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HERDING IN COLOMBO STOCK EXCHANGE

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ABSTRACT

This study on herding in Colombo Stock Exchange examines the presence of herding behavior in Sri Lankan equity market. The daily returns of the shares of all listed companies in the Colombo Stock Exchange from January 2001 to December 2015 were taken for the study. The model, Cross Sectional Absolute Deviation (CSAD), proposed by Chang, Cheng and Khorana (2000), was used to detect market-wide herding. The regression results show a statistically significant, positive regression coefficient for r_{mt}^2 in line with what is suggested by the Traditional Asset Pricing Model. Hence the study revealed no evidence on market-wide herding in the Colombo Stock Exchange during the period of the study. The lack of research done in emerging markets especially in Sri Lankan context and the inconclusive results of the studies undertaken etc. were the key motives for this study.

KEYWORDS: Herding Behavior, Colombo Stock Exchange, Cross Sectional Absolute Deviation, Market-wide herding, Traditional Asset Pricing Model

1. INTRODUCTION

It is widely accepted that a sound investment decision must be backed by a proper analysis of the fundamentals. Though traditional finance presumes that the investors are rational; i.e. investors make their investment decisions based on risk and return; behavioral finance, which emerged in 1980s, opposes their view showing that investors always tend to deviate from rationality whenever making their investment decisions. Herding behavior is regarded as an emotional bias and it can be treated as an alternative way that investors make their investment decisions. In general, herd behavior refers to the tendency of investors to imitate the behavior of a larger group rather than making their own decisions based on the private information they have. Banerjee (1992) identifies herd behavior as "everyone doing what everyone else is doing even when their information suggests doing something different".

Bikhchandani and Sharma (2000) point out that an individual can be said to herd, if she would have made an investment without knowing other investors' decisions, but does not make that investment when she finds that others have decided not to do so. They have identified two types of herd behavior; intentional herding and false herding; and at the same time, they have identified 03 potential causes of rational herding behavior namely; imperfect information, concern for the reputation and the compensatory structures. As Christie and Huang (1995) point out, investors tend to be rational and they make decisions based on available information under normal market conditions. According to them, herding is more likely to form under conditions of market stress. Herding always results in an inefficient market because whenever investors mimic the behavior of other people rather than going along with fundamentals, the assets prices will move away from their fundamental value. Because of this, when herding exists, the

investors transact at inefficient prices. Also, presence of herding makes diversification difficult for investors. Chang, Cheng and Khorana (2000) point out that when herding is present, the investors require a larger number of securities to achieve the same level of diversification than in an otherwise normal market. Up to now, a number of studies have been done in different contexts to detect herding both market-wide and of a particular group of investors (individual/institutional investors, financial analysts). Most of the studies done relating to herding is for developed markets and very few studies have been undertaken in emerging markets and especially no study has been done in Sri Lankan context. Also, the results of the so far done studies are inconclusive. Further, most of the studies have focused on herding behavior of a particular group of investors rather than the overall, market-wide herding. This study on herding in Colombo Stock Exchange attempts to find out whether market-wide herding (the collective behavior of all investors with respect to market portfolio) exists in Sri Lankan stock market in general. Hence this study is expected to contribute to the existing body of knowledge and also this is expected to contribute to the development of the capital market in Sri Lanka. The rest of the article will cover the review of literature, data and methodology and finally the findings and conclusions.

2. OBJECTIVES

The overall objective of this paper is to examine the presence of market-wide herding in Colombo Stock Exchange in Sri Lanka. In addition to that, going along with the general finding that the relationship between the dispersion and market return is asymmetric in bull and bear market phases, this also attempts to find out any herding evidences in those up and down market conditions separately.

