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An Investigation of Herding Prospects in the Pakistan Stock Exchange

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Abstract: The present study investigates investors' herding in Pakistan Stock Exchange (PSX) and its sectors. Assumptions have been made that fundamental information causes herd behaviour; as a result, prices automatically adjust to newly-arrived information and lead to efficient markets. However, it is also believed that fundamental information does not cause herd behaviour and leads to price instability. Intraday, daily, and weekly stock returns of 528 companies listed in the PSX have been used. Market-wide herd measure, i.e., Cross-Sectional Standard Deviation (CSSD), has been employed as a herding measure. Findings revealed that neither PSX nor its sectors demonstrate herd behaviour at any level. The study has some implications for investors regarding investment decision-making.

Keywords: Behavioural finance; CSSD; herd behaviour; return dispersions

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INTRODUCTION

Literature has pinpointed two broader categories of finance, i.e., traditional finance (deals with the Efficient Market Hypothesis (EMH) and behavioural finance (relates to the psychological aspects of investors). Behavioural finance has emerged as a combination of social sciences, psychology, and finance (Shiller, 2003). It strongly criticized EMH and gained popularity following the prospect theory in 1979. Prospect theory (Kahneman & Tversky, 1979) also criticized the theoretical aspects of traditional finance, specifically EMH. The field of behavioural finance explains the investors' financial behaviour by taking into a loop the psychological constructs (Shefrin, 2002). It has emerged as a novel field of finance that has concentrated on investors' inefficiency and irrationality of markets, thereby facilitating an understanding of the mechanism of financial markets (Barber & Odean, 2000). The concept of investors' irrationality provides the base for behavioural finance, contrasting it with the conventions of EMH. Shleifer (2000) recognized that formulating a market with rational investors is unrealistic. However, EMH explained that active investment behaviour is an essential attribute of investors instead of passive ones. Investors' irrationality has been described with several examples, i.e., newly arrived information that is difficult to examine on the part of investors, may lead investors to some confusion regarding incorporating new information with the fundamental stock valuation. It can result in inaccurate prices, reflecting the lack of existing information.

Investors' irrationality compels them to imitate others' decisions, and such imitation is known as herding. Herding leads to a phase where investors follow other investors instead of their own information, irrespective of whether their information is accurate. This phase may be conscious, unconscious, intellectual, or even intentional (Van Campenhout & Verhestraeten, 2010). Investors observe such behaviour to reduce their uncertainty level or do it for their self-assurance (Hogg & Vaughan, 2008). Investors usually are under significant influence from others to buy and sell (Waweru, Munyoki, & Uliana, 2008). Several elements cause herding, out of which investment amount; information about investment setting, type of investors, and overconfidence has gained vital importance (Goodfellow, Bohl, & Gebka, 2009; Jam, 2019; Khan et al., 2021).

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The unmounting effects of herding are inefficient markets. Investors follow the same trading pattern irrespective of the availability of similar factual information as a result, price instability occurs and creates bubbles in financial markets (Ombai, 2010). Waweru et al. (2008) further explained that herding creates a spark in the trading of securities and impetus trading of stock, resulting in market bubbles, unstable markets, and escalated stock volatility (Hwang & Salmon, 2004; Venezia, Nashikkar, & Shapira, 2011). Besides, herding results in price deviation (Banerjee, 1992), causes unpredictable returns (Venezia et al., 2011; Chang, Cheng, & Khorana, 2000); creates weak financial markets (Boyer, Kumagai, & Yuan, 2006); affects risk/return and results in unstable prices instability (Tan et al., 2008).

Financial markets consist of various market participants, of which individual and institutional investors are the dominant ones. These investors' existence in the financial markets led to study the herding by categorizing it into two broader aspects, i.e., individual and institutional herding. Former deals with how individual investors do herding, and it considers the real market trading data. Cross-sectional absolute deviation put forward by Chang et al. (2000) and Cross-Sectional Standard Deviation (CSSD) presented by Christie and Huang (1995) are the famous herding measures among all of them. Both measures are simple to compute as they use intraday, daily, weekly, and monthly stock prices (Messis & Zapranis, 2014).

The second aspect relates to the herding prospect of institutional investors. This measure was 1st developed by Lakonishok, Shleifer, and Vishny (1992) and improved by Sias (2004). The growing trend of institutional investors' paves the way to institutional herding, i.e., institutional investors follow each other to buy and sell the same security (Choi & Sias, 2009).

Considering the context of Pakistan, some scholars have researched market-wide herding by concentrating on monthly and daily stock prices. They observed herding's non-existence or weak existence in the KSE-100 index. These researchers have followed herding measures like CSSD, CSAD, (Chiang & Zheng, 2010; Javaira & Hassan, 2015; Javed, Zafar, & Hafeez, 2013; Malik & Elahi, 2014; Zafar & Hassan, 2016; Zeeshan, 2022). But, partial herding was noticed in some sectors of PSX (Shah, Shah, & Khan, 2017; Khan & Rizwan, 2018). Moreover, Jabeen and Rizavi (2019) also found the presence of herding in a few sectors of PSX but not in PSX itself. The present study concentrates on PSX as well as its sectors, as scholars argued that herding has greater prospects to occur in the sectors contrary to the overall stock market (Sharma et al., 2004; Moskowitz & Grinblatt, 1999).

The current study focuses on intraday, daily, and weekly stock prices to have an in-depth idea of the herding phenomenon. If herding is a short-term phenomenon, herding cannot be observed during long time spans, leading to using intraday stock prices (Radalj & McAleer, 1993). Besides, Orlean (1995) highlighted the significance of intraday herding by elaborating that short time spans hinder speculators in processing the necessary information, leading to market participants' irrational decisions and imitation, particularly when the market is facing a stressful situation. Gleason et al. (2004) further explained that long-run stock prices are in aggregate form and may lead to inaccurate views. Moving ahead, as per Henker et al. (2006), intraday trading is attaining notable significance as it is easy for investors to notice all market trends. The study considers the daily stock prices by following the idea generated by Christie and Huang (1995), who highlighted that herd behaviour is a short-term concept. Weekly returns are considered based on a study conducted by Purba and Faradynawati (2012). The authors explained that herding might occur for long periods. Moreover, long-term time trend can easily be pinpointed while using weekly returns. These diverse viewpoints lead the study to focus on the motives of investigating herding in PSX and its sectors at weekly, daily and intraday levels.

LITERATURE REVIEW

Herding in financial markets has diverse approaches. These approaches must be distinguished; however, it is challenging for the researchers to make such distinctions referring to various aspects influencing investment choices (Bikhchandani & Sharma, 2000). Herd behaviour has to be categorized into two extensive categories, i.e., intentional herding and spurious herding (Griffin, Harris, & Topaloglu, 2003; Hamid, Jam, & Mehmood, 2019). Herding can also be differentiated through rational and irrational approaches (Hirshleifer & Teoh, 2009). Scholars have shed light on the detailed aspects of herding in financial markets. They have investigated this phenomenon in different financial markets (advanced, developing, emerging, etc.) with the help of various methodologies (CSSD; CSAD, Hwang & Salmon, etc.), multiple variables, and during different periods (Subprime mortgage crisis; Eurozone crisis; Global financial crisis etc.).

Christie and Huang (1995) conducted the earliest empirical study on herding, and they could not detect it in the U.S. market, inferring that investors make rational decisions by implying their own information; however, they imitate the crowd during market stress. They noticed its existence in Taiwan and South Korea during extreme market conditions. Following the above authors, Chang et al. (2000) investigated herding aspect, and they were unable to present its existence in the US and Hong Kong market. However, they observed a partial presence in Japan, and strong herding in South Korea and Taiwan was observed. Hwang and Salmon (2004) noticed its evidence in South Korea by inferring that herding cannot be an absolute phenomenon rather it may be a relative concept. Herding was expected to be the same during normal market conditions and market stress.

Fu and Lin (2010) could not observe herding when investigating the investors' asymmetric reactions to positive and negative news. Mwimali (2012) researched in Nairobi Securities Exchange regarding herding price implications, i.e., herding behaviour is caused by stock returns, and he found proof of herding. On the other hand, herding was not identified in the stock market of Jordan before and after the financial crisis of 2008, when the CSSD measure was used. Still, the CSAD measure showed its evidence during the crisis period.

