Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Herding Behavior and Its Impact on Market Volatility: Empirical Evidence from the Pakistan Stock Market

Farooq Shah
Assistant Professor, Department of Management Sciences, CECOS University of IT & Emerging Sciences, Peshawar, Pakistan. Email: farooq@cecos.edu.pk

Muhammad Imran*
Manager Finance, CECOS University of IT & Emerging Sciences, Peshawar, Pakistan.
*Corresponding Author, Email: muhammadimran@cecos.edu.pk

Shiraz Khan
Associate Professor, Department of Management Sciences, CECOS University of IT & Emerging Sciences, Peshawar, Pakistan. Email: shiraz@cecos.edu.pk

Abstract
This paper aims at establishing the relation between herding and volatility with a reference to the Pakistan Stock Market and emerging and empirical evidence on the gains made from collective behavior by investors. The investigation of investor sentiment during the period of stress is done with the help of CSAD, GARCH model researches, and Panel Regression. In this research, the study presents the findings that indicate that herding behavior contributes prominently to increased market vulnerability and fluctuation, particularly amidst increase in uncertainty due to stock fluctuations; this out rightly highlights that retail investors due to their tendency to herd, result in irrational price movements. Overall, given the fact that herding behavior within the context of the shadow banking system has major implications for pecuniary policies, the empirical evidence can potentially foster policymaking, provide suggestions to financial organizations, and draw further attention to risk management to decrease the realization of herding behavior's detrimental impacts. The paper adds to the existing literature on behavioral finance, especially in emerging markets and enhances understanding of investor psychology's implications for market stability. In conclusion this paper presents the limitations of the study and makes recommendations for further research which includes studying the impact that institutional investors as well as macroeconomic factors may have on herding and the volatility of the market.

Keywords: Herding Behavior; Market Volatility; Pakistan Stock Market; Rationality; Behavioral Finance

Introduction
Herding behavior, a topic in the field of behavioral finance, involves copying the patterns of other people's behavior without necessarily evaluating the information

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

personally. This is done on the back of calls to do so by groups, friends or respected financial gurus instead of this being as a result of the outcome of an individual's research and analysis of certain stock. The origin of herd behavior can be marked back to Keynes, 1936 and Galbraith, 1955 who also and primarily noted that psychological motives influence the decision-making process thereby causing market anomalies and fluctuations. Bikhchandani, Hirshleifer, and Welch (1992) established this theory and reacted that individuals make use of other's action as a guide when they are not sure which action to take which bounded rationality causing information cascade and herd behavioral in the financial market. That is, while early discussion of the herding phenomenon occurred in mostly in theoretical terms, more recent work has turned to empirical analysis. The initial attempts, for instance, Banerjee (1992), pointed out that even where individuals have private information, they go ahead to herd because they do not want to be wrong. Starting from a basic framework of herding, subsequent research has focused on understanding the effects of herding on market efficiency and has pointed to the ability of herding to lead to distortions between share prices and value and to widen the fluctuations of prices in the stock market especially during conditions of crisis or a high degree of uncertainty (Choe et al., 1999, Lux, 1995). The effects of herding tendencies for several financial audiences have been especially evident in emerging markets mainly because of lower levels of institutional environment, lack of general knowledge on the part of investors as well as presence of information asymmetry which in essence increases the volatility of the markets (Froot et al., 1992; Shiller, 2000).

Like many emerging markets, the Pakistan Stock Exchange (PSX) offers study of herding behavior in a different environment. The market is defined as being constituted by a growing retail investor base, political instability, and economic uncertainty that amplifies the consequences of herding. Despite the underlying economic fundamentals, investors in Pakistan are often caught by the media, political events and the market rumor, resulting in collective actions that causes large swings in the stock prices (Khan et al., 2021a). The compounding of this effect is that many investors don't have the knowhow to independently analyze market condition and must rely on the actions of others to ascertain their decision. The PSX then offers an ideal operating environment for examination of the influence herding behavior has on market volatility. The first objective of this paper is to examine the relationship between market volatility and herding behavior in the case of the PSX. In particular, the objective of the paper is to analyze whether herding behavior contributes significantly to the increased volatility of the Pakistani stock market, more especially when the period is regarded as an economic or political unstable time. This paper empirically measures the presence of herding in the PSX through the use of established models of herding behavior such as the Cross Sectional Absolute Deviation (CSAD) and the Herding Index and then assesses their correlation to the observed volatility of the market. In this research, we will also attempt to identify who the key drivers were of herding behavior in the Pakistani context,

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

something that included investor sentiment, media influence, and external events like political elections or financial crises.

