investments. A lack of experience and knowledge will lead investors to just follow market sentiments or other investors, thus, investment decisions will be more homogeneous in the market. Homogeneous transactions in the market will make investment transactions become clustered.

Estimates of Herding Behavior as a Whole Market

After doing partial tests on each country (Indonesia, Malaysia, Singapore, the Philippines, and Thailand), this research will estimate herding behavior as a whole market. The estimate was done by collecting data on each variable for each country, combining it into one part, and converting the value to USD. The conversion was needed due to the use of different currencies from each country from the raw data.

Based on Table 3, the results show significantly positive coefficients in the linear term ($|R_{mt}|$). The squared market return (R^2_{mt}) has a positive value, but it is not statistically significant. This means that the dispersions are an increasing function of the market returns, as the rational asset pricing model predicted (Chang et al., 2000; Christie & Huang, 1995a). Hence, this indicates that there is an insignificant evidence of herding behavior exhibited in the Indonesia, Malaysia, Singapore, Philippines, and Thailand stock markets as a whole market.

CONCLUSION

This study examines the investment behavior of market participants within different international markets in the ASEAN-5 region, specifically with regard to their tendency to exhibit herding behavior. Herding behavior occurs when investors ignore individual characteristics of stocks and follow the performance or sentiment of the market. The data employed in this study were retrieved from daily individual stocks and market returns of each market from January 2008 to December 2014.

To analyze and detect the herding behavior, this empirical study adopted the CSAD model. The pioneering study on detecting herding behavior was derived from the work of Christie and Huang (1995a), through the CSSD method. Then, Chang et al. (2000) extended the work of Christie and Huang (1995a) through the CSAD method. Chang et al. (2000) argue that if the equity return dispersion is measured by the CSAD of returns, the rational asset pricing model predicts that not only dispersion is the increasing function of the market returns, but also the relation is linear. Hence, an increased tendency on the part of market participants to herd around the market consensus during periods of large price fluctuations will convert the linear relation into a non-linear one. To capture the effect, Chang et al. (2000) employed a non-linear regression specification by adding a non-linear variable of market returns, which was R^2_{mt}. Thus, if herding exists, the coefficient γ_2 (R^2_{mt}) will be negative and statistically significant.

According to previous discussions, the results show that Indonesia, Singapore, and Thailand have significant positive values of R^2_{mt}. It indicates that there is no evidence of herding behavior present in Indonesia, Singapore, and Thailand stock markets during the time period under investigation. However, the results showed that Malaysia and the Philippines have significant negative values of R^2_{mt}. It indicates that there is evidence of herding behavior in Malaysia and Philippines stock markets during the entire time frame.

An important investment implication for Malaysia and Philippines stock markets, which exhibit herding behavior, is the market participants can use a strategy that orients themselves as traders and not as investors. Technical analysis is suitable to be used by traders. The information does not quickly reflected on the price of a stock in a market (market inefficiency). Therefore, fundamental analysis cannot be applied in the stock market. Since herding behavior is only a short-term phenomenon, investors in the stock exchange can use a short-term orientation by applying the momentum and trend from the fluctuating changes of stock prices to get a capital gain or return.

On the other side, an important investment implication for Indonesia, Singapore, and Thailand stock markets, which did not exhibit herding behavior, is the market participants can use a strategy that orients themselves as investors. They can become growth investors or value investors. In these markets, which did not exhibit herding behavior, the information quickly reflected on the price of a stock in a market (efficient market). Fundamental analysis and technical analysis are suitable to be applied by investors. The strategies that can be used focus on profit growth, firm value, long-term dividends, fundamental information and macroeconomic information. In these stock markets, investors will not be influenced by fluctuations in stock prices, because they are oriented to large profits in the long term.

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