

Herding Behavior of Investors in Pakistan Stock Exchange during Covid-19

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ABSTRACT

This study attempts to investigate the presence of herding behavior during COVID-19 in Pakistan Stock Exchange (PSX). Cross Sectional Standard Deviation (CSSD) is used for detecting the deviation in returns of the selected firms on a particular date. Linear regression is used to test the presence of herding behavior. The study of the data covers all the three lock down periods in Pakistan of COVID-19 in Pakistan. The results of the study concluded that during investors of individual firm don't follow herd during upward market movement, but on other hand they follow herd during downward market movements.



Introduction

There are certain circumstances in economic and social life where the actions of some people affect the decisions of other people. For example, in normal routine when people purchase something for personal use such as car, dresses, plot etc., their choice is affected by other people's choices to a large extent. This behavior of people is generally referred to as herd behavior. Chaudhry and Sam (2018) stated that unreasonable behavior among investors indicates that there is an anomaly in the capital market because investors stereotype the action of the established investors without checking the accuracy of information that underlies that action. The behavioral finance theories suggest that most of the investors mimic other investor's actions, during turbulent period of fear, uncertainty and panic. The ongoing corona virus disease 2019 (COVID-19), has affected the all over the world economies, as well weakened the performance of stock markets due to fear among the investors. (Shah et al, 2021) also stated that Pakistan lost one third of his revenue on exports as a result of the corona outbreak.

An unprecedented disease originated from China since December 2019, which was named COVID-19 later on, and was spread across the globe, and became a pandemic.. After the mass spread of the COVID-19 pandemic within the Republic of China, specifically in the province state of Wuhan, the

negative effect of COVID-19 outbreak has been felt all over the world. On 30 January 2020, the World Health Organization (WHO) announced the COVID-19 pandemic as a Public Health Emergency of International Concern (PHEIC) to warn the countries over the world about the spread of the deadly virus. On 11 March 2020, the WHO declared COVID-19 as a pandemic. The COVID-19 pandemic destabilized the global financial markets, including Pakistani stock market. In this article, we examine whether the COVID-19 outbreak causes herd formation in stock markets, specifically at the firm level.

Problem Statement

Herding behavior is an emerging area in research, different authors have tested it, but the result is contradictory to one another. So it needs proper investigation. Secondly it has been tested during normal market movements. So it needs to be tested during particular market situation like recently market fluctuations due to Covid-19.

Significance of the Study

The research on the herding behavior in stock markets is of great relevance to improve knowledge about the factors influencing the prices of financial assets. It also helps in better understanding in the current debate on validity of tradition models of assets pricing. This study focuses on testing the existence of herding behavior of firms listed on Pakistan Stock Exchange (PSX) during Covid-19. The study helps the individual investor to decide himself about optimal investment decision. The study not only helps the fund's managers in assessment and selection of stocks, but also helps them either to follow or avoid the herd in particular situations. Decision makers can also take help from the study that during which particular situations firms listed on the PSX herd toward market or industry portfolios.

Research Questions

The main question of the study is, that whether in investors herd during Covid-19 in Pakistani Stock Exchange? Besides this, the study will answer the following questions?

- Are investors follow herd during of COVID-19 in PSX in upward market movement.
- Are investors follow herd during of COVID-19 in PSX in downward market movement.

Objectives of the Study

The main objective of the study is to investigate the presence of herding behavior of investors in Pakistan stock market during Covid-19. Besides these the following are the secondary objectives of the study.

- To investigate presence of herding behavior COVID-19 in PSX in upward market movement.
- To investigate presence of herding behavior COVID-19 in PSX in downward market movement.

Literature Review

Most of the research in the field of finance is based on traditional view of EMH (Shleifer 2000). This traditional view of finance has assumed that market cannot be beaten in long run by any investment strategy, as prices fully reflect all available information. But according to modern finance theories, investors' behavior affects share prices in irrational way. Herding behavior is one of these behaviors of investors, which is explored most frequently (Asgharian, 2012). The view of classical finance the investors on the basis of their private information invest rationally has been challenged by the recent researchers view, that in some market situations investors suppress their

owner information and follow the observed herd. (Dong et al, 2010). Herding occurs in case of volatility in prices of assets and uncertainty regarding occurrence of information.

