Macrothink Institute™

Asian Journal of Finance & Accounting
ISSN 1946-052X
2014, Vol. 6, No. 1

An Exploratory Study of Herd Behaviour in Vietnamese Stock Market: A New Method

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Received: Feb. 28, 2014 Accepted: April 8, 2014 Published: June 1, 2014

doi:10.5296/ajfa.v6i1.5326 URL: http://dx.doi.org/10.5296/ajfa.v6i1.5326

Abstract

This research examines the presence of herd behavior in Vietnamese Stock Market from 2006 to 2012. Based on two methods suggested by Christie and Huang (1995); and Chang, Cheng, and Khorana (2000), this research work proposes a new probability approach; that is on market index return and market dispersion to capture herd behavior. This new method enables this study to detect herding in a given trading day. The study adopts daily data from a main center of Vietnamese Stock Market. The existence of herd is found during the whole period as using the statistics methods. To be more concrete, herding days are explored via the new probability method in this work.

Keywords: Herd behaviour, Cross-sectional standard deviation, Cross-sectional absolute deviation, Probability approach, Vietnamese Stock Market

1. Introduction

Herd behavior is a popular phenomenon in financial markets and in stock markets of advanced and emerging markets. Herding of participants in the financial market is defined as "the tendency to accumulate on the same side of the market", which is a significant threat for financial market's stability and efficiency (Kremer & Nautz, 2011, p. 1). In other words, it exists in most economies in the world, regardless of size. In different markets, the degree of herd behavior, nevertheless, is not the same. While herding behavior does not usually appear at a low degree in mature markets, this behavior is such a widespread phenomenon and it highly influences the so called "immature" markets. With an inappropriate long term pricing mechanism, it leads to the sudden development and/or possible collapse of the stock market (Bikhchandani & Sharma, 2001). It, therefore, affects other related markets in the economy. Hence, capturing exactly the herd in the market is always an important objective. Many analysts and experts failed to detect herd (Gleason et al., 2004; Demirer & Kutan, 2006; Ohlson, 2010). Thus, a new method, which can find out herd, is an essential contribution for detecting herd behavior in particular and financial field in general.

The Vietnamese stock market has just been established. Consequently, herding behavior does not only exist in the Vietnamese stock market, but it is also a captain which leads the market. There were periods when all the market went up regardless of shares' quality. There were also many times when the whole market went down even though it was helped by a lot of positive information from companies or the government. In other words, herd behavior has controlled most of Vietnamese stock markets. Hence, this study introduces methods to detect herd behavior in a stock market and apply these methods to point out herd behavior in the Vietnamese stock market.

2. Literature Review

Numerous researches have studied herd behavior and most of them retained the idea of Bikhchandani and Sharma (2001). They argued that individuals can examine herd if they invest without knowing decisions of other investors. In vice versa, they will not make the investment when they find others' decisions (Bikhchandani & Sharma, 2001). Other researchers proposed a broader definition of herd behavior. They conceptualized herd behavior as "a group of investors transacting in the same way, in the same direction (buy or sell) for a given period of time" (Grinblatt, Titman & Wermers, 1995); Nofsinger & Sias, 1999). So, the correlations in investors' behaviors influence each other. However, this correlation may be observed when investors are solely affected by factors or common information (Khan, Hassairi, & Viviani, 2011). At another side, Hirshleifer and Teoh (2003) perceived the difference between two types of herd behavior. They are convergence of behaviors and informational cascades situations where the trading of individual investors depends on their observation about others' action instead of their own informational signal. Therefore, when investors try to follow the market consensus, it may lead asset prices to deviate from economic fundamentals. As a result, stocks are not accurately priced. Further, many studies focus on market participants' herding behavior of managers to analysts working in mutual fund and institutions. Grinblatt, Titman and Wermers (1995) detected obvious evidence of herding activity in mutual fund markets. Herd behavior appeared when fund managers flock to buy shares that can make profit. They confirmed that nearly 80 percent of mutual fund investors are momentum investors, who try to buy high return securities and sell poor return ones. Welch (2000) suggested that fundamental information is less likely to lead investors to flock to the market consensus. He also implied that analysts are tempted to determine to herd because of little or no information. Whereas Wermers (1999) detected

evidence of little herding by mutual fund managers in trading average securities, Welch found more support of herding in trades of small stocks by growth-oriented funds which have plans to get bigger.