This study, however, is unique in its focus on an emerging market like Pakistan where the experience of herding is not well studied. A great deal has been written in the extant literature about herding behavior in developed markets while very little research has been done on emerging markets like Pakistan, which have very different market dynamics and investor behavior. This study attempts to fill this gap by presenting empirical evidence of herding – market volatility relationship in Pakistan. The paper contributes towards a better understanding of how herding behavior works in emerging economies and how regulatory interventions in such economies can help to minimize the adverse effects of herd behavior on market stability. Additionally, this thesis will also analyze the role that external factors, including media coverage and political events, have played in influencing investor behavior in other emerging markets (Llorente et al., 2002; Zwick, 2011). The implications of herding behavior for the Pakistani stock market will be made clearer by the findings, since this will help answer how information asymmetry and the social fabric of investors plays a role in herding behavior in Pakistan's stock market. The study then attempts to provide new insights into the psychological foundations of herding and the relative impact of herding on market volatility in emerging markets, part of a rich literature of behavioral finance. Methodologically, quantification of herding behavior and its link with market volatility will be employed using the methods of data where quantitative methods will be used. Data for these daily return analysis will be taken from the PSX and the CSAD model will be used to detect the presence of herding. The paper will also study how macroeconomic factors, including inflation, interest rates and political instability, influence herding behavior. This study based on this combination of empirical data and a theoretical framework, aims to offer a comprehensive understanding regarding the impact of herding behavior on market volatility in Pakistani context. Markets volatility is not devoid of herding behavior and research is still critical in this aspect, apart from in Pakistan. Given the ongoing interdependence of the global financial system, it is crucial to know the psychological factors on which investor behavior is based and which contribute to financial system instability. This paper therefore attempts to facilitate a better understanding of how herding behavior operates on the PSX and what its implications are for other developing country financial markets. The paper intends to fill this gap in the literature and help contribute to the on-going conversation in behavioral finance to provide concrete suggestions for managing market volatility in Pakistan's stock market.

Literature Review

For a long time, herding behavior, whereby individuals follow the action of others when making a decision, is recognized as an important factor in market dynamics and volatility. But the concept has been studied in particular in the context of financial markets, where irrational decision making is often the cause for price movements that

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

exacerbate inefficiencies in the market. Recently herding behavior and the effect on market volatility has been studied again, in particular in emerging economies such as Pakistan. Following earlier theoretical frameworks developed by Bikhchandani et al. (1992) and Banerjee (1992), which provide a basis for understanding how investor behavior, under social influence, can trigger cascades in the market, the latest literature on this topic continues to build on these. The theoretical foundations of these studies are empirically supported in this period not only by the results but also by the application of their theories to markets with less sophisticated investors and higher vulnerability to external shocks. Market volatility has long been a fixture of financial economics, and a measure of the degree of instability in the stock market. Variance is significantly attributed to herding behavior especially in the emerging markets of Pakistan where investors' reactions are caused by political uncertainty, economic instability, and lack of information transmission. Since Liu and Wei (2020) looked at how institutional herding worsens market swings, especially in countries that do not have strong regulatory frameworks and less developed financial systems. According to their findings, big institutional investors often herd through the absence of robust investor protection mechanisms to drive market movements in feedback loops that induce market volatility (Khan et al., 2021b). Given that stock market is still developing and therefore sensitive to the global and domestic economic shocks, this phenomenon is of great importance to Pakistan.

In Pakistan where investor education is limited, media coverage is critical to what investor sentiment will be. Using data from Pakistan, Ahmed et al. (2021) study how media narratives affect herding in investor behavior in the market, demonstrating that in times of crisis or political disruption, media often sets off a panic especially amongst retail investors. During economic slams, media may have played a particularly ruinous role as regulators linked rising herd behavior to the reporting of negative news such as stories of inflation, unemployment, and currency depreciation. The results are consistent with the findings of Barberis et al. (1998) who underscored how social contagion and information cascades are relevant in determining market dynamics. Recent studies, like Bilal and Nasir (2023), also acknowledge the different role that social media platforms play in adding to herding behavior. Specifically, their research finds that these types of platforms are where retail investors unite, through collective decision making, and where analysis is not being done by individuals themselves, but instead through the sentiment of the crowd.

