

An Analysis Of Herding Behavior In The Dhaka Stock Exchange During Bull And Bear Markets

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Abstract

*The purpose of this study is to investigate the presence of herding behavior in the investors of Dhaka Stock Exchange (DSE). Herding behavior is characterized as taking decision based on observing the actions of others instead of following own beliefs. The daily closing price data of 464 listed stocks for the period of January 2018 to February 2025, were used to calculate Cross-Sectional Absolute Deviation (CSAD) and cross-sectional standard deviation (CSSD). The analysis reveals significant evidence of market-wide herding in the DSE. More critically, by partitioning the data into extreme up (bull) and extreme down (bear) market conditions, we find that herding is **significantly more pronounced during extreme down markets (market crashes)**. This finding suggests that fear and panic are stronger drivers of collective investor behavior in the DSE than greed and speculation. The results have important implications for market regulators and investors in understanding the unique behavioral dynamics of the Bangladeshi equity market.*

Keywords: Herding behavior, DSE, Bull market, bear market.

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I. Introduction

The act of committing money or capital to an effort with the goal of gaining extra revenue or profit is referred to as investing. This can include stocks, bonds, real estate, or other assets with the potential to increase in value or create income. Typically, the purpose of investing is to accumulate wealth over time and/or to provide a consistent stream of income. Investment decision is always a vital decision in every human's life. Behavioral finance is an emerging field of study that integrates theories and studies from different academic disciplines like psychology sociology and economics to understand why individuals make certain financial decisions and how those decisions affect financial markets. One of the important deviation from the standard investment rule is herding. Herding behavior is characterized as tendency or behavior of the investor to copy the other investors instead of relying on their own judgment and information in making investment decision (Rook, 2006). It is a phenomenon of people to follow the crowd. In following the crowd people forget to apply their own judgment and inner convictions. It is often characterized as imitating others even if we have information to the contrary. It can be presented as alignment of thoughts of a number of people without any centralized command.

The Dhaka Stock Exchange (DSE) is a very large stock exchange in Bangladesh with annual turnover of approximately BDT 1.5 trillion in 2024. The total market capitalization stood at BDT 7884492.964 million (DSE PLC. 2025). The market is a mirror of Bangladesh economy. The market is characterized as a retail investor based market where institutional investment is not that much prevalent. Like all other stock exchange it shows behavioral biases. Herding is one of them. It shows the following the trend with any analysis or ignoring the analysis. The purpose of the paper is to investigate whether the herding behavior is symmetric during bearish and bullish market. The central question addressed is: Is herding more pronounced during market crashes or during speculative bubbles in Bangladesh?

Herding behavior in any market is influenced by investors' psychology and various market conditions. Herding occurs when investors mimic actions of others in rather than relying on their own judgment and information.

II. Literature Review

The concept of efficient market hypothesis suggests that all the participants in the market are rational and information is symmetrically available and all prices reflect available information (Fama, 1970). But the

real world scenario tells something else. A number of empirical evidences challenged the EMH and gave birth of behavioral finance (BF). BF is a field of study that integrates psychology with finance. It is better able to explain the behavioral anomalies of the investor (Kahneman & Tversky, 1979; Shiller, 2003).

The root of herding lies in theories of social proof and informational cascades. Here people take decision from the action of others (Bikhchandani et al., 1992). In financial markets, herding leads to systematic deviation of stock prices due to decision taken by investor by copying others. The empirical model to calculate herding was developed by Chang, Cheng, and Khorana (2000). This model suggests that if herding exists, the dispersion of individual stock returns around the market return will decrease non-linearly as the absolute market return increases. In a rational market, dispersion should increase linearly with market return.

The Dhaka stock exchange is the larger among the two bourses in Bangladesh. It has a huge number of retail investors in this market. The number of beneficiary owner (BO) account is 1,632,227, while 1,209,207 accounts have any security (CDBL 2025).

III. Data And Methodology

Research Design and Data

The research is a quantitative one with the intention to measure the herding behavior in Dhaka Stock Exchange of Bangladesh an emerging economy of South Asia. The study aimed to do it for both bull and bear market conditions. Return dispersion methodology pioneered by Christie and Huang (1995) and refined by Chang, Cheng and Khorana (2000) was adopted. This methodology is very suitable and widely used for measuring herding behavior in emerging market.

The data for this study consists of daily closing prices for 464 stocks listed on the Dhaka Stock Exchange (DSE). The sample period spans from January 1, 2018, to February 26, 2025, providing a robust time series of over seven years of trading data which covers period of Covid-19. To maintain data quality and consistency several screening and criteria were applied. Script with less than eighty percent of price and volume data were excluded. We adjusted price data for corporate actions like declaration of cash and stock dividend, rights offering and stock splits. Market return was calculated by doing a simple average of the return of the companies. In Bangladesh this was practiced by many researcher in the past (Afrin, 2023; Islam, 2022).