There are several empirical researches related to measures which have been developed to investigate herd behavior in financial market. Lakonishok, Shleifer and Vishny (1992) detect herd by exploring whether number of money managers are equal in buying and selling stock or not. For example, after finding out that in the market 70 percent of money managers raised their holding, whereas just 30 percent money managers declined their holding, they concluded that herding was present. However, this measure does not concern the quantity of stocks which are bought or sold by investors.

The second method proposed by Christie and Huang (1995) (henceforth referred as CH) which investigates the magnitude of cross-sectional dispersion of individual stock returns during large price changes. If the dispersion is small during the large price changes then they suggest that there is an evidence of herding. After that, Chang, Cheng and Khorana (2000) (henceforth referred as CCK) introduced another method to detect herd using the relationship between dispersion of market return and market return. In this method, the dispersion is represented by cross-sectional absolute deviation.

Hwang and Salmon (2004, 2011) created and developed a model based on Capital Asset Pricing Model to detect and measure a herd's magnitude. Hwang and Salmon (2004, 2011) suggested a model based on the change of stock betas from their equilibrium to measure the herd behavior level. They used cross-sectional betas of assets to measure herding. With this method, they observed herding behavior in the stock markets of the United States, United Kingdom, and South Korea. They found beta herding when investors believed that they know where the market is herding rather than when the market is in crisis. This model also allows us to add other variables in order to test steadiness or measure the effects of other factors.

Nevertheless, it is not easy to obtain expected results using Hwang and Salmon's method due to insignificant coefficients. In addition, methods of Christie and Huang (1995) and Chang et al. (2000) still have their model's disadvantages. Consequently, a new method with a probability approach to detect herding is offered. The new method will be applied to test herd behavior of Vietnamese Stock Market. Its empirical results will be taken to compare with the results in Christie and Huang (1995) and Chang et al. (2000)'s research works.

3. Method

In order to comprehend these three methods as well as compare empirical results, basic principles of the methods used to detect herd are translated as follows.

3.1. Method of Christie and Huang (1995)

Christie and Huang (1995) or CH (1995) used the cross-sectional standard deviation (CSSD) of single stock returns concerning market returns. The CSSD is calculated by the formula as:

$$CSSD_t = \sqrt{\frac{\sum_{i=1}^{N}\left(R_{i,t} - \overline{R}_{m,t}\right)^2}{N-1}} \quad (1)$$

Where $CSSD_t$ is the cross-sectional standard deviation of market return at time t. $R_{i,t}$ is observed stock return of company i at time t. $\overline{R}_{m,t}$ is the cross-sectional average return of the N stock returns in the stock market at time t. N is the number of stocks in the market

portfolio. In other words, $CSSD_t$ is the standard deviation of stocks' returns at time t in the stock market when we consider the stock market is a sample. CH (1995) also stated that rational asset pricing models forecast that dispersion will go up with the absolute value of the market return. It is because individual stocks differ in their sensitivity to the market return.

CH (1995) proposed that in the extreme market movements (up or down) individual investors are highly probable to follow the market consensus. They wanted to do an empirical test in order to find out whether asset return spreads during extremely bullish and bearish periods are significantly lower than in average. Therefore, they estimated this difference through the following formula:

$$CSSD_t = \alpha + \beta^L D_t^L + \beta^U D_t^U + \varepsilon_t \tag{2}$$

D_t^L and D_t^U are dummy variables. $D_t^L = 1$ if the market return of day t belongs to the intense lower tail of the market return distribution and of course $D_t^L = 0$ if not. $D_t^U = 1$ when the market return of day t lies in the intense upper tail of the market distribution and $D_t^U = 0$ otherwise.

These variables are created to capture differences of investors' actions between intense movement and normal conditions of the market. As the statistical coefficients of β^L and β^U are significantly negative, they indicate the presence of herd behavior. To define periods of extreme bull and bear market, CH (1995) used one or five per cent of the lowest and highest observations in terms of market return.