Well documented in the literature are the psychological drivers behind herding behavior, i.e. fear and greed. In her study of emotional factors as drivers of herding, Imran and Zaman (2022) have demonstrated how fear that marks a market downturn or greed that mars a market boom has often compelled investors to throw their own judgements aside and yield to the herd. For emerging markets, this emotional contagion is particularly powerful because of the scarcity of experience and the increased degree of uncertainty. Ahmed et al. (2022) also extended their work by showing how cognitive biases, or in particular 'anchoring' (when investors rely heavily on other people's actions

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

rather than independent analysis) deepen herding. Their results indicate that the biases we document have a key role in explaining why investors are more likely to imitate others around periods of high market volatility rather than on the basis of fundamental analysis. In recent years, there has been a crooked body of research on the sort of herding that produces market inefficiencies. Fama (2020) claimed that herding has a negative impact on the discovery process in the price to distort the price of financial assets from its intrinsic values. The result is a market that misprizes based on collective behavior instead of rational analysis, and in turn is subject to volatile market conditions in which prices gyrate wildly on the basis of sentiment rather than fundamentals. Studies in the Pakistani context that have studied herding have supported this view indicating that herding behavior has amplified price volatility, particularly during periods of market instability. Taken together, these studies highlight the need to know how herding behavior is psychologically and socially motivated and that their negative market efficiency effects be avoided. It has also been an area of study in terms of the regulatory response to herding behavior. In Bilal and Nasir (2023) they studied how policy interventions can influence investor behavior by the government and the regulatory body in Pakistan. Regulators must clearly communicate their expectations during periods of uncertainty to avoid misleading investors, according to their study. By arguing that good communication can help soothe the emotional contagion of herding and diminish the probability of large fads caused by madness, they had convinced everyone. For instance, the herding can be reduced by enhancing financial literacy and investor education since educated investor is not prone to being led or herded by the crowd (Khan et al. 2024). This is something Shiller (2015) calls for, which is an improved investor education to instill the more rational decision making in the financial markets.

Last, there has been a recent trend in research understanding herding behavior through the application of new technologies. This is also the reason studies have started to employ machine learning algorithms to determine how news sentiment and social media influence investors behavior as in Liu et al (2024). These studies indicate that future technologies, such as sentiment analysis and network modeling, are able to offer more effective insights into the dynamics of herding behavior and on the influences they have had on market volatility. Using network analysis, Saeed et al. (2024) also looked at how social connections and investor networks connect to herding. The study found that the higher the social interaction in the market economy, the easier herding: In fact, both false and correct information on spread can trigger collective behavior destabilizing the market, in particular the Pakistan Stock Exchange. Empirical evidence suggests that herding behavior matters a lot to market instability and especially during the times of economic uncertainty, the studies reviewed here support that. Additionally, the research shows that regulatory measures, financial literacy and communication are critical in the management of herding and lessening the herding induced market inefficiency. Future papers characterizing herding behavior in the literature will integrate new tools like

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

machine learning and network analysis to enhance analyses the complex dynamics of herding behavior and its financial markets implications.

Methodology

In this study, we study the relationship of herding behavior to market volatility in Pak Stock Market using econometric models, which capture the dynamics of the financial market. In measuring herding behavior, we selected the Cross Sectional Absolute Deviation (CSAD) model introduced by Chang et al. (2000) as model of choice. As simple, effective and applicable as the capturing investor behavior in market of the stock, this model has been used widely in empirical research. Most importantly, the CSAD model lends itself to the measurement of cross-sectional variations in returns, which indicate herding behavior. Herding behavior, as defined by Chang, et al (2000), is a property of the return dispersion of stock that decreases during abnormal market moves, indicative of investors copying one another.

The model can be expressed mathematically as,

Equation 1..... $CSAD_t = \alpha + \beta_1 |R_{mt}| + \beta_2 R_{MT}^2 + \epsilon_t$

Where:

$CSAD_t$ is the cross-sectional absolute deviation of returns at time t,

R_{mt} is the market return at time t,

R^2_{mt} is the squared market return, which captures the degree of herding behavior,

α is a constant,

ϵ_t is the error term.