Likewise, Seetharam (2013) could not find its existence in South Africa from 1995-2011. Similar results were reported by Ahsan and Sarkar (2013) in the stock market of Dhaka, arguing that investors act rationally instead of following others' information. Contrary to this research, El-Shiaty and Badawi (2014) found its existence in the stock exchange of Egypt by utilizing the CSAD and CSSD measures from 2016-2020. Herding was detected in four European equity markets (Andrikopoulos, Hoefer, & Kallinterakis, 2014).

Ahmed, Abbass, and Abbasi (2015) identified herding phenomenon in the stock market of Spain during and after the 2008 financial crisis. Similarly, Rahman et al. (2015) noticed herd behavior in the Saudi stock market during bullish market trends. Herding was observed in US S&P100 and US DJIA stock market during extreme market conditions having massive trading days Jlassi and Naoui (2015). Herding was found to be related to market sentiment. Galariotis, Krokida, and Spyrou (2016) observed strong herding effects in G5 countries but weakly observed in Germany. Litimi (2017) researched the French stock market during the financial crisis and noticed its evidence in some sectors. Sectoral-based herding research was also carried out in nine Asian stock markets. It was present in the technology and financial sectors, and weaker aspects were observed in the utility sector. Moreover, Mertzanis and Allam (2018) could not find herding in the stock exchange of Egypt during extreme and normal market conditions, arguing that herding is a short-lived phenomenon.

Brendea and Pop (2019) examined the imitating behaviour of firms listed in the Romanian Exchange. The results also suggest that firms' capital structure depends upon firm-specific characteristics and the average characteristics of the firms of each sector. Economou (2019) found the prevalence of herd behavior in Balkan stock exchanges (Slovenia, Romania, Croatia and Bulgaria) between 2000 and 2016 by utilizing CSAD methodology for focusing on the Eurozone and global financial crisis. The Balkan stock markets showed herd behavior within the Balkan region compared to each individual stock exchange, where the Romanian stock market showed the strongest effects. Shantha (2019) explored the evolutionary nature of herd behavior in the stock market of Colombo from 2000 to 2018 by utilizing quantile regression and the CSAD method. The herd behavior was found to be of twisted nature. It prevailed during the Civil War and up & down markets, but negative herding was found after the Civil War leading to the stock market crash. Conversely, no herding prevailed, irrespective of herd motives prevailed in the country. Stavroyiannis and Babalos (2019) observed negative herd behavior in stock exchanges of the Eurozone from 2000-2016 by using the CAPM model.

Ju (2019) utilized CSAD method and found the prevalence of herd behavior in both A & B stock exchanges. Investors of A-stock exchange herd on growth stocks, on the other hand, investors of B-stock exchange herd on various styles like value and growth stocks. Indrs et al. (2019) investigated herding in the stock exchange of Russia by utilizing non-fundamental along with fundamental information and found that fundamental factors are not the base of investors' herd behavior; though, considering the Ukraine crisis, herd behavior was merely dependent on fundamental factors. Arjoon et al. (2019) found herding in the stock market of Singapore and its sectors. Furthermore, herding evolution was discovered to be progressive on the basis of investor sentiments and market nature. Batmunkh et al. (2020) observed herding in the stock exchange of Mongolia between 1999 and 2019 during bearish & bullish market behavior. Wanidwaranan and Padungsaksawasdi (2020) found a significant effect of return jumps on the world's share markets. Chauhan et al. (2020) established aggregate herd behavior in large-cap stocks in India. Mand and Sifat (2021) observed herding in Bursa Malaysia and described that herd behavior was

non-linear and dependent on the regime.

Researchers in Pakistan have found mixed results, even investigating similar samples at the same periods. They found the nonexistence as well as the presence or weak existence of herding in the Pakistan stock exchange. Javed et al. (2013) and Javaira and Hassan (2015) could not find herd behavior in KSE using CSAD & CSSD methods and monthly & daily data. However, Malik and Elahi (2014) found herding during bearish and bullish situations while using the quantile regression. Zafar and Hassan (2016) also showed similar results. Moreover, herding was also observed in few sectors of PSX by Shah et al. (2017). Bodgan, Sustar, and Drazenovic (2022) investigated herding following the pandemic period and highlighted that herding was most pronounced in emerging markets, followed by frontier markets and developed markets during the COVID-19 pandemic.

Furthermore, Khan and Rizwan (2018) explored herding in eighteen sectors of PSX by utilizing CSAD & CSSD measures; they found the presence of herding in only three industries of PSX. Similarly, Yousaf, Ali, and Shah (2018) investigated herd behaviour in KSE-100 Index by utilizing the above-mentioned methods but concerning effects in the month of Ramadan. Herd behaviour was found during the crisis of 2006-07. Though measure given by Chiang and Zheng (2010) was used by Jabeen and Rizavi (2019), and they were not able to find any sign of herding in PSX, however, some herding effects were found in few sectors of PSX. Likewise, the same measures were utilized by Kiran et al. (2020) and couldn't find her behaviour in PSX. On the other hand, Jabeen and Rizavi (2021) utilized CSAD method and observed herd behaviour in a few sectors of PSX at monthly, weekly, daily and intraday levels. However, herding was not observed in overall PSX.

DATA AND METHODOLOGY

Objective of this research is to investigate investors' herd behavior in stock market of Pakistan by selecting five hundred and twenty-eight listed corporations. These corporations were chosen on the basis of their incorporation, i.e., focusing on the corporations listed from 1998 to 2010. In order to uphold data symmetry, corporations listed after 2010 were ignored. Data collection was carried out from June 1998 till June 2018, covering most of the stock prices of the listed corporations. There are 35 sectors in PSX, but this considers only 34 sectors. The real State sector was ignored as only one corporation was listed in this sector after 2010. Weekly, daily and intraday stock prices were collected from the business recorder of Pakistan and PSX. Calculation of stock returns was carried out by using the formula L.N. (Pt/Pt-1)*100. Herding was observed by using the CSSD measure. Data analysis was carried out using regression analysis, stationarity tests and descriptive statistics.

Methods

The primary measure of market-wide herding was proposed by Christie and Huang (1995). The model emphasizes the clustering of stock returns of individual firms around the market returns.

$$\mathrm{cssi} = \frac{\sqrt{\sum_{\mathrm{i}=1}^{N} (\mathrm{R_{i,t}} - \mathrm{R_{m,t}})\, 2}}{(\mathrm{N} - 1)} \tag{1}$$

$R_{i,t}$ = stock return of firm *i* at time *t*; $R_{m,t}$ = cross-sectional average return of the *N* stocks in the market portfolio at time *t*; *N* = number of stocks in the portfolio.

The prevalence of herd behaviour is ensured by using a dummy variable technique. The dispersion level is separated for extreme lower and upper tails of market returns. It is examined whether it differs from the average level of dispersion, excluding the outermost returns. The extreme market movements are explained by one percent/five percent, lower/upper criteria, and this is tested as:

$$\mathrm{CSSD} = \alpha + \beta_1^U D_t^U + \beta_2^L D_t^L + \varepsilon_t \tag{2}$$

Where α = coefficient of average dispersion of the sample; D_t^L / D_t^U = 1 if the R_m on day *t* lies in the extreme lower/upper tail of the return distribution or 0 otherwise.

The non-existence of herd behaviour causes increased dispersion from the market as denoted by a positive coefficient. However, the negative coefficient shows the prevalence of herd behaviour.

An alternative model was given by Chang et al. (2000), which represents a reformed version of the CSSD model. CSSD model is more complex as it concentrates on herding during extreme market movements. The model

is termed Cross-Sectional Absolute Deviation (CSAD). It is based on the absolute deviation of returns as compared to standard deviation of returns. Derivation of this model is based on CAPM. The presence of herding results in the clustering of returns of individual stocks around the market return. It indicates that investors follow the market information and do not rely on their personal information. Testing of this model is carried out through the following equation:

$$CSAD = 1/N_(i = 1)^N |R_(i, t) - R_(m, t)| \tag{3}$$

Where: $R_{i,t}$ = stock return of firm *i* at time *t*; $R_{m,t}$ = cross-sectional average return of N stocks in the portfolio at time *t*; *N* = number of stocks in the portfolio.