3.2. Method of Chang, Cheng and Khorana (2000)

Adopting the same idea with Christie and Huang (1995), Chang, Cheng and Khorana (2000) also used cross-sectional dispersion to detect herd behavior and developed CCK model. However, instead of CSSD, Chang et al. (2000) used the cross-sectional absolute deviation of returns (CSAD) as a measure of spread. The cross-sectional absolute deviation as a better measure of spread compared to the CSSD is defined as follow:

$$CSAD_t = \frac{\sum_{i=1}^{N} \left| R_{i,t} - \overline{R}_{m,t} \right|}{N} \tag{3}$$

where $CSAD_t$ is the cross-sectional absolute deviation of market return at time t. $R_{i,t}$ is observed stock return of company i at time t. $\overline{R}_{m,t}$ is the cross-sectional average return of stocks in the market at time t. N is the number of stocks in the market portfolio. In other words, $CSAD_t$ is the average of absolute differences of market return and each stock return.

This measure is also applied to the CH (1995)'s method via the equation:

$$CSAD_t = \alpha + \beta^L D_t^L + \beta^U D_t^U + \varepsilon_t \tag{4}$$

The consequence is the same with equation (2). β^L and β^U are significantly negative when they estimate coefficients. They illustrate the presence of herd behavior.

3.3. The New Method - Finding Herd in a Specific Day

Christie and Huang (1995) and Chang et al. (2000) could only detect herd behavior during a period of time while this present research suggests a new simple method which can capture herd in a specific day. This new method is also based on the relation between market return and market volatility as same as CH (1995) and CKK (2000) did. Nevertheless, the new method uses probability approach instead of using statistic approach like CH (1995) and CKK (2000). Usually, the relationship between market return and market dispersion belongs to a particular interval. However, it will be outside this interval if there is herd behavior. Therefore we can measure the probability of this relationship to detect herding.

There are two ways to calculate market return. The first one is using cross-sectional average stocks returns in the market. This way is implemented in Christie and Huang (1995) and Chang et al. (2000). Another one is using market indexes. The latter is adopted in the new method as follow:

$$R_{Index,t} = \ln\left(\frac{P_{m,t}}{P_{m,t-1}}\right) \tag{5}$$

Where $R_{Index,t}$ (or market index return) is the market return which is calculated by using market index; ln(.) is natural logarithm function; $P_{m,t}$ and $P_{m,t-1}$ are market index at time t and $(t-1)$, respectively.

It is assumed that the market return is the market index return in this case, has a normal distribution with its own mean (μ) and variance (σ^2). Its distribution or "probability density function" is a bell-shaped which is symmetric with its mean at the center. This function is also known as Gaussian function. It is as follows:

$$f\left(x;\mu,\sigma^2\right) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} \tag{6}$$

Where μ is the mean or expectation (location of the peak); σ^2 is the variance; σ is standard deviation; e is an irrational and transcendental constant approximately equal to 2.718; π is a mathematical constant that is the ratio of a circle's circumference to its diameter, and is equal to 3.14 (McClave, 2011).

When the market return is a fairly stochastic process (or a random process), it follows a normal distribution with zero or $R_{Index} \sim N(0, \sigma^2)$ as the mean, which can be tested with a null hypothesis H_0: $\mu_{Rindex} = 0$. Base on these assumptions, it is not difficult to standardize market return distribution. It means transferring market return from normal distribution (N (0, σ^2)) into standard normal distribution (N (0, 1)). Then, the probability (p-value) of the relationship between market returns and market dispersions in each day can be computed. The more the probability is, the more frequently it happens.

The method's principle is not hard to comprehend. If the daily market return has an up-jump over a particular upper limit and the market dispersion is relatively small, then this jump seems to be a rare event due to its tiny p-value. Therefore, we can implement this logical idea to capture herd in a specific day. A daily herd will be detected through the daily market return and the daily market volatility. To be more concrete, if market return is higher (smaller) than upper (lower) limitation and market dispersion is small enough, herding is presented, or vice versa.

