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Short Term and Long Term Herding Prospects: Evidence from Pakistan Stock Exchange

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Abstract

The present research intends to examine the herd behaviour of investors in the Pakistan Stock Exchange (PSX). Herd behaviour in stock market is sometimes based on fundamental information, which causes quick price adjustments to new information and leads to efficient markets. Still, sometimes it is not dependent on fundamental information and results in price instability. Herding can be a short term phenomenon, but sometimes a longer time span can provide favourable outcomes for the occurrence of herd behaviour. Considering these diverse views, intraday, daily, weekly, and monthly stock prices of 528 companies listed in the PSX have been used to calculate stock returns. Market-wide herd measure, i.e. CSAD, has been used to compute the herd behaviour. Data has been investigated for autocorrelation, heteroscedasticity, and stationarity issues. Findings revealed that herding did not exist in PSX, but some sectors showed this behaviour. Herd behaviour was more likely to exist at daily level. The tendency of occurrence of the herding phenomenon gradually decreases at intraday and weekly levels. However, herding cannot be taken as a long term phenomenon as just single sector was evidenced about its existence at monthly level. Herding is an inherent phenomenon that is very difficult to eliminate from the stock market completely. However, knowledge and information sharing can guide investors to improve this behaviour.

Keywords: Herd Behaviour, Behavioural Finance, Return Dispersions, Pakistan Stock Exchange, CSAD

Literature has categorized the field of finance into two aspects, traditional finance and behavioural finance. Traditional finance relates to the efficient market hypothesis, which Fama (1970) presented, whereas behavioural finance concerns the psychology of investors. The viewpoint of the rationality of investors is the foundation of behavioural finance, and it creates distinction against the assumptions of the efficient market hypothesis. The irrational conduct of investors compels them to follow other investors in making their decisions (Parveen & Siddiqui, 2018). Following the conduct of someone else is known as herding. The phenomenon of herding represents a scenario in which investors set aside their own information and follow the crowd, irrespective of the accuracy of their information (Van Campenhout & Verhestraeten, 2010). Herding has been classified into two types, i.e. market-wide herding and institutional herding. Market-wide herding considers the market's trading data, and it investigates how investors do herding in the market. Cross-Sectional Standard Deviation (CSSD) and Cross-Sectional Absolute Deviation (CSAD) are the two crucial measures of market-wide herding. On the other hand, institutional herding revolves around institutional investors. Institutions are banks, pension funds, insurance companies, and mutual funds (Choi & Sias, 2009). Institutional herding means institutional investors follow other institutional investors to buy and sell securities (Liao, Huang, & Wu, 2011). Institutional investors direct the market in terms of financial assistance as well as information delivery. They are considered sophisticated investors as they can better obtain and process the information compared to individual investors (Jiambalvo, Rajgopal, & Venkatachalam, 2002).

Herd behaviour in the stock market is sometimes based on fundamental information, which causes quick price adjustments to new information and leads to efficient markets. Still, sometimes it is not dependent on fundamental information and results in price instability. Previous researchers have examined herd behaviour in advanced as well as in emerging markets. However, herding tends to prevail in emerging markets, having asymmetrical information. Considering Pakistan's context, some studies have focused on market-wide herding by focusing daily and monthly stock returns. Some of them have identified weak evidence, and some have highlighted

the absence of herd behaviour. In additions, some researchers have targeted only KSE-100 index (Javaira & Hassan, 2015; Javed, Zafar, & Hafeez, 2013; Malik & Elahi, 2014; Zafar & Hassan, 2016), and some have considered limited sectors of the Pakistan Stock Exchange (PSX) (Khan & Rizwan, 2018; Shah, Shah, & Khan, 2017). These researchers have highlighted that herd behaviour can be measured through some other data streams. Javed et al. (2013) demonstrated that behavioural predispositions are short-lived, so daily and weekly data can provide significant insights into this phenomenon. Shah et al. (2017) described that future studies can investigate herd behaviour using weekly and monthly stock prices. Moreover, these studies did not cover the overall stock market trend. Javed et al. (2013) proposed that a detailed picture of herding can be obtained by increasing the sample size. Javaira and Hassan (2015) clarified that sector-wise stock returns could be used for getting comprehensive information of herd behaviour.