According to rational asset pricing model during market stress the dispersion in return increased, but this depression reduced toward market in case of herding behavior, (Christie et al. 1995). The first study conducted by Christie et al. (1995) and tested the hypothesis that investors herd during extreme market movements. The data of stock prices is collected from New York Stock Exchange (NYSE), America Stock Exchange (AMEX) and from Center for Research in Securities Prices (CRSP). Cross Sectional Standard Deviation (CSSD) and Cross Sectional Absolute Deviation (CSAD) are used for analysis of the data during market stress. The authors found no herding in the selected financial markets of United stated, as the results of the paper show high dispersion in prices during extreme market movement. Similarly Gleason, et al. (2004) also tested herding behavior in America Stock Exchange (AMEX), by using intraday data. CSSD and CSAD were used by the authors for analysis purpose. The authors found no evidence of herding in up market and down market in the stocks of nine sectors traded on the American Stock exchange.. Similarly Chen (2020) empirically investigated country level intraday herding behavior of investors in global market. The author found significant herding behavior of investors among country level investors, the study also found that that country level herding consists of informed and uninformed herding where uninformed herding is five times as greater as informed herding.

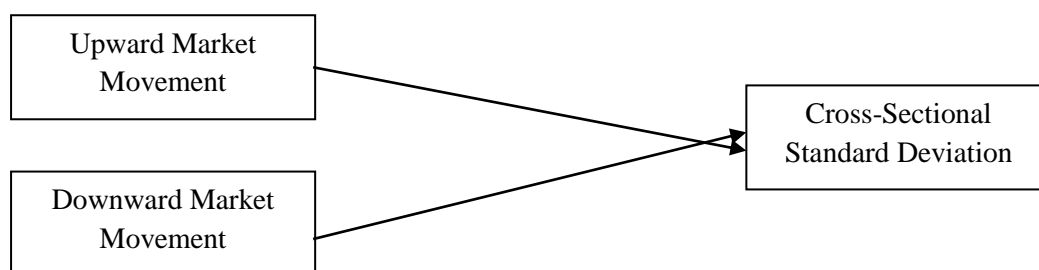
Jabeen & Farhan (2021), tested the herding behavior during covid-19 pandemic which not only effected health, but also enforced the world for great lockdown. Billions of businesses have shut down and GDP of all most of all countries have been effected. The authors used Cross Sectional Standard Deviation (CSSD) and found herding behavior especially during bearish market as compare to bullish market. Similarly Wu, Yang and Zhao (2020) investigated herding behavior in Chinese stock market during Covid-19 pandemic. The authors used the same methodology used by Christie and Huang (1995) and Chang et al. (2000) and found significantly low herding behavior in Chinese stock market during Covid-19 as compare to usual market situations. Similarly Demirer and Kutan (2006) also used cross-sectional standard deviation to investigate herding behavior in the emerging market of China. The authors have taken stocks return data related to 375 Chinese firms traded on Shanghai and Shenzhen Stock Exchange for the period of January 1999 to December 2002. They found higher dispersions in equity returns in the period of large changes in aggregate market index. The authors observed that dispersion in extreme downside movements was lower as compare to extreme upward movements. Indicating that during down markets stock returns behave most similarly, the results of the paper is consistent with efficient market, and assets pricing model. Similarly Chiang and Tan (2010) examined herding behavior of investors in Chinese stock market. For analysis the authors collected data of 861 A-share firms from Shanghai and 639 A-share firms from Shenzhen stock exchange and 55 B-share firms from Shanghai and 59 from Shenzhen stock exchange. To test the hypothesis the authors used least square method and cross-sectional and absolute standard deviation to find herding behavior in both A and B share Stocks. The Statistical results of the paper show that the deviation in A-share returns is less as compare to B-share return. Similarly (Yao et al. 2014), also investigated the existence of herding behavior across A and B stock markets. They found different level of herding behavior in both the stock exchanges, particularly strong existence of herding in B share Market. The author also found that investor herd mostly in down word market movements. Similarly Lao and Singh (2011) tested the existence of herding behavior in Chinese and India stock markets. The author found higher herding behavior of investors in Chinese market during falling market, and found high herding behavior in India stock market during upward swings in high volume.