By implementing this method, analysts can capture herd in specific days and count number of days which herd happens in a period. Moreover, the method allows investors to compare herd's effect between up and down market. This method seems to be better than the previous statistic approach methods. It eliminates disadvantages of these methods in terms of model fitness. In additions, it provides a clearer picture about herd behavior in stock markets. All of these advantages will be illustrated in detail in the results section. The raw data are the daily closed prices of stocks issued in Ho Chi Minh City stock market and closed index of VN-Index. Data sample is collected from 01 January, 2006 to 30 June, 2012.

4. Empirical Results

This section shows the result analyses of three methods.

4.1. The two models CH (1995) and CCK (2000)

4.1.1. Sample data

The investigating presence of herd behaviour in Vietnamese stock market begins by using dummy variables in regression tests which are the same as the methods of Christie and Huang (1995) and Chang, Cheng and Khorana (2000) (henceforth referred as CH (1995) and CCK (2000)). Both of cross-sectional standard deviation (CSSD) and cross-sectional absolute deviation (CSAD) are used as measures of dispersion. The coefficients of dummy variables interpret differences in dependent variables and cast light on the range of herd behavior via extremely bullish and bearish trading day. Equation (2) and (4) are estimated by using 3% of the price movement days following the definition of extremely bullish and bearish days.

Table 1 shows the parameters estimated by t-statistics value and p-value pertaining to the daily data. The results of these equations suggest the same feature. This is an appearance of herd behavior in the stock market. The coefficients of β^L and β^U are negative and the p-values are much smaller than 0.05. It means β^L and β^U are significantly negative. However, when we look at the results carefully, we can see differences between the coefficients of β^L and β^U in CSSD model (-0.0056 and -0.0075, respectively) and CSAD model (-0.0080 and -0.0084, respectively). Only one data is considered being used for these models. So it can be said that the CSAD model is more sensitive than another in terms of capturing herd behavior. In addition, the R-squared (R^2) in CSAD model is much higher than R^2 in CSSD model (0.107 compares to 0.056). It means that in CSAD model, regression line fits a set of data better than one in CSSD model.

Table 1. Estimated coefficients of Christie and Huang (1995)'s and Chang et al. (2000)'s methods

	CSSD			CSAD		
	β^L	β^U	R^2	β^L	β^U	R^2
Coefficients	-.0056***	-.0075***	.0556	-.0080***	-.0084***	.107
t-statistics	-5.968	-7.904		-9.659	-10.306	

Note: * significant at 10%; ** significant at 5%; *** significant at 1%.

CSAD: cross-sectional absolute deviation

CSSD : cross-sectional standard deviation

However, in both models, the values of R^2 are too small (less than 0.2). R^2 is used to describe how well the data fit a model is. R^2 is between 0 and 1, and the bigger R^2 is, the better the

data fit the model. Therefore, in this case, the models do not fit the data well. It is not difficult to explain this problem. Actually, herd behavior is not only a reason which leads to changes in market dispersion in extreme price movement periods. There are also fundamental factors of the market which affect the market in the same way. Nevertheless, these factors are not involved in the models, so small R^2 is a reason. Unfortunately, it is not easy to increase R^2 by adding variables into the models. This problem also caused inaccuracy of the two methods of Christie and Huang (1995) and Chang et al. (2000) in terms of detecting herd behavior.

4.1.2. Yearly periods

According to the integrated results in Table 2, once again we can see the advantage of CSAD in comparison to CSSD to represent market variation because the coefficients in CSAD model are always higher than ones in CSSD model. It means that CSAD is more sensitive than CSSD regarding to changes in D^L and D^U.