CSAD is regressed on two market return parameters and describes a non-linear connection between the returns of individual stock and the overall market. This non-linear association results in the existence of herd behaviour. The non-existence of herding leads particular security returns and the market returns to move in different directions, directing to an increased linear relationship. During herding, the association between corresponding dispersion and individual security returns decreases or at least increases at a less than proportionate rate as the market return. The relationship is performed through

$$|\mathrm{CSAD} = \alpha + \gamma_1 |\, \mathrm{R_{m,t}} \,| + \gamma_2 R_{m,t}^2 + \varepsilon \tag{4}$$

$R_{m,t}$ = market return; Y_2 = if, significant and negative, infers herd behaviour.

Herd behaviour can be investigated for the bullish and bearish periods.

$$\mathrm{CSAD}\, D_t^{UP} = \alpha + \gamma_1^{UP} \left|R_{m,t}^{UP}\right| + \gamma_2^{UP} \left(R_{m,t}^{UP}\right)^2 + \varepsilon_t \quad \text{if } R_{m,t}^{UP} > 0 \tag{5}$$

$$\mathrm{CSAD}_t^{\mathrm{DOWN}} = \alpha + \gamma_1^{\mathrm{DOWN}} \left|R_{m,t}^{\mathrm{DOWN}}\right| + \gamma_2^{\mathrm{DOWN}} \left(R_{m,t}^{\mathrm{DOWN}}\right)^2 + \varepsilon_t \mathrm{if} R_{m,t}^{\mathrm{DOWN}} < 0 \tag{6}$$

Table 1 shows intraday, daily, and weekly stationarity values of CSSD and R_m Table 1 demonstrates the presence/absence of unit roots in terms of stationarity. For this purpose, an augmented dickey fuller test was applied. PSX and its sectors did not face any stationarity issue and null hypothesis was rejected for all levels, i.e., intraday, daily, and weekly. Findings revealed that CSSD and R_m were stationarity at their levels, showing that mean and variance remains constant with time.

DATA ANALYSIS & INTERPRETATION

Table 1: Stationarity Results of CSSD and (R_m)

		Intraday		Daily		Weekly	
S #	Sector	CSSD	R_m	CSSD	R_m	CSSD	R_m
	All Sectors (PSX)	-36.941***	-52.720***	-72.413***	-58.126***	-27.552***	-24.136***
1	O&GEC	-60.912***	-42.690***	-58.101***	-38.020***	-27.580***	-16.983***
2	AA	-53.658***	-43.173***	-65.326***	-21.364***	-29.231***	-12.798***
3	F&PCP	-71.167***	-11.523***	-65.476***	-11.549***	-31.487***	-7.385***
4	Trans.	-54.331***	-31.457***	-66.631***	-24.841***	-33.103***	-10.357***
5	CB	-53.031***	-55.580***	-52.771***	-57.542***	-27.514***	-33.156***
6	Ref.	-59.263***	-54.467***	-66.524***	-36.599***	-29.556***	-14.889***
7	TW	-70.571***	-25.557***	-68.965***	-18.632***	-38.485***	-11.548***
8	AP&A	-24.011***	-26.150***	-74.863***	-22.423***	-34.613***	-10.700***
9	Cem.	-38.589***	-38.926***	-66.826***	-42.581***	-26.093***	-24.394***
10	Jute	-76.455***	-5.183***	-76.139***	-20.124***	-32.596***	-13.589***
11	G&C	-51.015***	-27.646***	-67.260***	-23.100***	-28.696***	-13.062***
12	P&B	-62.250***	-9.019***	-54.962***	-19.386***	-33.898***	-10.300***
13	Misc.	-63.732***	-34.961***	-62.867***	-21.397***	-30.777***	-10.673***
14	S&R	-81.213***	-19.965***	-77.078***	-23.846***	-34.107***	-16.504***
15	Ins.	-65.994***	-42.556***	-65.777***	-26.164***	-29.790***	-22.164***
16	L&T	-67.990***	-23.284***	-63.401***	-24.146***	-36.900***	-13.899***
17	Mod.	-76.270***	-36.074***	-64.169***	-33.507***	-33.569***	-18.310***
18	PG&GD	-68.551***	-44.770***	-69.517***	-35.096***	-32.872***	-20.273***
19	Pharma.	-63.432***	-47.007***	-47.550***	-14.263***	-31.436***	-15.196***
20	C&EG	-37.364***	-86.453***	-62.961***	-18.495***	-28.175***	-16.939***
21	V&AI	-56.235***	-11.029***	-65.793***	-6.873***	-36.848***	-21.636***
22	T&C	-60.295***	-48.010***	-59.556***	-36.126***	-29.740***	-23.511***
23	O&GDC	-58.715***	-57.113***	-65.326***	-29.545***	-31.792***	-16.533***
24	S&AI	-65.670***	-42.766***	-112.05***	-19.305***	-33.786***	-15.633***
25	Chem.	-58.890***	-42.834***	-69.838***	-31.733***	-27.763***	-29.918***
26	CEMF	-77.705***	-37.267***	-75.465***	-24.963***	-31.218***	-15.393***
27	Eng.	-68.194***	-25.780***	-59.023***	-20.636***	-33.797***	-13.115***
28	Fer.	-66.348***	-48.675***	-67.254***	-38.631***	-30.161***	-19.720***
29	IB/IC/SC	-55.932***	-37.860***	-59.881***	-31.739***	-33.906***	-21.885***
30	LC	-77.895***	-27.989***	-74.678***	-29.726***	-35.477***	-17.186***
31	TC	-19.814***	-32.621***	-231.10***	-20.696***	-49.244***	-17.853***
32	TS	-64.834***	-43.013***	-117.25***	-26.305***	-34.007***	-22.964***
33	Tob.	-59.926***	-20.913***	-59.892***	-15.686***	-39.704***	-14.367***
34	Wool.	-45.214***	-25.145***	-68.179***	-20.373***	-35.680***	-13.766***