Shah et al. (2017) tested herding behavior in PSX, the authors claimed that the study contributed to the literature in many facets, such as herding in crisis period which has not been checked

previously in Pakistan, herding of individual firms toward market, herding of small and large stocks, herding of low and highly traded stocks. Herding of individual firm toward market portfolio and herding of market portfolio toward market. The daily data of 609 firms listed on PSX for the period 2004 to 2013 has tested through Cross Sectional Standard Deviation (CSSD) previously used by Christie and Huang (1995). The results of the study found that large firms show herding in extreme market movements. The authors further found that several firms herd toward industry portfolio. The authors also found herding of industries portfolio toward market and herding during crisis period. Similarly Yousaf et.al (2018) examined herding in PSX during various market movements, like crisis period, Ramadan effect, this authors also used the methodology of Christie and Huang (1995) and Chang et al., (2000). Stock return from 2004 to 2014 has been used for analysis, they found that data related to daily stock return revealed the absence of herding during upward and downward market movement, while found herding during days of low trading, the authors have also checked herding on the basis of period and found that herding exist inn Pakistani stock market during 2005, 2006 and 2007, while rest of the sample period herding has not been found. Herding has not also been found during Ramadan, but during the crisis period of 2007-09 the herding has been witnessed by the authors. But on other hand Malik and Elahi (2014) used OLS and Quantile regression to test herding behavior in share prices of 261 companies listed on KSE. They found significant evidence of herding behavior in extreme market movements. But on other hand Javed et al. (2011), conducted a study in the developing economy of Pakistan. The data collected for this purpose is related to KSE 100 index. The authors used the methodology of Christie et al. 199), and found no herding in Karachi Stock Exchange (KSE).

Theoretical Framework

According to Christie and Huang (1995) herding phenomenon in extreme market movement. By extreme market movement the authors mean that upward and downward market movement. The authors further described that existence of herding on the basis of deviation of individual stock price from market index, for this purpose they used Cross-Sectional Standard Deviation (CSSD). The situation where this deviation is high then there will be no herding and every investor will follow his own way. But on other hand if the deviation is low or no deviation then it indicates that the investors in market follow the observed patterns and are herd to market.



Testable Hypotheses

1. To test the existence of herding behavior of Pakistani investors during COVID-19 in upward market movement.
2. To test the existence of herding behavior of Pakistani investors during COVID-19 in downward market movement.

Methodology

Methodology of the study includes the tools and techniques used to collect the data and analyze the data.

Population of the Study

The data in the study will from all firm listed on Pakistani Stock Exchange from January, 2020 to November, 2022.

Data Collection Tools

This section of the study describes various tools that are used for collection of data to be tested. The most common data collection tools are; interview, questioners, case studies, observations etc. in this study secondary data will be collected from websites, like www.kse.com and <https://finance.yahoo.com>.

Sampling Techniques

On the basis of this discussion it is concluded that cluster sampling will be used in this study as the data is related to different situations. i.e. crisis period, extreme market situations and the period of COVID-19. The Covid-19 period will cover all the three lock down periods in Pakistan.

Data Analysis Tools

In this study the statistical models used by Christie et al. (1995), is used. These researchers used cross sectional standard deviation for measurement of dispersion of stock returns. Following is the statistical model of CSSD used in this study.

$$CSSD_t = \sqrt{\frac{\sum_{i=1}^n (r_{j,t} - \bar{r}_t)^2}{n-1}}$$

In the above model ($r_{j,t}$) represents the return of individual Stock Return (j) for time (t). While (\bar{r}_t) represents cross-sectional mean of the n returns for (t) time period n represents the number of firms available at time t.

$CSSD_t$ Measures the deviation between individual returns from the cross-section mean return on a particular date. The deviation of individual returns from cross-sectional mean indicates no herding in stock market. In case of less or no deviation of individual returns from cross-sectional would indicate the existence of herding behavior. This rationale shows that investors follow the collective action of market and suppress their own beliefs. Further they used two linear regressions of dummy variables (i.e. one for 1% increase or decrease in returns and other for 5% increase or decrease in returns) to capture the extreme market movements. But this study use five linear regressions for 1%, 2%,3%,4% and 5% increase or decrease in returns to capture the extreme market movements. The linear regression model is following.

$$CSSD_t = a + \beta_1 D_t^U + \beta_2 D_t^L + \varepsilon_t$$

D_t^U Is dummy for up market movements (1 to 5% increase in returns) and D_t^L is dummy for lower market movements (1% to 5% decrease in returns) at time (t). $D_t^L=1$ if the aggregate return of market portfolio is in lower tail of the dispersion and 0 otherwise. And $D_t^U=1$ if the return on market portfolio is in upper tail of the dispersion and 0 otherwise. Negative and statistical significant coefficients, of β_1 (up market conditions) and β_2 (down market conditions) show that there is herding in the market and vice versa. Christie et al. (1995).