Table 2. Estimated coefficients of Christie and Huang (1995) and Chang et al. (2000) method in each year

		CSSD		CSAD	
		β^L	β^U	β^L	β^U
2006	Coefficient	-0.0008*	-0.0056*	-0.0036*	-0.0063*
	t-value	-0.2105	-1.5534	-1.3503	-2.3477
2007	Coefficient	-0.0026*	-0.0027*	-0.0038*	-0.0045*
	t-value	-0.9974	-1.0263	-1.7651	-2.0756
2008	Coefficient	-0.0047*	-0.0103*	-0.0092*	-0.0120*
	t-value	-1.4841	-3.2909	-3.0025	-3.9017
2009	Coefficient	-0.0097*	-0.0158*	-0.0122*	-0.0155*
	t-value	-5.2489	-8.5562	-6.7142	-8.5245
2010	Coefficient	-0.0020*	-0.0041*	-0.0022*	-0.0035*
	t-value	-1.7267	-3.4977	-1.9522	-3.1033
2011	Coefficient	-0.0003*	0.0009*	0.0002	0.0016
	t-value	-0.2856	0.9160	0.2460	1.6492
First half of 2012	Coefficient	-0.0015*	-0.0047*	-0.0008*	-0.0053*
	t-value	-1.0623	-3.2562	-0.5928	-3.6976

Note: * significant at 1%.
CSAD: cross-sectional absolute deviation
CSSD : cross-sectional standard deviation

The presence of herd behavior can be detected only in 2009 by using CSSD measures. However, when using CSAD to measure the dispersion, herding is found in 2008 and 2009 at 1% significant level because both β^L and β^U are significantly negative at alpha is 1%.

4.2. The New Method

This method is based on a simple principle; however, to be reliable, the data has to satisfy some assumptions which are concerned in the previous sections. Some tables and graphs for describing the data are showed in order to provide a clear picture of stock market data in Vietnam.

4.2.1. Descriptive analysis

Descriptive statistics in Table 3 illustrates essential statistics of data which include Min, Max, Mean, Median, Standard Deviation, Kurtosis, Skewness, and N (number of observation). The largest range of market returns is around 0.096 in 2006 and the smallest one is 0.070 in 2012. However, in total, the distribution of data, which is symmetric with the Skewness (-0.0511), is closed to 0, and is equal to the Mean (0.0002) and the Median (0.0002).

Table 3. Descriptive statistics of market index return

	Min	Max	Mean	Median	S.D	Kurt	Skew	N
2006	-0.0497	0.0465	0.0036	0.0026	0.0202	0.1036	-0.2437	250
2007	-0.0447	0.0414	0.0008	-0.0007	0.0172	-0.0629	0.1840	248
2008	-0.0480	0.0464	-0.0043	-0.0058	0.0233	-0.6393	0.1007	248
2009	-0.0467	0.0465	0.0018	0.0018	0.0218	-0.5127	-0.0893	251
2010	-0.0402	0.0440	-0.0001	0.0005	0.0132	0.8954	-0.1276	250
2011	-0.0411	0.0336	-0.0013	-0.0013	0.0133	0.2362	-0.0116	248
2012	-0.0303	0.0393	0.0015	0.0003	0.0141	-0.0599	-0.0403	121
Total	-0.0497	0.0465	0.0002	0.0002	0.0184	0.1209	-0.0511	1616

Besides, Figure 1 also gives us a visual way to capture the total data. Intuitively, market return distribution is symmetric and seems to be a normal distribution with a mean is 0.