3. METHODOLOGY

This study aims to test whether market wide herding exists in the Colombo Stock Exchange of Sri Lanka, where currently ordinary shares, preference shares, warrants and debentures are traded. The Colombo Stock Exchange, the organization responsible for the operation of the only one share market in Sri Lanka, was formally established in 1985. It is a company limited by guarantee established under the Companies Act No.17 of 1982 and licensed

by the Securities and Exchange Commission of Sri Lanka to operate as a Stock Exchange in Sri Lanka. The Colombo Stock Exchange became the second best performing stock markets in the world in 2010 with the terrorism was totally eliminated in 2009 from the country. By the end of 2015, it had 15 members, 14 trading members, and 287 quoted public companies. As at 31st December 2015, its total market capitalization was Rs. 2,937 Bn, and this was a 19% increase when compared to 2013. The performance of the stock market of a country is an indicator of that country's economic performance and hence this study is expected to contribute to the development of the Sri Lankan capital market by identifying the factors that may lead to market inefficiency, if there is any. This study will use Cross Sectional Absolute Deviation (CSAD) model proposed by Chang, Cheng and Khorana (2000) to detect market-wide herding.

Cross Sectional Absolute Deviation:-
The formula to compute CSAD is given below.

$$CSAD_t = \frac{\sum |R_{it} - R_{mt}|}{N}$$

Where;

R_{it} = Observed return on share "i" during time period t

R_{mt} = Observed return on "market" during time period t

N = Number of shares listed on the Colombo Stock Exchange

According to the method proposed by Demirer et al. (2010), the following hypothesis is considered. Under extreme market conditions, the relationship between the stock return and the market return is nonlinear. In order to highlight the presence of the nonlinear component, a new term was introduced in the CSAD method as follows.

$$CSAD_t = c + y_1 |r_{mt}| + y_2 r_{mt}^2 + \varepsilon_t$$

According to Chang et al. (2000), when there's a moderate to severe herding, the return dispersions will increase/decrease at decreasing rates. Also, they pointed out that when herding exists, this relationship between dispersion and market returns will be negative and non-linear. Hence, a statistically significant, negative coefficient, y_2, will indicate the presence of herding.

Also, it has been found that the relationship between CSAD and market returns is

asymmetric in bull and bear market phases. Hence, the above mentioned general relationship is subdivided into two equations as follows. A positive or zero market return state was considered as bull phase and a negative market return state was considered as a bear phase.

$$CSAD_t^{up} = c + y_1^{up}\left|r_{mt}^{up}\right| + y_2^{up}\left(r_{mt}^{up}\right)^2 + \varepsilon_t \; if \; r_{mt} \geq 0 \tag{6}$$

$$CSAD_t^{down} = c + y_1^{down}\left|r_{mt}^{down}\right| + y_2^{down}\left(r_{mt}^{down}\right)^2 + \varepsilon_t \; if \; r_{mt} < 0 \tag{7}$$

$\left|r_{mt}^{up}\right|$ and $\left|r_{mt}^{down}\right|$ are the absolute values of the market return whenever the market is up and down respectively. A statistically significant negative y_2^{up} and y_2^{down} coefficients indicate the presence of herding.

Christie and Huang (1995) state that herd behavior is a short-term phenomenon and hence it can be observed only during frequent data. Therefore, in order to examine herding in Colombo Stock Exchange in Sri Lanka, daily closing prices of all the stocks listed on CSE during January 2001 to December 2015 were taken into consideration. This resulted in 3,595 time series observations for 327 companies, which remained listed during the period being considered. The All Share Price Index (ASPI) return was used as a proxy for the market return. ASPI includes all stocks listed on CSE. All the data for the entire period under consideration were obtained from the Data Library of the Colombo Stock Exchange.

The return of all individual shares and of the market were determined as follows.

$$R_t = ln\left(\frac{P_t}{P_{t-1}}\right) \tag{8}$$

Where P_t and P_{t-1} represent the day t price and the previous day price respectively.

4. RESULTS
4.1 Descriptive Analysis:-
The descriptive statistics related to CSAD and daily ASPI return are given by Table 7.1: Descriptive Statistics. The average daily return of CSE over the period has been 0.08% whereas the average daily return of the upward and downward markets have been 7.61% and -3.39% respectively. The Sri Lankan equity market shows a relatively high volatility with a standard deviation of 11.92% per day for the whole market whereas it has been 18.37% and 12.47% for the upward and downward markets respectively. The highest daily market return reported over the period has been 18.29% per day whereas the minimum market return reported over the period has been -13.89%.