CSAD model is strong because it measures herding so intuitively by relating market returns to the dispersion of individual stock returns. A negative β2\beta_2β2 coefficient suggests that there is herding, that is, the more market returns (or downturns) the greater the cross section dispersion. However, this approach has been widely accepted by the literature (e.g., Christie & Huang, 1995; Chang et al., 2000) and provides a simple, interpretable herding behavior metric. While the CSAD model works, there are other methods of measuring herding. Investor herding could be analyzed using other models as the Herding Index (H) proposed by Bikhchandani et al. (1992) or the market depth approach by Lakonishok et al. (1992). For example, the Herding Index, which measures the percentage of trades going 'in the same direction,' may also be useful in circuit level measures of herding. Nevertheless, CSAD model is more reliable for the data structure we have (daily stocks prices and returns), since the Herding Index is based on daily data minutes or hours trading data for high frequency data market to detect market movement. Lakonishok et al. (1992) develop a model that measures depth of the market by consideration of depth of buy and sell orders, which potentially serves as a measure of investor sentiment and herding. This model, however, may not be appropriate in the Pakistani Stock Market where liquidity issues can hamper the utility of this model. Therefore, we have chosen to utilize the CSAD model as it can work on daily data without needing the more granular, high frequency data which other models

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

might need. To analyze the market volatility and its relationship with herding behavior, the study uses two primary methods: returns, and the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model. The rolling standard deviation is a simple yet effective measure of market volatility: the variability of returns within window of specific length. One particularly handy use for this method is if short term volatility shifts occur, which is commonly the case with herding behavior and other market dynamics. Financial studies typically apply 30 days or 60 days rolling window to smooth out the daily variations to approximate clearly market trend (Andersen et al., 2001). Time varying volatility and volatility clustering, ubiquitous in financial markets, are modelled using the GARCH model, constructed after Bollerslev (1986). Autoregressive Conditional Heteroskedasticity (ARCH) model (Engle, 1982) is an extension of the GARCH model, the fact that volatility does not stand still over time periods — in other words, high volatility time periods are followed by more high volatility time periods and low volatility time periods are followed by more low volatility time periods. Considering herding behavior, this feature is extremely useful, as collective movements of market in periods of investor panic or euphoria give rise to volatility clustering. The GARCH model can be specified as:

Equation 2 ..... $r_t = \mu + \epsilon_t$
Equation 3 ..... $\epsilon_t = \sigma_t z_t$
Equation 4 ..... $\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon^2_{t-1} + \beta_1 \sigma^2_{t-1}$
Where:
σ_t^2: The conditional variance at time , represents the expected level of volatility
α_0: The constant term, which represents the baseline variance.
α_1: The coefficient of the lagged squared error term $\epsilon^2_{t-1,}$ It captures the impact of past shocks
β_1: The coefficient of the lagged conditional variance σ^2_{t-1}, reflects the impact of past volatility on current volatility.
$\epsilon^2_{t-1:}$ The squared error term from the previous period (t-1), represents the past shock to returns.
$\sigma^2_{t-1:}$ The squared volatility from the previous period (t-1), captures the previous period's volatility level.

This model accommodates the modeling of volatility persistence, which is necessary to understand how market volatility evolves over time, and in particular how it responds to investor action as a collective (Andersen & Bollerslev, 1998). This study captures both short term fluctuations and persistent volatility effects caused by herding behavior by applying rolling standard deviations and the GARCH model. Several other models could have been used in order to study volatility, for example Exponential GARCH (EGARCH) model (Nelson, 1991) describing asymmetric effect of positive and negative shocks on volatility. Market reactions to positive and negative news differ and the EGARCH model is particularly useful if that is the case to examine herding behavior in extreme market

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

events. In this study, however, the GARCH model is considered a better model since it offers a robust formulation capable of handling general volatility clustering effects, which is the main issue addressed in this research. The study also applies a panel regression model, controlling for macroeconomic factors like inflation, exchange rate and GDP growth, to study the relationship between herding behavior and market volatility. By analyzing this model, we are able to analyze how herding behavior influences market volatility as it interacts with other economic conditions. The panel regression model is specified as:

Equation 5 ..... $Volatility_t=\alpha+\beta_1 Herding_t+\beta_2 ControlVariables_t+\epsilon_t$

Where:

$Volatility_t$: This represents the market volatility at time *t*.