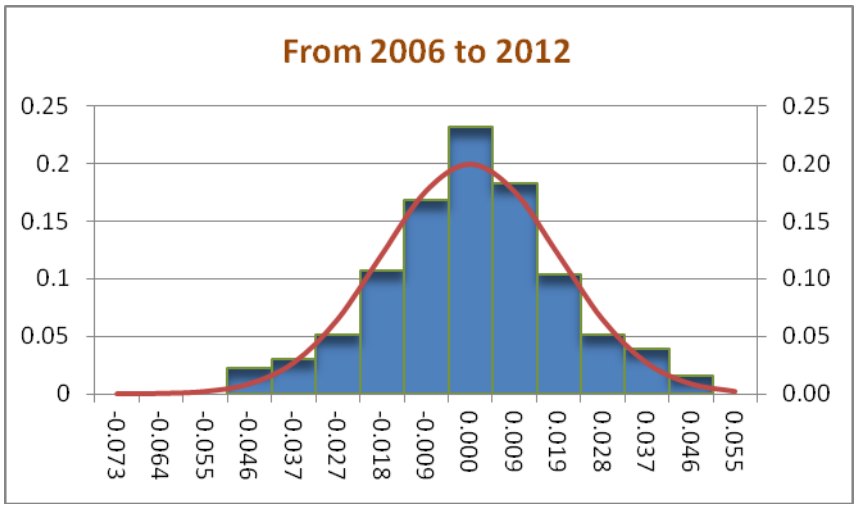

Figure 1. Distribution of market index return

In addition, daily statistic information of stocks in the market is provided to market index returns. Table 4 shows descriptive statistics of all stocks in September 2008. According to these results, differences between the highest and lowest daily stocks returns are relatively high (less than 10%). Daily stocks returns distributions seem to be asymmetric because absolute Skewness statistics are quite high. Especially, there are three days, 19th, 22nd and 30th whereas the Kurtosis was extremely high (14.2, 30.9 and 23.4) respectively. It demonstrates that there are unusual features that occurred in those days.

Table 4 . Descriptive statistics of stocks' returns in September 2008

Year	Min	Max	Mean	Range	S.D	Kurt	Skew	N
20080903	-0.050	0.065	0.036	0.116	0.024	5.236	-2.456	141
20080904	-0.073	0.057	0.015	0.131	0.035	-0.930	-0.665	141
20080905	-0.077	0.066	-0.001	0.143	0.042	-1.723	-0.007	141
20080908	-0.072	0.062	-0.008	0.134	0.039	-1.489	0.370	141
20080909	-0.051	0.063	-0.006	0.115	0.037	-1.432	0.256	141
20080910	-0.052	0.048	-0.029	0.101	0.027	0.554	1.226	143
20080911	-0.075	0.053	-0.040	0.129	0.020	6.524	2.440	143
20080912	-0.074	0.042	-0.043	0.116	0.016	9.289	2.727	143
20080915	-0.063	0.064	-0.009	0.127	0.039	-1.505	0.325	143
20080916	-0.132	0.047	-0.046	0.179	0.019	8.902	1.081	143
20080917	-0.065	0.047	-0.040	0.112	0.021	7.281	2.788	143
20080918	-0.091	0.045	-0.042	0.136	0.021	7.835	2.680	144
20080919	0.001	0.094	0.046	0.094	0.009	14.202	-0.685	145
20080922	0.015	0.093	0.046	0.078	0.006	30.900	2.341	145
20080923	-0.070	0.060	-0.006	0.131	0.037	-1.458	0.157	145
20080924	-0.058	0.050	-0.024	0.108	0.027	0.398	1.128	145
20080925	-0.050	0.072	0.025	0.122	0.028	0.822	-1.307	145
20080926	-0.051	0.048	0.015	0.100	0.028	-0.580	-0.604	145
20080929	-0.051	0.048	-0.020	0.099	0.029	-0.066	0.970	145
20080930	-0.087	0.000	-0.048	0.087	0.007	23.474	1.701	145

The market index return and market dispersion are illustrated in the Figure 2. In September 2008, the market return fluctuated with large ranges, while in some days market dispersion was quite small. Therefore, it is not difficult to realize that there were some herding days in which market deviation was fairly small whereas return was relatively high. For instance, on 12th, 16th, 19th, 22nd and 30th, the absolute market index return was over 4 percent and the market dispersion was really small (less than 2 percent). It means, based on the new method's principle, herd obviously happened in these days. Hence, looking the figure can be a simple way to capture herd, even though it is a visual way.