Motivating from these researches, existing research intends to examine herd behaviour in PSX and its sectors using intraday, daily, weekly, and monthly trading data. Moreover, sector-wise trading data is also used as some researchers have claimed that herding is mainly observed within sectors compared to the overall stock market (Moskowitz & Grinblatt, 1999; Sharma, Easterwood, & Kumar, 2004). Short term and long term data streams have been used to get in-depth information on the herding phenomenon. The intraday stock returns have been emphasized, as, Radalj and McAleer (1993) argued that if herding exists in short time span, it would not be possible to identify it in long time span. Supporting this, Orlean (1995) explained that herd behaviour is based on intraday stock prices, as in short time, speculators have limited or no time to process this information. They make irrational decision and follow market participants, particularly during market fluctuations. Henker, Henker, and Mitsios (2006) claimed that intraday trading is gaining importance as all spikes in the market can be observed by investors. Christie and Huang (1995) emphasized the importance of daily stock returns by arguing that herding is short term phenomenon. Weekly trading data has been considered, because, in the viewpoint of Purba and Faradynawati (2012), herding may be observed in longer times, and weekly data is also helpful to detect long term time trends in security prices. Apart from this, Christie and Huang (1995) emphasized the importance of monthly data and explained that herding requires longer time to affect stock prices. Moreover, monthly stock returns are normally distributed. This through debate leads to the following objectives:

Research Objectives:

1. Herd behaviour significantly exists in PSX at intraday, daily, weekly, and monthly levels.
2. Herd behaviour significantly exists in all sectors of PSX at intraday, daily, weekly, and monthly levels.

Research Questions:

1. Does herd behaviour exist in PSX at intraday, daily, weekly, and monthly levels?
2. Does herd behaviour exist in all PSX sectors at intraday, daily, weekly, and monthly levels?

Literature Review

Previous studies have presented mixed evidence about the existence and non-existence of herd behaviour. These researchers have used different measures to investigate herd behaviour. Chiang and Zheng (2010) noticed the presence of herding in advanced markets and Asian markets; however, they could not find its evidence in the US market. Mwimali (2012) observed herd behaviour in Nairobi Securities Exchange by using the CSAD measure. He also emphasized on price implications of herding (effect of stock returns on herd behaviour). Considering the same measure, Al-Shboul (2012) could not detect herd behaviour in Jordanian Stock Exchange, focusing on the 2008 global financial crisis. Herding prevailed only during the crisis period.

Similarly, Ahsan and Sarkar (2013) did not show the effects of herding in the Dhaka stock market during the time period of 2005-2011. Likewise, Seetharam (2013) used CSAD measure and did not notice herd behaviour during bearish market trends in South Africa from 1995-2011. However, Cakan and Balagyozyan (2014) highlighted the prevalence of herding in the Turkish banking sector during 2007-2012. Herding was reported in Greater Chinese stock markets during the 2008 financial crisis (Teng & Liu, 2014). Besides, Yao, Ma, and He (2014) observed herd behaviour in the Chinese B share market, but, It was not present in the A-share market. El-Shiaty and Badawi (2014) also illustrated the presence of herd behaviour in the Egyptian stock market. Likewise, Ramadan (2015) presented the same results in the Amman stock market. Zouari, Ghorbel, Ghorbel-Zouari, and Boujelbene (2015) observed herding effects in the Tunisian stock market from 2000-2012 by using the GARCH model. Similar results about herding were obtained by Rahman, Chowdhury, and Sadique (2015) in the Saudi stock market. Apart from this, Jlassi and Naoui (2015)

presented more substantial herding effects in US stock markets during bullish market trend and high trading volume days. Ahmed, Abbass, and Abbasi (2015) examined herding behaviour in the Spanish stock market, focusing on the 2008 financial crisis. Also, öZsu (2015) observed herd behaviour in Borsa Istanbul during 1995-2014. Chong, Liu, and Zhu (2016) used CSAD measure and illustrated herding in the Chinese stock market. Likewise, Hwang, Kim, and Sing (2016) presented its evidence during bullish and bearish market trends in the Korean equity market. Focusing on the same market trends, Vinh and Anh (2016) found herd behaviour in Vietnam stock market. Galariotis, Krokida, and Spyrou (2016) noticed the presence of herd behaviour in G5 countries with Germany was having limited evidence of herd behaviour. Zheng, Li, and Chiang (2017) examined herding by targeting the specific industries in nine Asian stock markets. Strong herding effects were found in some sectors. Sector-based herd behaviour was also observed in French market (Litimi, 2017). Chen, Wu, and Huang (2017) observed herd behaviour in China and attributed its existence to irrationality of investors.