4.2 Regression Analysis: General Analysis:-

The above explained equation (5) was estimated to identify the evidences of herd behavior of all the investors in Colombo Stock Exchange in Sri Lanka. If the regression coefficient of r_{mt}^2 is negative and statistically significant, that will indicate the presence of herd behavior. The Table 7.2: Regression Results, exhibits the results obtained through regression analysis. The y_2 coefficient is positive and statistically significant and hence we have no evidence to state that herding exists in Colombo Stock Exchange in Sri Lanka during the period of the study.

4.3 Regression Analysis: Analysis for Bull and Bear Market Phases:-
The equations (6) and (7) were estimated to identify any evidences of the presence of herding in bull and bear phases of the market separately. The Table 7.3: Regression Results for Up and Down Markets shows the regression results. Statistically significant positive coefficients for both y_2^{up} and y_2^{down} shows that no herding exists in bull and bear phases of the market during the period of study.

5. SUGGESTIONS

Lack of evidence on market-wide herding in Colombo Stock Exchange in Sri Lanka during the period of study leaves us a new point to think on whether Sri Lankan investors act rationally whenever making investment related decisions. A questionnaire based survey targeting the individual investors and institutional investors will allow us to come to a conclusion on whether Sri Lankan investors do act rationally in their investment related decision making.

6. CONCLUSION

The study of Herding in Colombo Stock Exchange was undertaken with the objective of identifying any evidences for the presence of market-wide herding in the equity market in Sri Lanka. The daily return data for all the stocks listed on the Colombo Stock Exchange during the period from January 2001 to December 2015 were taken for the study whereas the daily return on the All Share Price Index were taken as a proxy for market return. The model, Cross Sectional Standard Deviation (CSAD) suggested by Chang, Cheng and Khorana (2000) was used to calculate return dispersions and that was regressed against market return to identify herd behavior. The estimated model did not provide any evidence of herding because the regression coefficient, r_{mt}^2, was positive and statistically significant indicating that herding does not present in Colombo Stock Exchange in Sri Lanka. Also, the estimated model for bull and bear phases of the stock market provide no evidence of herding in either phase during the period of study. This finding is in contrary to what Christie and Huang (1995) found that emerging markets exhibit more herding behavior but consistent with lots of empirical research done in emerging contexts.

7. FIGURES, TABLES AND REFERENCES

7.1. TABLES

Table 7.1: Descriptive Statistics

	Mean	S.D.	Min.	Max.
CSAD	0.0356	0.0287	0.0037	0.6426
Rm	0.0008	0.1192	-0.1389	0.1829
$CSAD_t^{up}$	0.0365	0.0278	0.0047	0.5321
$CSAD_t^{down}$	0.0161	0.0263	0.0000	0.6426
r_{mt}^{up}	0.0761	0.1837	0.0001	0.9948
r_{mt}^{down}	-0.0339	0.1247	-0.9968	0.0000

Source: Author

Table 7.2: Regression Results

Coefficients			
Model	Unstandardized Coefficients	t-statistic	sig
Constant	0.022	42.343	0.000
$|r_{mt}|$	1.837	30.246	0.000
r_{mt}^2	1.968	2.784	0.005
Dependent Variable: CSAD			
Adjusted R Square	0.423		
F Statistics	1,318.336		
p-value	0.000		
N	3,595		

Source: Author

Table 7.3: Regression Results for Up and Down Markets

Coefficients				Coefficients			
Model	Coefficients	t-statistic	sig	Model	Coefficients	t-statistic	sig
Constant	0.354	45.025	0.000	Constant	0.324	39.477	0.000
$\left| r_{mt}^{up} \right|$	-0.187	-9.715	0.000	$\left| r_{mt}^{down} \right|$	-0.133	-6.849	0.000
$\left(r_{mt}^{up} \right)^2$	0.265	14.034	0.000	$\left(r_{mt}^{down} \right)^2$	0.203	10.865	0.000
Dependent Variable: $CSAD_t^{up}$				Dependent Variable: $CSAD_t^{down}$			
Adj. R Sq.	0.098			Adj. R Sq.	0.066		
F Statistic	101.727			F Statistic	60.627		
p-value	0.000			p-value	0.000		
N	1,857			N	1,690		

Source: Author

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