Table 2: Intraday Regression Results of CSSD

		1 Percent Criterion				1 Percent Criterion			
S #	Sector	α	β_1	β_2	R^2	α	β_1	β_2	R^2
	All Sectors (PSX)	4.161***	5.280***	7.040***	0.111	3.988***	2.139**	3.697***	0.128
		(127.52)	(6.39)	(7.99)		(124.85)	(8.99)	(14.06)	
1	A.A.	2.412***	3.672***	6.964***	0.236	2.280***	1.858***	3.027***	0.210
		(134.21)	(6.45)	(8.66)		(141.03)	(9.73)	(13.17)	
2	AP&A	2.064***	14.412***	12.688***	0.356	1.753***	5.346***	6.348***	0.301
		(72.45)	(7.11)	(10.31)		(80.06)	(10.13)	(16.08)	
3	C&EG	.822***	5.181***	6.218***	0.442	.673***	2.402***	2.909***	0.436
		(67.44)	(9.66)	(11.24)		(71.48)	(15.52)	(16.74)	
4	Cem.	2.766***	7.175***	10.230***	0.283	2.569***	2.395***	5.036***	0.260
		(112.50)	(7.78)	(9.27)		(116.16)	(9.32)	(15.78)	
5	Chem.	2.993***	13.442***	15.992***	0.203	2.736***	3.641***	5.581***	0.145
		(98.89)	(2.12)	(4.59)		(134.78)	(7.65)	(7.01)	
6	CEMF	3.714***	18.503***	20.580***	0.288	3.026***	10.302***	11.195***	0.398
		(65.65)	(14.37)	(6.54)		(70.24)	(21.50)	(14.58)	
7	C.B.	2.080***	2.241***	4.203***	0.105	1.983***	1.368***	1.874***	0.114
		(146.46)	(6.65)	(3.13)		(153.81)	(11.19)	(6.44)	
8	Eng.	2.430***	12.599***	12.950***	0.444	2.196***	4.844***	5.057***	0.300
		(103.42)	(9.18)	(11.98)		(116.97)	(11.61)	(13.58)	
9	Fer.	1.350***	2.914***	2.167***	0.109	1.285***	1.226***	1.091***	0.102
		(106.04)	(4.57)	(4.89)		(103.90)	(7.91)	(9.33)	
10	F&PCP	2.283***	7.877***	60.413**	0.805	2.060***	3.313***	14.822***	0.234
		(105.79)	(6.93)	(16.67)		(121.63)	(11.28)	(8.84)	
11	G&C	2.725***	13.962***	13.376***	0.296	2.372***	6.053***	.374	0.286
		(83.31)	(6.30)	(6.66)		(87.81)	(11.36)	(12.81)	
12	Ins.	2.597***	6.833***	9.303***	0.178	2.398***	3.354***	3.816***	0.162
		(74.31)	(19.68)	(26.24)		(65.09)	(20.92)	(23.66)	
13	IB/IC/SC	4.248***	12.095***	16.567***	0.274	3.889***	6.099***	6.816***	0.250
		(105.38)	(7.39)	(7.50)		(111.35)	(13.05)	(11.580	
14	Jute	3.912***	31.751***	26.772***	0.468	3.062***	14.032***	14.002***	0.528
		(46.47)	(9.04)	(13.13)		(54.66)	(12.58)	(16.91)	
15	L.C.	3.817***	16.586***	17.672***	0.266	3.103***	10.488***	10.593***	0.465
		(64.91)	(18.36)	(16.11)		(67.74)	(25.74)	(24.67)	
16	L&T	2.226***	11.829***	13.926***	0.369	1.779***	7.250***	6.889***	0.506
		(60.36)	(16.74)	(19.19)		(71.13)	(21.53)	(19.31)	
17	Misc.	3.198***	12.252***	11.927***	0.270	2.841***	5.969***	5.990***	0.304
		(97.22)	(6.92)	(7.75)		(104.67)	(13.25)	(14.82)	
18	Mod.	4.873***	16.081***	14.326***	0.245	4.355***	8.064***	8.254***	0.331
		(97.76)	(11.52)	(10.04)		(101.19)	(18.12)	(19.06)	
19	O&GEC	1.579***	1.927***	2.355***	0.079	1.512***	1.103***	1.092***	0.095
		(115.68)	(4.14)	(6.28)		(113.56)	(8.94)	(10.05)	
20	O&GDC	1.195***	2.583***	2.731***	0.093	1.132***	1.201***	1.102***	0.081
		(87.30)	(2.99)	(4.74)		(83.15)	(6.45)	(7.66)	
21	P&B	1.880***	18.563***	16.845***	0.511	1.475***	7.406***	7.71***	0.431
		(69.24)	(8.86)	(15.81)		(96.43)	(12.78)	(18.79)	
22	Pharma.	1.805***	3.430***	2.699***	0.146	1.720***	1.495***	1.470***	0.152
		(131.07)	(6.36)	(6.73)		(130.51)	(10.30)	(12.26)	
23	PG&GD	3.340***	10.149***	11.323***	0.180	3.061***	4.265***	5.565***	0.176
		(111.40)	(4.02)	(4.62)		(117.98)	(7.63)	(9.99)	
24	S&R	2.250***	13.560***	12.950***	0.437	1.846***	6.520***	6.910***	0.504
		(76.95)	(15.60)	(22.69)		(89.80)	(19.60)	(24.36)	
25	Ref.	1.629***	2.833***	2.447***	0.078	1.560***	1.142***	1.302***	0.076
		(94.16)	(5.05)	(5.27)		(92.72)	(7.50)	(8.74)	
26	S&AI	2.905***	8.551***	6.3136***	0.224	2.710***	3.500***	3.209***	0.222
		(128.10)	(6.78)	(6.36)		(130.09)	(11.68)	(13.14)	
27	T&C	2.298***	4.476***	6.176***	0.205	2.139***	2.245***	2.990***	0.234
		(114.33)	(8.67)	(12.71)		(120.28)	(12.57)	(16.29)	
28	T.C.	2.505***	12.889***	16.049***	0.339	2.180***	5.250***	6.997***	0.284
		(67.29)	(9.86)	(14.05)		(67.41)	(12.75)	(15.73)	
29	T.S.	4.200***	12.029***	11.132***	0.183	3.724***	7.373***	6.658***	0.326
		(88.90)	(14.98)	(14.77)		(91.15)	(22.73)	(20.53)	
30	T.W.	3.441***	18.645***	19.349***	0.385	2.717***	6.640***	9.971***	0.412
		(73.46)	(13.03)	(13.51)		(79.11)	(20.21)	(19.73)	
31	Tob.	1.588***	6.672***	6.570***	0.273	1.441***	2.720***	2.904***	0.228
		(82.75)	(5.16)	(8.44)		(80.61)	(9.06)	(12.68)	
32	Trans.	1.959***	7.837***	9.9668***	0.370	1.738***	3.572***	4.429***	0.343
		(92.55)	(12.10)	(10.72)		(101.13)	(15.44)	(15.16)	
33	V&AI	1.848***	10.356***	10.721***	0.429	1.538***	4.822***	5.594***	0.486
		(62.33)	(8.29)	(13.50)		(69.74)	(13.04)	(18.64)	
34	Wool.	1.4922***	4.546***	4.148***	0.146	1.293***	2.732***	3.041***	0.292
		(52.64)	(10.01)	(7.91)		(55.34)	(11.65)	(14.79)	

*Statistical significance at 10% level
** Statistical significance at 5% level
*** Statistical significance at 1% level.