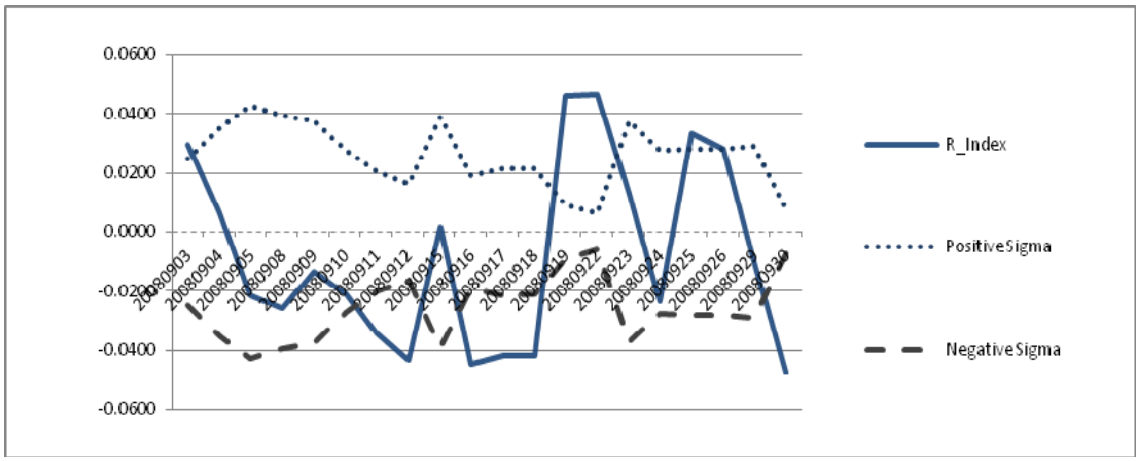

Figure 2. Market index return and market dispersion in September 2008

4.2.2. Testing the null hypothesis

The result of testing the null hypothesis is demonstrated in Table 5. According to the p-value (0.6622) which is much higher than 0.05, the null hypothesis is not rejected. In other words, the market index return has a zero mean. The market return distribution follows the normal distribution with the mean is equal zero or $R_{Index} \sim N(0, \sigma^2)$. It means the data satisfies assumptions of the method. Hence, the new method is applicable to detect herd.

Table 5. The result of testing the null hypothesis

Mean of R_{Index}	Std.Dev of R_{Index}	N	t-value	p-value
0.0002	0.018	1616	0.437	0.6622

4.2.3. Detecting herd results

The results in Table 6 show the number of herding days in the market during each year and the whole period. Herd is detected in two levels of significance at alpha is 5 percent and 1 percent. The smaller alpha is, the less herding days are found. In total, the number of herding days at 5 percent of alpha is double at 1 percent of alpha. In additions, the market is fairly symmetric with number of herding days is almost the same in both up and down market. Herd happened mostly in 2008 and 2009 and were not frequent since 2010, regardless of market direction. Hence, the new method illustrates herd in the Vietnamese Stock Market. A conclusion is similar to previous studies of CH (1995) and CKK (2000). However, it provides a more concrete picture about herd compare to the others. According to this result, the frequency of herd behavior is relatively high in the market. Especially, the frequency of herd behavior at 5% of alpha are used to detect herding days (114 herding days in 1616 trading days).

Table 6 . Number of herd days in the market

Year	Up market		Down market		Total	
	α = 5%	α = 1%	α = 5%	α = 1%	α = 5%	α = 1%
2006	13	8	9	5	22	13
2007	6	1	3	1	9	2
2008	13	9	24	14	37	23
2009	23	9	14	5	37	14
2010	4	1	2	1	6	2
2011	0	0	2	0	2	0
2012	1	0	0	0	1	0
Total	60	28	54	26	114	54

As the result shows, herd behavior appeared frequently from 2006 to 2009. In such period, the stock market developed dramatically, and then dropped significantly. Stocks' price and the market index were much over their real value. However, since 2010, herd behavior rarely happened. Investors have become more rational. Stocks' price came back to their true values without any rapid development or crash. It means that the stock market seems to operate more efficiently and stably.

5. Conclusion

The main purpose of this research is not only proving whether herd behavior exists or not in Vietnamese Stock Market. The fact is that herd behavior usually exists in a financial market, especially in an immature market like Vietnamese stock market. People can easily realize the presence of herd cognitively. In this study, the crucial objective is introducing the new method to detect herd behavior. Through empirical tests and results comparison between this new method with the two methods of CH (1995) and CCK (2000), a deeper comprehension about herd is provided. Therefore, this research can be deemed as an angle of new interest for researchers or potential researchers who are working or going to work in the same field, same topic or topics related to herd behavior detecting.