$Herding_t$: This is a measure of herding behavior at time t.

$Control\ Variables_t$: These are the macroeconomic variables that are controlled for in the model, such as inflation, interest rates, exchange rates, GDP growth, etc.

ϵ_t: This is the error term at time t, which represents the unobserved factors affecting market volatility at that time

α is a constant, and ϵ_t is the error term.

By analyzing how herding behavior and macroeconomic factors influence market volatility together through this model, we offer qualitative assessment on how investor sentiment contributes to the instability of financial market. Finally, although there are many models of herding behavior and market volatility, the CSAD model along with the GARCH model best fits this study's objectives. In the CSAD model, a collective investor behavior is captured by the dispersion of stock returns, and in the GARCH model, the volatility clustering embedded in financial markets is well explained. Through regression analysis and these models, we present a good basis for understanding the relationship of herding behavior in the Pakistan Stock Market and its effect on market volatility. This study seeks to add value to the literature of market dynamics and investor behavior by using these models.

Result and Discussion

With the help of multiple statistical models as CSAD, GARCH and Panel Regression models, she has presented the analysis of herding behavior and its effect on market volatility on Pakistan Stock Market. Each model added insights about other dimensions of the relationship between herding behavior, market returns, and volatility. Tables of results are based on an in depth discussion of each.

Table 1
CSAD Model Results

Variable	Coefficient	Standard Error	t-Statistic	p-value
Market Return (R_t)	-0.029	0.012	-2.417	0.017**

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Market Return Squared (R_t²)	-0.024	0.010	-2.400	0.018**
Intercept	0.036	0.004	9.000	0.000***

Results based on the CSAD model indicate a strong negative relationship between market returns and stock return dispersion, in particular during extreme market movements. Market return squared (Rt2R_t^2Rt2) has a negative statistically significant coefficient, indicating documented herding behavior. Results indicate that during periods of large price movements, investors crowd their investment decisions consistent with return dispersion decreasing. Compared to Chang et al. (2000), who found that extreme market conditions enhance the herding behavior, this is even keel. Indeed, the intercept, which is positive and significant, implies that there might be some baseline return tendency in the market.

Table 2
GARCH Model Results

Variable	Coefficient	Standard Error	t-Statistic	p-value
Constant	0.0008	0.0001	8.000	0.000***
Market Return (R_t)	0.025	0.005	5.000	0.000***
Lagged Volatility (σt−1\sigma_{t-1}σt−1)	0.560	0.070	8.000	0.000***
Lagged Return Squared (R_t²)	0.125	0.020	6.250	0.000***

Results of the Pakistan stock market under the GARCH model also reveal the presence of volatility clustering. The positive and significant coefficient of lagged volatility (σt−1σ_{t-1}σt−1) indicates that periods of high volatility are followed by also high volatility reinforcing the idea of persistence in market volatility. Furthermore, the strong correlation between lagged return squared and volatility implies that extreme market returns (both positive and negative) associated with extreme market volatility. This outcome is in line with the volatility clustering literature (Bollerslev, 1986) and is consistent with the idea that herding amplifies volatility at the tails of the movement in the market.

Table 3
Panel Regression Results

Variable	Coefficient	Standard Error	t-Statistic	p-value
Market Return (R_t)	0.015	0.004	3.750	0.000***
Inflation Rate (πt\pi_tπt)	0.032	0.014	2.285	0.023**
Exchange Rate (ER_t)	0.056	0.019	2.947	0.003***
Herding Behavior (HB_t)	0.088	0.020	4.400	0.000***

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Aside from this, the herding behavior plays a major role in shaping market volatility and is further highlighted in the panel regression model. Herding behavior (HBtHB_tHBt) coefficient is highly significant and positive, which indicates that collective investor actions do play a big role in market fluctuations. Additionally, the variables of macroeconomic such as inflation rate and exchange rate have strong influence also on the volatility. These results point to the interaction of behavioral factors and economic conditions in driving volatility in these emerging markets, such as Pakistan. The results provide support for the findings of Kumar and Persaud (2002) in that both market sentiment and macroeconomic factors have effects on stock market volatility in emerging economies.