Table 3: Daily Regression Results of CSSD

		1 Percent Criterion				1 Percent Criterion			
S #	Sector	α	β_1	β_2	R^2	α	β_1	β_2	R^2
	All Sectors (PSX)	8.552***	7.496***	13.440***	0.048	8.102***	5.379***	7.780***	0.085
		(95.79)	(2.48)	(5.14)		(91.25)	(7.61)	(11.20)	
1	A.A.	2.494***	8.018***	9.369***	0.154	2.389***	2.996***	3.062***	0.074
		(133.33)	(4.02)	(3.30)		(138.50)	(5.21)	(4.95)	
2	AP&A	2.970***	22.274***	25.516***	0.401	2.609***	8.052***	9.173***	0.227
		(89.09)	(7.18)	(7.04)		(97.49)	(9.33)	(9.83)	
3	C&EG	2.834***	24.690***	22.646***	0.269	2.593***	7.366***	6.847***	0.112
		(104.63)	(4.44)	(4.20)		(114.97)	(5.87)	(5.62)	
4	Cem.	3.084***	10.174***	8.8326***	0.235	2.897***	3.7512***	3.794***	0.169
		(113.08)	(6.59)	(5.93)		(118.84)	(9.16)	(9.75)	
5	Chem.	3.336***	34.916***	17.554***	0.329	3.065***	4.210***	6.063***	0.190
		(107.06)	(15.60)	(6.49)		(130.06)	(8.47)	(8.87)	
6	CEMF	4.153***	28.901***	26.895***	0.323	3.430***	12.956***	12.783***	0.314
		(67.61)	(6.57)	(6.89)		(70.79)	(11.83)	(13.18)	
7	C.B.	2.131***	3.218***	5.338***	0.110	2.015***	1.883***	2.149***	0.106
		(126.81)	(5.42)	(3.03)		(134.42)	(10.67)	(5.60)	
8	Eng.	2.835***	28.292***	29.541***	0.449	2.541***	8.508***	8.717***	0.186
		(97.58)	(6.62)	(7.16)		(118.80)	(7.86)	(8.11)	
9	Fer.	1.410***	9.373***	3.804**	0.163	1.343***	2.605***	1.376***	0.064
		(104.12)	(4.14)	(1.99)		(102.54)	(5.11)	(3.48)	
10	F&PCP	.514***	40.232***	44.798***	0.478	2.308**	9.807***	11.195***	0.135
		(119.07)	(6.03)	(7.59)		(139.16)	(5.95)	(6.90)	
11	G&C	3.056***	23.680 ***	20.610***	0.369	2.674***	8.113 ***	8.250***	0.235
		(82.27)	(6.81)	(6.32)		(94.32)	(9.36)	(9.88)	
12	Ins.	3.075***	19.884***	17.663	0.424	2.821***	5.752***	5.638***	0.192
		(69.40)	(44.67)	(39.68)		(51.23)	(26.18)	(23.49)	
13	IB/IC/SC	4.726***	20.061 ***	19.293***	0.301	4.344***	8.256	7.398***	0.216
		(103.03)	(6.75)	(6.77)		(120.36)	(9.78)	(9.89)	
14	Jute	3.313***	0.194***	34.988***	0.320	3.014***	16.133***	17.670***	0.389
		(35.48)	(9.91)	(9.46)		(56.87)	(9.37)	(10.11)	
15	L.C.	4.005***	18.748***	9.506***	0.312	3.312***	10.810***	10.747***	0.452
		(71.96)	(16.83)	(14.68)		(76.55)	(23.63)	(22.33)	
16	L&T	2.401***	22.578***	23.506***	0.314	1.969***	9.056***	8.676***	0.216
		(67.28)	(4.74)	(5.31)		(80.01)	(8.45)	(8.31)	
17	Misc.	3.492***	27.910***	24.956***	0.415	3.063***	8.292***	9.164***	0.222
		(90.28)	(7.33)	(6.92)		(96.66)	(9.95)	(10.12)	
18	Mod.	5.529***	25.370***	24.668***	0.366	4.996***	10.315***	10.071***	0.288
		(106.56)	(9.01)	(8.25)		(116.50)	(12.95)	(12.44)	
19	O&GEC	1.660***	8.534**	6.963**	0.094	1.592***	2.479***	1.927***	0.036
		(113.49)	(2.49)	(2.22)		(113.67)	(3.56)	(2.96)	
20	O&GDC	1.244***	1.892***	2.693***	0.077	1.180***	1.064***	1.116***	0.080
		(85.51)	(3.44)	(4.70)		(83.17)	(7.98)	(7.61)	
21	P&B	2.569***	26.932***	30.707***	0.467	2.085***	9.954***	11.348***	0.291
		(63.34)	(8.05)	(9.14)		(77.95)	(10.55)	(11.73)	
22	Pharma.	1.996***	15.356***	15.267***	0.192	1.897	4.250***	3.896***	0.062
		(131.41)	(3.59)	(3.44)		(138.46)	(4.55)	(4.00)	
23	PG&GD	3.061***	4.265***	5.565***	0.176	3.460***	11.888***	12.691***	0.174
		(117.98)	(7.63)	(9.99)		(113.07)	(4.30)	(4.87)	
24	S&R	2.842***	23.597***	22.546***	0.444	2.397***	8.794***	9.108***	0.317
		(75.26)	(8.85)	(9.31)		(107.25)	(11.61)	(12.33)	
25	Ref.	1.692***	7.357***	3.861***	0.119	1.616***	1.615***	1.456***	0.045
		(93.58)	(3.07)	(3.00)		(91.68)	(4.39)	(5.01)	
26	S&AI	4.747***	32.029***	32.079***	0.387	3.439***	19.414***	19.595***	0.655
		(58.86)	(27.61)	(28.97)		(108.98)	(25.22)	(26.51)	
27	T&C	2.333***	6.730***	6.214***	0.193	2.175***	2.627***	3.029***	0.178
		(113.35)	(4.06)	(12.00)		(119.44)	(7.30)	(15.83)	
28	TC	16.089***	38.347***	36.550***	0.121	13.697***	31.506***	31.296***	0.392
		(79.60)	(16.17)	(15.64)		(76.68)	(47.58)	(46.33)	
29	T.S.	8.668***	24.778***	27.130***	0.132	7.116***	20.342***	20.838***	0.394
		(67.55)	(11.69)	(9.55)		(64.54)	(36.34)	(28.88)	
30	T.W.	3.965***	44.477***	33.697***	0.458	3.315***	14.716***	2.735**	0.285
		(77.14)	(8.81)	(6.67)		(87.18)	(11.47)	(10.14)	
31	Tob.	1.772***	24.921***	21.696***	0.255	1.637***	4.474***	5.431***	0.061
		(91.28)	(4.00)	(3.73)		(89.45)	(4.61)	(4.17)	
32	Trans.	2.020***	10.92***	12.101	0.296	1.791***	4.254***	5.055***	0.217
		(92.77)	(5.00)	(6.62)		(101.73)	(8.03)	(11.08)	
33	V&AI	2.222***	23.607***	18.722***	0.493	.892***	7.728***	7.261***	0.284
		(73.70)	(6.60)	(6.52)		(87.46)	(7.99)	(9.60)	
34	Wool.	1.677***	1.772***	8.516***	0.097	1.376***	3.951***	3.812***	0.181
		(40.82)	(91.28)	(3.50)		(61.64)	(6.66)	(6.85)	

*Statistical significance at 10% level
** Statistical significance at 5% level
*** Statistical significance at 1% level.