Measuring Herding:

To calculate the herding effect we needed the daily return of the stock listed in DSE. The daily log returns $R_{i,t}$ for each stock were calculated as

The equal-weighted market return ($R_{m,t}$) was calculated as the simple average of all individual stock returns on a given day. The Cross-Sectional Absolute Deviation (CSAD) measure captures the dispersion of individual stock returns from the overall market return and is computed as:

Where, $R_{i,t}$ denotes return of stock i for period t , $R_{m,t}$ denotes return of the market for the period t , and N_t is number of securities for period t . Herding behavior is then tested using the non-linear regression model:

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 + \epsilon_t.$$

Here, α is a constant that represent an intercept of the regression equation. γ_1 is the coefficient of independent variable market return, γ_2 is the coefficient of square of the market return. ϵ_t is the error terms.

We also calculated the cross sectional standard deviation (CSSD) using the following formula:

Where, $R_{i,t}$ denotes return of stock i for period t , $R_{m,t}$ denotes return of the market for the period t , and N_t is number of securities for period t . CSSD was also regressed using a non-linear regression equation:

$$CSSD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 + \epsilon_t.$$

A negative and statistically significant coefficient on the squared market return term (γ_2) indicates the presence of herding. This negative non-linearity suggests that, under extreme market movements, return dispersions shrink rather than widen. This is consistent with investors collectively following the market consensus. Prior empirical evidence from emerging markets also reports asymmetric herding, typically stronger during market downturns, reflecting a fear-driven behavioral response.

Market Condition Definition

To test for asymmetric herding, the sample period was divided into three distinct market conditions based on the daily market return:

1 **Full Sample:** All trading days.

2 **Extreme Up (Bull) Market:** Days where average return falls in the top 10% of the market return distribution.

3 **Extreme Down (Bear) Market:** Days where average return falls in the bottom 10% of the market return distribution.

The CSAD regression model was applied separately to each of these three sub-samples.

IV. Empirical Results And Discussion

Descriptive Statistics-CSAD

The descriptive statistics of the study of CSAD is given in Table 1. It shows that there were 1690 observations in the study for the full data set. From that sample only 10 percent were considered as up or bull market. On the other hand ten percent from the down were considered as bear market. So for both bull and bear there were 169 observations each.

Table 1: Descriptive Statistics of CSAD and Market Return

Variable	Sample	Count	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
CSAD	Full Sample	1690	0.0167	0.0058	0.0025	0.0960	2.0822	22.0177
	Extreme Up (Bull)	169	0.0221	0.0060	0.0116	0.0562	2.1112	9.3902
	Extreme Down (Bear)	169	0.0193	0.0082	0.0067	0.0960	5.0685	45.0870
Market Return	Full Sample	1690	-0.0001	0.0112	-0.0788	0.1283	0.7244	14.6990
	Extreme Up (Bull)	169	0.0195	0.0125	0.0110	0.1283	4.8016	34.9577
	Extreme Down (Bear)	169	-0.0199	0.0092	-0.0788	-0.0125	-3.1717	13.2305

Source: Author's own calculation.

CSAD of the full sample shows an average dispersion of return of 0.0167 and a standard deviation of 0.0058. It is positively skewed (2.08). The kurtosis of 22.01 shows that the sample is highly leptokurtic. Whereas the market return shows an average dispersion of negative value nearly zero with standard deviation of 0.0112. It is also positively skewed and high in Kurtosis.

CSAD Regression Results

The results of the OLS regression for the full sample and the two extreme market conditions are presented in Table 2.

Table 2: CSAD Regression Results for the Dhaka Stock Exchange

Variable	Full Sample	Extreme Up (Bull) Market	Extreme Down (Bear) Market
Intercept (α)	0.0139***	0.0171***	0.0043
R_{mt} (γ_2)	0.3918***	0.2474	0.9542
(γ_2)	-1.0231*	0.2856	-8.3930*
R-squared	0.240	0.330	0.217
Observations	1690	169	169
Herding Conclusion	Detected	Not Detected	Detected

***Significant at the 1% level.

In a rational market CSAD should increase linearly with absolute market return. The coefficient is expected to be positive and significant. Herding occurs when investor suppress their own beliefs and follow the consensus. If γ_2 is negative and statistically significant, herding is present in the market. From the table above, the γ_2 for the full sample is negative 1.0231. it is statistically significant at 10% level. The R^2 of 0.240 indicates that market movements explain about 24% of the variation in CSAD, which is reasonable for this type of cross-sectional model

The bearish market (down) has γ_2 of negative 8.39. It shows herding at the peak. Because during sharp decline in the market investors herd more and the prices converge.

No evidence of herding is detected in the bullish market condition. This is consistent with the idea that during winning the investors freely follow their choice to chase the winner. So the prices don't converge.

Descriptive Statistics-CSSD

The cross sectional standard deviation for the period is shown in the following table.