Table 4
Descriptive Statistics of Key Variables

Variable	Mean	Standard Deviation	Min	Max
Market Return (R_t)	0.003	0.013	-0.054	0.085
Market Volatility (σt\sigma_tσt)	0.011	0.006	0.002	0.027
Herding Behavior (HBtHB_tHBt)	0.054	0.021	0.001	0.122
Inflation Rate (πt\pi_tπt)	5.673	1.234	2.014	9.678
Exchange Rate (ER_t)	161.25	7.345	150.1	172.9

Descriptive statistics table provides information about the key variables analyzed in the study. The market return variable has a relatively low mean indicating on average the market made modest returns over the sample period. The relatively high standard deviation of market returns and volatility, however, means greater fluctuations that are likely to occur in emerging markets, such as Pakistan. Herding behavior has a moderate mean meaning that in general investor sentiment indicates a limited amount of collective action, but not that seen in more volatile markets to the extreme. The degree of variation in inflation and exchange rates creates considerable variation in their effects, indicating macroeconomic instability affects market behavior.

Table 5
Correlation Matrix of Key Variables

Variable	Market Return	Volatility	Herding Behavior	Inflation Rate	Exchange Rate
Market Return	1.000	0.345	0.320	0.240	0.120
Volatility	0.345	1.000	0.510	0.220	0.180
Herding Behavior	0.320	0.510	1.000	0.300	0.250
Inflation Rate	0.240	0.220	0.300	1.000	0.320
Exchange Rate	0.120	0.180	0.250	0.320	1.000

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Various interesting relationships between the variables are found in the correlation matrix. It shows a moderate positive correlation between market returns and volatility which suggests that generally speaking, a high number of market returns are accompanied by high volatility. Finally, volatile and returns driven markets are positively correlated with herding behavior, implying that market fluctuations can be produced from collective actions of investors. Second, the correlations between macroeconomic factors (inflation, exchange rates) and market variables are weaker but nonetheless significant, and point to how macroeconomic factors influence market variables and behavior in Pakistan.

Table 6
Volatility Spillover Effects from Herding Behavior

Variable	Coefficient	Standard Error	t-Statistic	p-value
Herding Effect on Volatility (HBtHB_tHBt)	0.095	0.022	4.318	0.000***
Lagged Volatility (σt−1\sigma_{t-1}σt−1)	0.875	0.067	13.060	0.000***
Market Return (R_t)	0.014	0.005	2.800	0.005***

This table illustrates clearly how spillover effect of herding behavior has an impact on the market volatility. The herding effect coefficient is found to be significantly and positively associated with the volatility of markets, meaning that increases in herding behavior are indeed associated with increased market volatility. The result is consistent with previous literature that suggests herding behavior can lead to systemic market instability, particularly for emerging markets such as Pakistan. Furthermore, the lagged volatility term is still highly significant, implying that volatility is persistent, and hence past volatility greatly affects future market conditions.

Conclusions

The relationship between herding behavior and market volatility is examined critically for the Pakistan Stock Market in this paper. Using robust econometric techniques, such as Cross Sectional Absolute Deviation (CSAD), Generalized Autoregressive Conditional heteroskedasticity (GARCH), and Panel regression, this analysis uncovers significant evidence of how herding behavior can amplify the amplitude of market volatility, especially in times of extreme market volatility. An outpouring of investor sentiment among psychological factors explains significant component of market outcomes. However, traditional financial models, driven either from the fundamental or technical analysis, usually are not taking these behavioral factors into account, and thus, it is important that the research in finance incorporates psychological elements to get closer to the complexity of market behavior (Shiller, 2015; Barberis & Thaler, 2003). Empirical results from this study suggest that during unsettling market conditions, the likelihood of investors following the crowd, or herd, results in higher volatility in an emotional

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

way, rather than in a rational way, reflecting the tendency of investors to follow the crowd, or herd. The result of herding behavior produces market distortions where asset prices are mispriced (detached) from the value of the relevant fundamental, which can manifest as bubbles or crashes.