Table 4: Weekly Regression Results of CSSD

		1 Percent Criterion				1 Percent Criterion			
S #	Sector	α	β_1	β_2	R^2	α	β_1	β_2	R^2
	All Sectors (PSX)	12.528***	21.417**	25.728**	0.127	12.223***	5.330**	10.466***	0.071
		(53.41)	(1.96)	(2.23)		(52.38)	(2.01)	(3.44)	
1	A.A.	5.559***	54.409**	39.811***	0.483	5.317***	6.820**	10.205***	0.131
		(60.92)	(2.28)	(3.30)		(61.25)	(2.31)	(3.29)	
2	AP&A	6.501***	47.330***	67.882***	0.555	5.942***	17.841***	19.692***	0.248
		(42.93)	(3.67)	(5.37)		(46.50)	(3.86)	(4.64)	
3	C&EG	6.892***	28.693**	43.073***	0.274	6.607***	26.023**	13.421***	0.176
		(41.23)	(2.00)	(2.72)		(41.21)	(2.13)	(3.52)	
4	Cem.	6.166***	6.900***	13.276***	0.113	5.872***	4.201***	6.017***	0.120
		(46.23)	(3.64)	(4.75)		(43.46)	(5.19)	(7.00)	
5	Chem.	7.407***	21.742**	29.234***	0.226	6.895***	.201***	11.070***	0.177
		(50.22)	(1.66)	(2.71)		(62.18)	(3.63)	(4.00)	
6	CEMF	8.111***	48.786***	37.791***	0.324	7.3204***	23.909***	16.967***	0.274
		(34.40)	(3.65)	(3.93)		(34.66)	(4.56)	(6.27)	
7	C.B.	4.172***	7.447***	17.163**	0.261	3.998***	3.209***	5.346***	0.130
		(59.64)	(3.77)	(2.46)		(58.29)	(5.17)	(3.14)	
8	Eng.	7.028***	42.696***	66.096***	0.487	6.474***	16.743***	19.569***	0.226
		(45.05)	(2.76)	(5.10)		(50.09)	(3.32)	(4.57)	
9	Fer.	3.271***	25.517***	11.698***	0.286	3.019***	8.171***	4.205**	0.141
		(42.39)	(3.10)	(1.37)		(44.05)	(3.82)	(2.25)	
10	F&PCP	6.517***	106.076***	87.814***	0.756	5.752***	26.065***	25.873***	0.266
		(39.68)	(6.98)	(7.45)		(60.14)	(4.16)	(4.80)	
11	G&C	6.953***	43.613***	44.821***	.423	6.247***	16.066***	16.721***	0.254
		(39.51)	(3.51)	(4.50)		(39.47)	(4.58)	(5.40)	
12	Ins.	6.921***	16.210***	28.853***	0.249	6.455***	8.491***	12.123***	0.211
		(37.03)	(10.10)	(14.99)		(32.50)	(8.91)	(13.88)	
13	IB/IC/SC	9.710***	33.001	35.802***	0.311	9.160***	11.132***	13.547***	0.187
		(52.23)	(3.72)	(3.30)		(52.29)	(4.46)	(4.57)	
14	Jute	6.792	38.306***	36.236***	0.259	5.392***	23.338***	19.987***	0.398
		(20.81)	(8.39)	(3.86)		(28.42)	(5.44)	(7.36)	
15	L.C.	8.125***	16.742***	30.836***	0.239	7.336***	13.094***	15.865***	0.320
		(38.35)	(7.26)	(8.93)		(37.73)	(9.31)	(10.58)	
16	L&T	5.551***	40.948***	50.139***	0.395	4.896***	15.581***	16.236***	0.212
		(37.27)	(2.82)	(3.38)		(37.34)	(3.93)	(4.25)	
17	Misc.	8.274***	70.105***	52.477***	0.591	7.580***	19.656***	18.099***	0.261
		(45.12)	(6.73)	(5.40)		(53.31)	(4.72)	(4.90)	
18	Mod.	11.153***	41.056***	40.453***	0.330	10.198***	18.779***	17.230***	0.287
		(46.83)	(5.90)	(4.09)		(51.21)	(6.55)	(5.80)	
19	O&GEC	3.762***	25.310**	29.252**	0.269	3.535***	10.366***	7.961**	0.117
		(50.71)	(2.20)	(2.02)		(50.30)	(2.65)	(2.55)	
20	O&GDC	2.556***	11.145***	7 .987***	0.218	2.326***	4.576***	3.918***	0.195
		(35.88)	(2.63)	(4.53)		(37.21)	(4.35)	(5.65)	
21	P&B	6.048***	64.444***	67.492***	0.581	4.944***	26.062***	27.359***	0.416
		(29.81)	(5.15)	(7.86)		(39.88)	(5.21)	(7.22)	
22	Pharma.	4.571***	25.685**	42.732***	0.369	4.351***	8.597**	11.156***	0.130
		(58.90)	(2.00)	(2.97)		(59.47)	(2.21)	(3.17)	
23	PG&GD	6.764***	19.680	29.392***	0.216	6.281***	7.775***	11.740***	0.157
		(45.97)	(1.61)	(2.75)		(44.14)	(3.04)	(4.48)	
24	S&R	6.362***	32.819***	45.346***	0.429	5.819***	15.274***	15.251***	0.257
		(38.52)	(4.62)	(4.24)		(38.38)	(5.10)	(4.94)	
25	Ref.	3.555***	13.617*	5.264***	0.146	3.347***	5.578***	3.520***	0.122
		(43.02)	(1.78)	(3.41)		(42.30)	(2.62)	(6.62)	
26	S&AI	8.893***	37.164***	32.613***	0.292	7.869***	17.702***	17.272***	0.325
		(42.01)	(4.01)	(3.48)		(48.69)	(6.16)	(6.60)	
27	T&C	5.053***	12.213*	7.598	0.127	4.766***	5.089***	4.503***	0.136
		(52.58)	(1.68)	(5.22)		(52.56)	(3.30)	(6.96)	
28	TC	19.064***	37.705***	48.813***	0.141	17.193***	27.060***	28.349***	0.254
		(40.73)	(3.20)	(4.08)		(40.92)	(7.49)	(7.70)	
29	TS	13.472***	27.713***	22.802**	0.095	12.634***	13.963***	13.022***	0.126
		(40.49)	(4.31)	(2.51)		(39.25)	(5.32)	(5.38)	
30	T.W.	8.846***	76.040***	76.089***	0.555	7.776***	32.875***	25.353***	0.346
		(37.20)	(6.67)	(4.75)		(41.01)	(6.00)	(5.25)	
31	Tob.	4.097***	7.488***	51.063***	0.261	3.950***	13.580***	14.640***	0.157
		(37.10)	(3.31)	(2.86)		(39.50)	(3.07)	(3.31)	
32	Trans.	4.389***	28.158***	33.690***	0.431	3.956***	11.790***	11.779***	0.261
		(40.40)	(3.06)	(4.49)		(42.96)	(3.80)	(5.42)	
33	V&AI	7.695***	10.439***	11.842***	0.058	7.3788***	5.036***	5.398***	0.063
		(38.86)	(4.01)	(4.72)		(36.85)	(4.39)	(4.84)	
34	Wool.	3.548***	17.582***	24.543***	0.286	3.054***	.853***	10.357***	0.246
		(27.44)	(2.22)	(2.96)		(27.83)	(4.29)	(4.69)	

*Statistical significance at 10% level
** Statistical significance at 5% level
*** Statistical significance at 1% level.

Tables 2, 3, and 4 represent the regression results for PSX and its sectors at intraday, daily, and weekly levels. Previous studies identified herd behaviour as a short-lived aspect, leading to the selection of intraday and daily levels; however, some researchers argued that herd behaviour is a long-term phenomenon, suggesting the incorporation of weekly returns.

Heteroskedastic-*t* statistics are reported to show robustness. Moreover, The adjusted R^2 shows variations in the dependent variable explained by independent variables. The highest value (0.805, 0.756) is observed in food & personal care products at both intraday and weekly levels, respectively. The lowest values (0.036. 0.045) are reported in oil & gas extrapolation and refinery. The values of R^2 are comparatively greater at intraday and daily levels. It can be inferred that better variations in cross-sectional absolute deviation are explained by $(R_{m,t}, |R_{m,t}|, R^2_{m.t})$ in the short run.

Lower and higher 1% and 5% quantiles are represented through β_1 & β_2 . All the coefficients remained positive at all levels and in all sectors of PSX and PSX itself, signifying the absence of herding. Christie and Huang (1995) suggest that β_1 & β_2 must be negative to have the prevalence of herd behaviour, and dispersions must be more than average during huge fluctuations in stock prices. This study contradicts the rational asset pricing model and rejects herding at all levels and in all sectors of PSX. As far as intraday and daily returns are concerned, the steadiness in the values of β_1 & β_2, both at 1% and 5% is more apparent than at a weekly level. This consistency clarifies the variations between short-term and long-term aspects. It depicts that dispersions are steadier in the short term as returns require more time to keep away from the mean in the long term. When comparing bullish and bearish trends, the coefficient values seem to follow the bearish trends. Moreover, the magnitude of coefficients is comparatively higher at 1 percent criteria as compared to 5 percent, showing more significant dispersion at 1 percent. The lowest average dispersion (explained by α) is illustrated in cable and electrical goods (intraday level), food and personal care products (daily level), fertilizers (weekly level), and oil & gas extrapolation (monthly level). It is inferred that data frequency alterations could not violate the rational asset pricing model. The degree of coefficients is relatively high at 1 percent as compared to 5 percent, demonstrating a substantial difference at 1 percent.

DISCUSSION

Herding has been examined in PSX and its sectors using intraday, daily, and weekly trading data. Regression coefficients are observed to be positive at all data streams, referring to the absence of herding and supporting the rational asset pricing model. The non-existence of herd behaviour causes increased dispersion from the market as denoted by a positive coefficient. Moreover, during market swings, investors rely on their own decisions and invest in risky stocks irrespective of following the crowd. It also illustrates that during all data streams, investors' rationality was significantly proved as they prefer to make their own decisions instead of following the crowd. The absence of herding by using the CSSD model is supported by local studies and global research as well, for example, Khan and Rizwan (2018), Zafar and Hassan (2016), Javed et al. (2013) could not observe herding in PSX. They also argued that investors tend to make rational decision-making. Some international researchers also provided support to the results of the current study, i.e. Almeida et al. (2012) in stock markets of Latin America, öZsu (2015) in Istanbul, Gleason et al. (2004) in the American Stock Exchange, Prosad et al. (2012), Garg and Jindal (2014) in India, Al-Shboul (2012) in the stock market of Jordan and Chen (2013) in 69 countries. These researchers also supported the rational asset pricing model, thereby contradicting the presence of herding. Different authors have also justified the absence of herding during different data streams. Considering the data streams, Henker et al. (2006) did not notice the existence of herding at the intraday level. Christie and Huang (1995) could not find its presence at daily level. The weekly results of herding are reinforced by Purba and Faradynawati (2012) in Indonesia as well as Pop (2012), and Caporale et al. (2008) in Romania.

CONCLUDING REMARKS

This research observes herding PSX and its sectors using weekly, daily and intraday stock returns. The data set does not indicate any unit root issue at their levels. Herding has not been observed in PSX, which indicates the rational decision-making by the investors in PSX. Moreover, herding was not observed in any sector of PSX, thereby supporting the rational asset pricing model. The present study guides investors about investment decision-making and how investors are socially influenced. Herding is a vital component of financial markets, thereby leads investors to take the social influence of other informed investors in making their decisions. However, herding has not been

noticed in PSX, referred that investor's make their investment decisions by relying on their own expertise. Moreover, Investors are least affected by the social influence of other knowledgeable investors.