Table 3: Descriptive Statistics of CSSD

Variable	Sample	Count	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
CSSD	Full Sample	1690	0.0270	0.0167	0.0073	0.3745	9.0470	138.5189
	Extreme Up (Bull)	169	0.0344	0.0241	0.0165	0.2212	4.9959	30.6523
	Extreme Down (Bear)	169	0.0319	0.0319	0.0121	0.3745	8.2488	82.1735

The above table gives descriptive statistics for the Cross-Sectional Standard Deviation (CSSD) which is also a return dispersion used in herding analysis. The mean CSSD is 0.027 for all the stocks this higher than the CSAD (0.0167). The return are very positively skewed (9.047). It shows a very high kurtosis of 138.5189. It confirms an extremely fat tail.

The bull and bear market conditions show mean CSSD of 0.0344 and 0.0319 respectively. Skewness of bear market (8.25) is much higher than the bull (4.99). On the other hand, the kurtosis value of bear market is 82.17 compared to 30.65 for the bull market. The high kurtosis of the full sample is attributable to the bear market.

CSSD Regression Results

The results of the OLS regression for the full sample and the two extreme market conditions are presented in Table 4.

Table 4: CSSD Regression Results for the Dhaka Stock Exchange

Variable	Full Sample	Extreme Up (Bull) Market	Extreme Down (Bear) Market
Intercept (α)	0.0262***	0.0202***	0.0013
$R_{m,t}(\gamma_2)$	-0.0032	0.8188**	-1.9839**
(γ_2)	6.2435***	-3.3477	-18.6591
R-squared	0.037	0.070	0.053
Observations	1690	169	169
Herding Conclusion	Not Detected	Not Detected	Not Detected

The coefficient of (γ_2) of full sample is 6.2435. This is **positive and highly significant**. It means, as market return becomes extremely positive or negative, the cross sectional dispersion increases at an increasing rate. It means herding is not detected. For the bull market, the coefficient of γ_2 is -3.3477, which is negative and not statistically significant. On the other hand, the bear market condition shows coefficient of γ_2 of negative 18.66. This is the most critical test, as herding is most expected during panic and downturns. While the coefficient is strongly negative, the lack of statistical significance means we cannot reject the null hypothesis that there is no non-linear relationship. The market shows high volatility in dispersion.

Summary

The full sample analysis yields a negative and statistically significant coefficient for the squared market return. This result confirms the existence of market-wide herding behavior in the Dhaka Stock Exchange. This finding is consistent with the general understanding of frontier and emerging markets, where informational inefficiencies and a dominant retail investor base often lead to collective, non-fundamental trading.

Asymmetric Herding: The analysis of the extreme market conditions provides the most significant insight:

- **Extreme Up (Bull) Market:** The gamma coefficient is positive (0.2856) and statistically insignificant (p-value = 0.673). This indicates that herding behavior does not exist during periods of extreme positive market returns (speculative bubbles). In these periods, investors appear to maintain their individual beliefs, suggesting that the DSE is less prone to "greed-driven" herding.
- **Extreme Down (Bear) Market:** The gamma coefficient is strongly negative and highly significant ($\gamma_2 = -8.3930$, p-value < 0.01). The magnitude of this coefficient is nearly eight times larger than the full sample coefficient. This result provides a clear answer to the research question: Herding is significantly more pronounced during market crashes in the Dhaka Stock Exchange.

This strong evidence of herding during market downturns suggests that fear and panic are the dominant psychological drivers of collective behavior in the DSE. When the market experiences sharp declines, investors abandon rational decision-making and rush to sell, leading to a clustering of returns and a collapse in market dispersion. This is a classic "flight-to-safety" or panic-selling scenario, which is often exacerbated by the rapid

spread of negative news or rumors through local social media groups and informal networks, which the user suggested as a potential local catalyst.

V. Conclusion And Policy Implications

The findings of the study confirms the presence of strong herding behavior in the Dhaka Stock Exchange. There is asymmetric presence of this behavior. This herding tendency is more pronounced during the period of bearish market. During the period of bullish tendency the market show less of the herding behavior. When investor start losing, they fail to apply their judgments and start following the crowd. The result is quiet natural and shows the psychological aspect of investment behavior. Though human being is considered rational, they cannot apply this rationality uniformly in all situations. Due to this herding behavior the falling market starts to fall sharp. The regulators can find some implications of this study. Bangladesh Securities and Exchange Commission (BSEC) can focus on implementing robust circuit breakers and cooling-off periods to mitigate panic selling during sharp market declines. Furthermore, efforts to enhance financial literacy and combat the spread of unverified investment "tips" on social media platforms like Facebook and YouTube are crucial to fostering a more rational investor base. Investors should be aware of the strong herding tendency during bear markets, as it indicates that prices during these periods are likely driven by emotion rather than fundamental value. This knowledge can inform counter-herding strategies for long-term investors. Future research could extend this analysis by incorporating social media sentiment data to directly test the influence of local catalysts on the observed herding behavior.

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