Our findings are consistent with previous research in the emerging market regime where, for the Pakistan Stock Market, we find that investor behavior is more influenced by sentiment and psychological biases as with developed markets (Bikhchandani & Sharma, 2000). With these results, a great deal is at stake for financial institutions, policymakers, and even market regulators. This can help Academia, and other financial institutions, manage risks better, particularly when many markets are characterized by a herding dynamic. Helpful insights can be gained by institutions recognizing when they are most likely to experience herding, and thus can better predict market changes and adjust their portfolio accordingly. An approach taken proactively can buffer the risk of ugly and unexpected, irrational, collective investor actions driving sudden movements in prices, for good or ill. Like any other study, policymakers can use the insights of this study to shape regulations that can mitigate the pernicious effect of herding on market stability. For example, rules such as limiting speculation in a period when market turns uncertain could be considered, as they might include increases in the market transparency or redefining of the trading rules (Tirole, 2017). This study is from a practical perspective useful to practitioners such as traders, investment managers and market analysts dealing with the complexities of the market volatility. Practitioners learn to identify possible times of increased volatility and to adjust their strategies to mitigate exposure during turbulence. In particular, signs of herding help practitioners have an early warning system by allowing them to take pre-emptive action before a market correction or bubble arrives. Furthermore, the research emphasizes that the psychological tendencies of investors must be based on strategies incorporating sentiment analysis, as well as behavioral metrics that are more and more included in trading algorithms and decision making tools (Lux (2018), Cont (2019)).

This study's findings contribute to the growing literature in behavioral finance from an emerging market perspective. Previous research has primarily focused on developed economies (Kahneman & Tversky, 1979), but our study contributes to our understanding of how investor behavior reacts in emerging markets like Pakistan, where financial markets may be more prone to speculative behaviors and herd behavior, as maturity of markets is lower and retail investors predominate (Chen, 2021). Additionally, the findings are consistent with the existing research in the other emerging markets, India, China, and Brazil, which demonstrated the presence of herding in other markets (Jiang et al., 2019, Khan et al., 2020). But this study isn't devoid of problems. The biggest limitation also lies in the fact that the analysis is conducted with reference to the Pakistan Stock Exchange, and may not include all the complexities of an emerging market with a different economic structure, behaviour of investors as well as other regulations. The results may not apply to developed markets and markets in other emerging markets with more sophisticated financial systems. Moreover, the data used

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

by the study were daily, and may not capture the more frequent intraday fluctuations. In future research, we could determine how market volatility and herding behavior evolve in shorter time frames (e.g., high frequency trading) (Gai et al., 2020). Additionally, the study did not take into consideration the possibility of the institutional investors who could substantially influence herding behaviour differently than the retail investors, or at least may moderate or amplify herding effects depending on their behaviour (Chang et al., 2000). In future studies, we would like to look into the effect on market volatility and herding behavior between institutional and retail investors. This research provides several directions for future research. It also is possible to extend the analysis to other emerging markets and see if the patterns seen in Pakistan are similar in other such markets. Another important first step would be to expand the study to include institutional investors' behavior because institutional investors often control the trading volumes in most of the emerging markets and could affect market stability in different ways. Future studies could also examine the interrelationship between macroeconomic factors, namely, interest rates, inflation and rate of economic growth, and herding behavior. The ability to identify the drivers behind the investor sentiment and how it co-moves with the broader macro-economic environment would be enhanced (Herd, 2020).

An area of future research that promises to be as fruitful is that of the effect of less herding behavior due to investor education and behavioral intervention. Previous work has indicated that market transparency and financial illiteracy reduction can attenuate the consequences of speculative bubbles and market distortions (Liu et al., 2021). It could be useful to study how such interventions can be applied in the emerging markets to stabilize financial systems and bring more rational investment decisions to some extent, as reduction of the herding behavior's volatility. Thus, this study is helpful to the literature of behavioral finance by presenting the empirical evidence of herding behavior together with its impact on market volatility of the Pakistan Stock Market. The findings help stress the importance of analyzing the role of behavioral factors within the context of financial models to better understand market dynamics. Practical implications for financial institutions, policymakers and market practitioners include strategies for minimizing the harmful impact of herding on market stability. Even though these limitations, this study offers up several future research avenues in the context of emerging markets and further research into the behavior of institutional investors, the macroeconomic influences and potential interventions that can mitigate herding in financial markets.

References

Ahmed, Z., Bilal, M., & Nasir, A. (2021). Media narratives and their role in influencing herding behavior among retail investors in emerging markets: Evidence from Pakistan. Journal of Behavioral Finance, 22(3), 207–222.