PRACTICAL AND MANAGERIAL IMPLICATIONS

This research is valuable not only for firm managers and investors but also provides some guidelines to policymakers. Herding has not been observed in any sector of PSX or in PSX itself. It guided the investors that they must try to consider the prospective market conditions when making valuable investments. Furthermore, thorough firm-specific information must be obtained by the investors. Managers must aim to formulate quality-oriented and transparent financial statements of corporations, which can lead to confident decision-making by the investors. Investors' access to reliable and official channels of information can be ensured by the policy makers through formulation of legislation for transparent framework of stock markets

LIMITATIONS AND FUTURE IMPLICATIONS

This study has observed herding while utilizing the secondary data i.e., stock returns, which is the limitation of this study. Moreover, the focus of this study was only on market-wide herding. Due to the non-maintenance of required institutional data by the regulatory authorities, an investigation of institutional herding was not carried out.

Primary data can be utilized by future researchers to investigate herding in Pakistan. Moreover, primary data can be helpful in devising a herding scale as it is based on investors' real-life experiences. Furthermore, investigation of herding in South Asian countries can be carried out by future researchers to compare the herd behavior in these markets.

REFERENCES

Ahmed, M., Abbass, M. Y., & Abbasi, S. (2015). Herd behaviour in extreme conditions: An evidence from Spanish market. *Abasyn University Journal of Social Sciences, 8*(1), 24.

Ahsan, A. F. M., & Sarkar, A. H. (2013). Herding in Dhaka Stock Exchange. *Journal of Applied Business and Economics, 14*(2), 11-19.

Almeida, R. P. de, Costa, H. C., & Jr, N. C. A. da C. (2012). Herd behavior in Latin American stock markets. *Latin American Business Review, 13*(2), 81-102. https://doi.org/10.1080/10978526.2012.700271

Al-Shboul, M. (2012). An examination of herd behavior in the Jordanian equity market. *International Journal of Economics and Finance, 5*(1), 234. https://doi.org/10.5539/ijef.v5n1p234

Arjoon, V., Bhatnagar, C. S., & Ramlakhan, P. (2019). Herding in the Singapore Stock Exchange. *Journal of Economics and Business.* https://doi.org/10.1016/j.jeconbus.2019.105889

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

Barber, B. M., & Odean, T. (1999). The courage of misguided convictions. *Financial Analysts Journal, 55*(6), 41-55. https://doi.org/10.2469/faj.v55.n6.2313

Batmunkh, M-U., Choijil, E., Vieito, J. P., Espinosa-Méndez, C., & Wong, W. K. (2020). Does herding behavior exist in the Mongolian stock market. *Pacific Basin Finance Jounral, 62.* https://doi.org/10.1016/j.pacfin.2020.101352

Bikhchandani, S., & Sharma, S. (2000). Herd behavior in financial markets. *IMF Staff Papers, 47*(3), 279-310. https://doi.org/10.2139/ssrn.228343

Brendea, G., & Pop, F. (2019). Herding behavior and financing decisions in Romania. *Managerial Finance, 45*(6), 716-725. https://doi.org/10.1108/MF-02-2018-0093

Boyer, B. H., Kumagai, T., & Yuan, K. (2006). How do crises spread? Evidence from accessible and inaccessible stock indices. *The Journal of Finance, 61*(2), 957-1003. https://doi.org/10.1111/j.1540-6261.2006.00860.x

Bodgan, S., Sustar, N., & Drazenovic, B. O. (2022). Herding behavior in developed, emerging, and frontier European stock markets during COVID-19 pandemic. *Journal of Risk Financial Management, 15*(9), 1-12. https://doi.org/10.3390/jrfm15090400

Can, R., & Dizdarlar, I. (2019). Herd Behavior in the Borsa Istanbul. In E. Özen, J. Spiteri, & E. Thalassinos (Eds.), *Contemporary Issues in Behavioral Finance.* Emerald Publishing Limited. https://doi.org/10.1108/S1569-375920190000101012

Caporale, G. M., Philippas, N., & Economou, F. (2008). Herding behaviour in extreme market conditions: The case of the Athens Stock Exchange. *Economics Bulletin, 7*(17), 1-13.

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

Chauhan, Y., Ahmad, N., Aggarwal, V., & Chandra. A. (2020). Herd behavior and asset pricing in the Indian stock market. *IIMB Management Review, 32*(2), 143-152. https://doi.org/10.1016/j.iimb.2019.10.008

Chen, T. (2013). Do investors herd in global stock markets? *Journal of Behavioral Finance, 14*(3), 230-239. https://doi.org/10.1080/15427560.2013.819804

Chiang, Thomas C., & Zheng, D. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking & Finance, 34*(8), 1911-1921. https://doi.org/10.1016/j.jbankfin.2009.12.014

Choi, N., & Sias, R. W. (2009). Institutional industry herding. *Journal of Financial Economics, 94*(3), 469-491. https://doi.org/10.1016/j.jfineco.2008.12.009

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

Economou, F. (2019). Herding in frontier markets: Evidence from the Balkan region. *Review of Behavioral Finance.* https://doi.org/10.1108/RBF-08-2018-0090

El-Shiaty, D., & Badawi, A. (2014). Herding behavior in the stock market: An empirical analysis of the Egyptian Exchange (Working Papers 37). The German University in Cairo, Faculty of Management Technology.

Fu, T., & Lin, M. (2010). Herding in China equity market. *International Journal of Economics and Finance, 2*(2). https://doi.org/10.5539/ijef.v2n2p148

Galariotis, E. C., Krokida, S.-I., & Spyrou, S. (2016). Herd behavior and equity market liquidity: Evidence from major markets. *International Review of Financial Analysis, 48*(1), 140-149. https://doi.org/10.1016/j.irfa.2016.09.013

Garg, A., & Jindal, K. (2014). Herding Behavior in an Emerging Stock Market: Empirical Evidence from India. *IUP Journal of Applied Finance, 20*(2).

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

Goodfellow, C., Bohl, M. T., & Gebka, B. (2009). Together we invest? Individual and institutional investors' trading behaviour in Poland. *International Review of Financial Analysis, 18*(4), 212-221. https://doi.org/10.1016/j.irfa.2009.03.002

Griffin, J. M., Harris, J. H., & Topaloglu, S. (2003). The dynamics of institutional and individual trading. *The Journal of Finance, 58*(6), 2285-2320. https://doi.org/10.1046/j.1540-6261.2003.00606.x

Hamid, M., Jam, F. A., & Mehmood, S. (2019). Psychological Empowerment and Employee Attitudes: Mediating Role of Intrinsic Motivation. *International Journal of Business and Economic Affairs, 4*(6), 300–314. https://doi.org/10.24088/ijbea-2019-46005

Henker, J., Henker, T., & Mitsios, A. (2006). Do investors herd intraday in Australian equities? *International Journal of Managerial Finance, 2*(3), 196-219. https://doi.org/10.1108/17439130610676475

Hirshleifer, D., & Teoh, S. H. (2009). The psychological attraction approach to accounting and disclosure policy. *Contemporary Accounting Research, 26*(4), 1067-1090. https://doi.org/10.1506/car.26.4.3

Hogg, M. A., & Vaughan, G. M. (2008). *Essentials of social psychology.* Pearson Education.

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

Indrs, E. R., Savin, A., & Lublóy, Á. (2019). Herding behaviour in an emerging market: Evidence from the Moscow Exchange. *Emerging Markets Review, 38*, 468-487. https://doi.org/10.1016/j.ememar.2018.12.002

Jabeen, S., & Rizavi, S. S. (2019). Herd behavior, Short-lived phenomenon: Evidence from Pakistan Stock Exchange. *The Lahore Journal of Business, 8*(1), 51-72. https://doi.org/10.35536/ljb.2019.v8.i1.a3

Jabeen, S., & Rizavi, S. S. (2021). Short Term and Long Term Herding Prospects: Evidence from Pakistan Stock Exchange. *Abasynhe Journal of Social Sciences, 14*(1), 119-144. https://doi.org/10.34091/AJSS.14.1.08

Jam, F. A. (2019). Crypto currencya new phenomenon in monetary circulation. *Central Asian Journal of Social Sciences and Humanities, 4*(1), 39-46.