There have been many methodologies used to detect herd behavior in the world. They used data in the past to test whether herd happened. Therefore, it does not make sense for realistic researchers for it may conflict with the time framed context and reference. The present research particularly contributes to fundamental studies of herd behavior for future researches. It provides basic and moderately significant theory and empirical exploration about herd behavior detecting method.

Thus, this research can be noted to prove a new method which can predict herd in the near future by using daily data. The method's object is more specific and concrete. It is a stock or a group of stocks instead of a whole market like the previous researchers did. With the new method, herd trend of individual stocks or groups of stocks can be detected in advance. Such result can help investors earn profit as well as authorities prevent price bubbles in the future.

References

Bikhchandani, S., & Sharma, S. (2001). Herd behavior in financial markets. *IMF Staff Papers, 47*(3), 279-310.

Chang, E., Cheng, J., & Khorana, A. (2000). An Examination of Herd Behavior in Equity Markets: An International Perspective. *Journal of Banking and Finance*, *24*(10), 1651-1679. http://dx.doi.org/10.1016/S0378-4266(99)00096-5

Christie, W. G., & Huang, R. D. (1995). Following the pied Piper: Do individual returns herd around the market? *Financial Analysts Journal, 51*(4), 31-37. http://dx.doi.org/10.2469/faj.v51.n4.1918

Demirer, R., & Kutan, A. M. (2006). Does Herd Behavior Exist in Chinese Stock Markets? *International Financial Markets, Institutions and Money, 16*(2), 123-142. http://dx.doi.org/10.1016/j.intfin.2005.01.002

Gleason, K. C., Mathur, I., & Peterson, M. A. (2004). Analysis of intraday herding behavior among the sector ETFs. *Journal of Empirical Finance, 11*(5), 681–694. http://dx.doi.org/10.1016/j.jempfin.2003.06.003

Grinblatt, M., Titman, S., & Wermers, R. (1995). Momentum investment strategies, portfolio performance, and herding: A study of mutual fund behavior. *The American Economic Review, 85*(5), 1088-1105.

Hirshleifer, D., & Teoh, S. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics, 36*(1-3), 337-386. http://dx.doi.org/10.1016/j.jacceco.2003.10.002

Hwang, S., & Salmon, M. (2001). *A new measure of herding and empirical evidence*. Warwick Business School: Financial Econometrics Reserach Centre.

Hwang, S., & Salmon, M. (2004). Market stress and herding. *Empirical Finance, 11*(4), 585-616. http://dx.doi.org/10.1016/j.jempfin.2004.04.003

Khan, H., Hassairi, S., & Viviani, J. (2011). Herd Behavior and Market Stress: The Case of Four European Countries. *International Business Research, 4*(3), 53-67. http://dx.doi.org/10.5539/ibr.v4n3p53

Kremer, S., & Nautz, D. (2011). *Short-Term Herding of Institutional Traders: New Evidence from the German Stock Market*. 27 pages, Berlin: SFB 649 Economic Risk.

Lakonishok, J., Shleifer, A., & Vishny, R. (1992). The impact of institutional trading on stock prices. *Journal of Financial Economics, 32*(1), 23-43. http://dx.doi.org/10.1016/0304-405X(92)90023-Q

McClave, J. B. (2011). *Statistics for business and economics*. Pearson Education Inc.

Nofsinger, J. R., & Sias, R. (1999). Herding and feedback trading by institutional and individual investors. *The Journal of Finance, 54*(6), 2263-2295. http://dx.doi.org/10.1111/0022-1082.00188

Ohlson, P. (2010). *Herd Behavior on the Swedish Stock Exchange*. Master thesis, 36 pages, JÖNKÖPING International Business School.

Welch, I. (2000). Herding among security analysts. *Journal of Financial Economics, 58*(3), 369-396. http://dx.doi.org/10.1016/S0304-405X(00)00076-3

Wermers, R. (1999). Mutual fund herding and the impact on stock prices. *Journal of Finance, 54*(2), 581-622. http://dx.doi.org/10.1111/0022-1082.00118