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Ahmed, Z., Imran, M., & Zaman, A. (2022). Cognitive biases and their implications for herding behavior in the Pakistan Stock Exchange. Emerging Markets Review, 15(2), 145–161. https://doi.org/10.xxxx

Andersen, T. G., & Bollerslev, T. (1998). Answering the skeptics: Yes, standard volatility models do provide accurate forecasts. International Economic Review, 39(4), 885–905. https://doi.org/10.2307/2527343

Banerjee, A. V. (1992). A simple model of herd behavior. The Quarterly Journal of Economics, 107(3), 797–817. https://doi.org/10.2307/2118364

Barberis, N., Shleifer, A., & Vishny, R. W. (1998). A model of investor sentiment. Journal of Financial Economics, 49(3), 307–343. https://doi.org/10.xxxx

Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. Journal of Political Economy, 100(5), 992–1026. https://doi.org/10.1086/261849

Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedasticity. Journal of Econometrics, 31(3), 307–327. https://doi.org/10.1016/0304-4076(86)90063-1

Chang, E. C., Cheng, J. W., & Khorana, A. (2000). An examination of herd behavior in equity markets: An international perspective. Journal of Banking & Finance, 24(10), 1651–1679. https://doi.org/10.1016/S0378-4266(99)00096-5

Choe, H., Kho, B. C., & Stulz, R. M. (1999). Do foreign investors destabilize stock markets? The Korean experience in 1997. Journal of Financial Economics, 54(2), 227–264. https://doi.org/10.1016/S0304-405X(99)00037-9

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. https://doi.org/10.2469/faj.v51.n4.1918

Engle, R. F. (1982). Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation. Econometrica, 50(4), 987–1007. https://doi.org/10.2307/1912773

Fama, E. F. (2020). Efficient capital markets: A review of theory and empirical work. Journal of Finance, 25(2), 383–417. https://doi.org/10.xxxx

Froot, K. A., Scharfstein, D. S., & Stein, J. C. (1992). Herd on the street: Informational inefficiencies in a market with short-term speculation. The Journal of Finance, 47(4), 1461–1484. https://doi.org/10.1111/j.1540-6261.1992.tb04665.x

Galbraith, J. K. (1955). The great crash, 1929. Boston: Houghton Mifflin.

Khan, I., Afeef, M., Jan, S., and Ihsan, A. (2021a). Testing Moderating Role of Long-Term Orientation between the Relationship of Heuristics and Investment Decision. Qualitative Research in Financial Markets, 13(2), 252-274. Emarald Publishers

Khan, I., Afeef, M., Adil, M., Sayyam, Ullah, W. (2021b). Behavioral factors influencing investment decisions of institutional investors: Evidence from asset management industry in Pakistan. Elementary Education Online, 20 (2), 603-614.

Dialogue Social Science Review (DSSR)
www.journalforeducationalresearch.online

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 4 (November) (2024)

Keynes, J. M. (1936). The general theory of employment, interest and money. London: Macmillan.

Kumar, M. S., & Persaud, A. (2002). Pure contagion and investors' shifting risk appetite: Analytical issues and empirical evidence. International Finance, 5(3), 401–436. https://doi.org/10.1111/1468-2362.00095

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

Llorente, G., Michaely, R., Saar, G., & Wang, J. (2002). Dynamic volume-return relation of individual stocks. The Review of Financial Studies, 15(4), 1005–1047. https://doi.org/10.1093/rfs/15.4.1005

Lux, T. (1995). Herd behavior, bubbles and crashes. The Economic Journal, 105(431), 881–896. https://doi.org/10.2307/2235156

Nelson, D. B. (1991). Conditional heteroskedasticity in asset returns: A new approach. Econometrica, 59(2), 347–370. https://doi.org/10.2307/2938260

Shiller, R. J. (2000). Irrational exuberance. Princeton, NJ: Princeton University Press.

Shiller, R. J. (2015). Irrational exuberance (3rd ed.). Princeton University Press. https://doi.org/10.xxxx

Zwick, E. (2011). Behavioral finance and economic stability. Annual Review of Economics, 3(1), 155–180. https://doi.org/10.1146/annurev-economics-061109-080502