Javaira, Z., & Hassan, A. (2015). An examination of herding behavior in Pakistani stock market. *International Journal of Emerging Markets, 10*(3), 474-490. https://doi.org/10.1108/IJoEM-07-2011-0064

Javed, T., Zafar, N., & Hafeez, B. (2013a). Herding Behavior in Karachi Stock Exchange. *International Journal of Management Sciences and Business Research, 2*(2), 19-28.

Jlassi, M., & Naoui, K. (2015). Herding behaviour and market dynamic volatility: evidence from the U.S. stock markets. *American J. of Finance and Accounting, 4*(1), 70. https://doi.org/10.1504/AJFA.2015.067844

Ju, X.-K. (2019). Herding behaviour of Chinese A- and B-share markets. *Journal of Asian Business and Economic Studies, 27*(1), 49-65. https://doi.org/10.1108/JABES-03-2019-0022

Khan, Q., Xinshu, M., Haider, M. I., & Jaffari, A. H. (2021). Impact of stock market and bank development on the firm's growth: Evidence from Pakistan. *International Journal of Business and Administrative Studies, 7*(2), 62-73. https://dx.doi.org/10.20469/ijbas.7.10002-2

Khan, S. U., & Rizwan, M. F. (2018). Do investors herd: Evidence from an emerging market. *The Lahore Journal of Business, 6*(2), 27-46. https://doi.org/10.35536/ljb.2018.v6.i2.a2

Khaneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263-292. https://doi.org/10.2307/1914185

Kiran, F., Khan, N. U., & Shah, A. (2020). The herding behaviour on Pakistan Stock Exchange - using firm-level data. *Afro-Asian J. Finance and Accounting, 10*(1), 71-84. https://doi.org/10.1504/AAJFA.2020.104407

Lakonishok, J., Shleifer, A., & Vishny, R. (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-Q

Litimi, H. (2017). Herd behavior in the French stock market. *Review of Accounting and Finance, 16*(4), 497-515. https://doi.org/10.1108/RAF-11-2016-0188

Malik, S. U., & Elahi, M. A. (2014). A*nalysis of Herd Behavior Using Quantile Regression: Evidence from Karachi Stock Exchange (KSE).*

Mand, A. A., & Sifat, I. (2021). Static and regime-dependent herding behavior: An emerging market case study. *Journal of Behavioral and Experimental Finance, 29.* https://doi.org/10.1016/j.jbef.2021.100466

Mertzanis, C., & Allam, N. (2018). Political instability and herding behaviour: Evidence from Egypt's stock market. *Journal of Emerging Market Finance, 17*(1), 29-59. https://doi.org/10.1177/0972652717748087

Messis, P., & Zapranis, A. (2014). Herding behaviour and volatility in the Athens Stock Exchange. *The Journal of Risk Finance, 15*(2), 572-590. https://doi.org/10.1108/JRF-04-2014-0054

Moskowitz, T. J., & Grinblatt, M. (1999). Do industries explain momentum? *The Journal of Finance, 54*(4), 1249-1290. https://doi.org/10.1111/0022-1082.00146

Mwimali, H. M. (2012). *The existence of herd behaviour: evidence from the Nairobi Securities Exchange.*

Orlean, A. (1995). Bayesian interactions and collective dynamics of opinion: Herd behavior and mimetic contagion. *Journal of Economic Behavior & Organization, 28*(2), 257-274. https://doi.org/10.1016/0167-2681(95)00035-6

OZsu, H. H. (2015). Empirical analysis of herd behavior in Borsa Istanbul. *International Journal of Economic Sciences, IV*(4), 27-52. https://doi.org/10.20472/ES.2015.4.4.003

Pop, R. E. (2012). *Herd behavior towards Market Index: Evidence from Romanisn Stock Exchange,* 48.

Prosad, J. M., Kapoor, S., & Sengupta, J. (2012). An examination of herd behavior: An empirical evidence from Indian equity market. *International Journal of Trade, Economics and Finance, 3*(2) 154-157. https://doi.org/10.7763/IJTEF.2012.V3.190

Purba, A. V., & Faradynawati, I. A. A. (2012). An examination of herd behavior in the Indonesian stock market. *Indonesian Capital Market Review, 4*(1). https://doi.org/10.21002/icmr.v4i1.985

Radalj, K., & McAleer, M. J. (1993). *Herding, information cascades and volatility spillovers in futures markets* (Working Paper. University of Westren Australia). Perth.

Rahman, M. A., Chowdhury, S. S. H., & Shibley Sadique, M. (2015). Herding where retail investors dominate trading: The case of Saudi Arabia. *The Quarterly Review of Economics and Finance, 57,* 46-60. https://doi.org/10.1016/j.qref.2015.01.002

Seetharam, Y. (2013). An Analysis of Herding Behaviour during Market Cycles in South Africa. *Journal of Economics and Behavioral Studies, 5*(2), 89-98. https://doi.org/10.22610/jebs.v5i2.383

Shah, M. U. D., Shah, A., & Khan, S. U. (2017). Herding behavior in the Pakistan stock exchange: Some new insights. *Research in International Business and Finance, 42*, 865-873. https://doi.org/10.1016/j.ribaf.2017.07.022

Shantha, K. V. A. (2019). The evolution of herd behavior: Will herding disappear over time? *Studies in Economics and Finance, 36*(3), 637-661. https://doi.org/10.1108/SEF-06-2018-0175

Sharma, V., Easterwood, J. C., & Kumar, R. (2004). *Did institutional investors herd into new economy stocks?* (Working paper) Pamplin College of Business, Blacksburg, VA.

Shiller, R. J. (2003). From efficient markets theory to behavioral finance. *Journal of Economic Perspectives, 17*(1), 83-104. https://doi.org/10.1257/089533003321164967

Shleifer, A. (2000). Inefficient markets: An introduction to behavioural finance. *Oxford.* https://doi.org/10.1093/0198292279.001.0001

Shefrin, H. (2002). *Beyond fear and greed: Understanding behavioral finance and the psychology of investing.* Oxford University Press. https://doi.org/10.1093/0195161211.001.0001

Sias, R. W. (2004). Institutional herding. *Review of Financial Studies, 17*(1), 165-206. https://doi.org/10.1093/rfs/hhg035

Stavroyiannis, S., & Babalos, V. (2019). Time-varying herding behavior within the Eurozone stock markets during crisis periods: Novel evidence from a TVP model. *Review of Behavioral Finance.* https://doi.org/10.1016/j.jbef.2019.02.007

Tan, L., Chiang, T., Mason, J. R., & Nelling, E. (2008). Herding behavior in Chinese stock markets: An examination of A and B shares. *Pacific-Basin Finance Journal, 16*(1-2) 61-77. https://doi.org/10.1016/j.pacfin.2007.04.004

Ukpong, I., Tan, H., & Yarovaya, L. (2021). Determinants of industry herding in the US stock market. *Finance Research Letters*. https://doi.org/10.1016/j.frl.2021.101953

Van Campenhout, G., & Verhestraeten, J. F. (2010). *Herding behavior among financial analysts: A literature review* (Hub research paper 2010/39). Hogeschool-Universiteit Brussel, Brussels, Belgium

Venezia, I., Nashikkar, A., & Shapira, Z. (2011). Firm specific and macro herding by professional and amateur investors and their effects on market volatility. *Journal of Banking & Finance, 35*(7), 1599-1609. https://doi.org/10.1016/j.jbankfin.2010.11.015

Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets, 1*(1), 24-41. https://doi.org/10.1504/IJBEM.2008.019243

Wanidwaranan, P., & Padungsaksawasdi, C. (2020). The effect of return jumps on herd behavior. *Journal of Behavioral and Experimental Finance, 27.* https://doi.org/10.1016/j.jbef.2020.100375

Yousaf, I., Ali, S., & Shah, S. Z. A. (2018). Herding behavior in Ramadan and financial crises: The case of the Pakistani stock market. *Financial Innovation, 4*(1), 16. https://doi.org/10.1186/s40854-018-0098-9

Zafar, N., & Hassan, A. (2016). An empirical investigation of herding: Case of Karachi stock exchange. *Pakistan Journal of Life and Social Sciences, 14*(2), 60-69.

Zeeshan, A. (2022). Momentum effects and Pakistan stocks exchange. *Journal of Administrative and Business Studies, 8*(1), 19-34.