Analysis of Empirical Results

This section of the study reports empirical results of herding behavior during COVID-19 in PSX from January 2020 to November 2022.

Herding Behavior during COVID-19

The CSSD at each date was determined during COVID-19 from January 2020 to November 2022, to investigate whether individual firm share prices follow the overall market. For measuring herding behavior in various market conditions, the deviation of a specific firm return (r_i) with the market return (\bar{r}_m) is determined in Up and down market dummies, such as Du1, Du2, Du3, Du4, and Du5, have been used to capture these market trends. The dummies for 1% to 5% downward market moves are D11, D12, D13, D14, and D15.

Table 4.1: Herding of Individual Firm to Market during COVID-19

Du/DI	Constant	β_1	P-Value	T-value	β_2	P-Value	T-value
Du5/D15	0.056	0.002	0.0000	3.650	-0.045	0.0000	120.030
Du4/D14	0.035	0.014	0.0000	56.220	-0.032	0.0000	181.140
Du3/D13	0.027	0.017	0.0000	121.070	-0.001	0.0000	167.750
Du2/D12	0.014	0.015	0.0000	173.200	-0.001	0.0000	196.740
Du1/D11	0.006	0.006	0.0000	106.690	0.001	0.0000	155.100

Table 4.1 shows regression results for all firms in the study during COVID-19 for market shifts ranging from 1% to 5% upward and downward. Positive coefficients of β_1 (1% to 5% upward market movements) and 1% downward market movement implying that variance under severe market circumstances is larger than variance on typical days and negative coefficients of β_2 (2% to 5% downward market movements), indicate that variance under severe market circumstances in downward market movement is lower during COVID-19 in Pakistan.

The results of these findings, it can be concluded that during COVID-19 investors of individual firm don't follow herd during upward market movement, but on other hand they follow herd during downward market movements when the prices fall by 5%, 4%, 3% and 2% due to fear of loss. However during 1% downward market movement no herding is found. The result of this study is in line with the finding of Christie and Haug (1995).

Discussion

Based on herding behavior theory, this study investigates the behavior of Pakistani investors, whether they follow other investors while investing during COVID-19, or not. This study empirically examines the presence of herding behavior in upward and downward market movements during COVID-19. The hypothesized behaviors of investors have been tested and find that investors follow herd during COVID-19 especially in downward market movements.

During the COVID-19 the findings confirmed significant positive relationship between CSSD and coefficient of upward market movements, and significant negative relationship between CSSD and

downward market movements. That shows that H_1 is accepted that there is no herding behavior during COVID-19 in upward market movement, and H_2 is rejected that investors following herding behavior during COVID-19 and the hypothesis also relate with that it was recognized as a global crisis and the COVID-19 pandemic negatively affects the globe and economic industry (Shah et al., 2021). On other hand the results shows that H_1 is rejected that there is no herding behavior during COVID-19 in downward market movement, and H_2 is accepted that investors following herding behavior during COVID-19. These findings support Christie et al. (1995), Javed et. al (2011) and Shah et. al (2017), indicate that PSX investors are rational and make sensible investments.

Summary

This study has tested the herding behavior of investors in Pakistan stock exchange during COVID-19. The results of the papers show that investors of PSX don't follow herd during during upward market movement, but follow herd during downward market. These findings support Christie et al. (1995) and indicate that PSX investors are rational and make sensible investments.

Recommendations for Future Research

Researchers can perform different experiments to evaluate institutional and individual investor herding behavior, as this study only looked at firm-level herding during COVID-19. Researchers can carry out further research by choosing a new sample period. Only daily stock returns were employed in this study; future researchers can investigate herding behavior with weekly and monthly returns. Moreover this study check herding behavior during Covid-19 from secondary data, as it is behavioral factor it would be better to test it qualitatively through interview.

Scope and Limitations of the Study

This study represents the herding behavior of firms listed the on PSX only during 1st, 2nd and 3rd lockdown; it may not represents investment behavior of investors outside Pakistan. This study tests herding behavior of investors during COVID-19.

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