On the other hand, Mertzanis and Allam (2018) could not find herd behaviour in Egyptian bullish and bearish stock markets. Similarly, Sharma (2018) could not identify herd behaviour during the bullish and bearish Indian stock market. Saastamoinen (2018) found herd behaviour in some sectors during market stress. Akinsomi, Coskun, Gupta, and Lau (2018) observed herd behaviour in Istanbul with the linear association between herd behaviour and volatility. Bui, Nguyen, Nguyen, and Titman (2018) noticed the presence of herd behaviour in the overall market and industry level in frontier stock market, especially in the Vietnam stock market. Chaffai and Medhioub (2018) observed herd behaviour in Islamic Gulf Cooperation Council stock markets during bullish and bearish market trends. The existence of herd behaviour in GCC countries was also observed by Youssef and Mokni (2018). However, they could not observe herd behaviour in Bahraini and Kuwaiti markets. Vo and Phan (2019a; 2019b) also presented the evidence of herd behaviour in the Vietnam stock market. El Hami and Hefnaoui (2019) highlighted the presence of herd behaviour in the Moroccan stock market. In addition, Silva, Klotzle, Pinto, and Gomes (2019) examined herd behaviour in cryptocurrency markets. Wang and Huang (2019) also observed herd behaviour in the Taiwan market. Brendea and Pop (2019) presented the existence of herd behaviour in Romania. Batmunkh et al. (2020) found herd behaviour in the Mongolian stock market from 1999-2019 during bullish and bearish market trends. Wanidwaranan and Padungsaksawasdi (2020) established the strong impact of return jumps on global equity markets. Ukpong et al. (2021) did not observe herd behaviour in the overall US stock market, but it was profound at the industry level.

Considering the context of Pakistan, some researchers have examined herd behaviour in Pakistan. Some of them have identified weak evidence, and some have highlighted the absence of herd behaviour. Javaira and Hassan (2015) and Javed et al. (2013) could not find herd behaviour in the Karachi stock market. They have used daily, and monthly data and have covered the period of 2002-2007. Besides, they have focused on CSSD and CSAD measures. However, Malik and Elahi (2014) noticed herd behaviour during bullish and bearish market trends in Karachi Stock Exchange. They have used ordinary least square and quantile regression analysis. Similarly, Zafar and Hassan (2016) observed herd behaviour in the Pakistan stock market. Apart from this, Shah et al. (2017) found herd behaviour in some sectors of PSX. Khan and Rizwan (2018) examined herding in 18 industries of PSX by using CSSD & CSAD measures. The CSAD measure illustrated the presence of herd behaviour in three sectors of PSX. Also, Yousaf, Ali, and Shah (2018) used the same measures to study herd behaviour in the KSE-100 index by focusing on Ramadan effects. Herd behaviour prevailed during 2006-07 crisis period. However, Jabeen and Rizavi (2019) used Chiang and Zheng (2010) measure and could not find herd behaviour in PSX, though they noticed its existence in some sectors of PSX. Similarly, Kiran et al. (2020) used CSSD & CSAD and did not detect herding in PSX. Moreover, Gul and Khan (2019) investigated the impact of attitudinal factors on the herding tendency of investors through survey research. Herd behaviour was significantly affected by some attitudinal factors, i.e. decision conformity, mood and decision accuracy; however, hasty decision and overconfidence had an insignificant effect on herd behaviour.

Data and Methodology

The present study aims to examine the herd behaviour of investors in PSX by targeting 528 companies listed in the PSX. These companies were selected based on their incorporation, i.e. the main focus was on the companies listed from 1998-2010. However, the companies listed after 2010 were not considered to maintain data symmetry. The stock price data was collected from June 1998 to June 2018 as it was covering data of the majority of the listed companies. PSX comprises 35 sectors, but the study considered only 34 sectors; the real estate sector was not

included as it consisted of only one company listed after 2010. Intraday, daily, weekly, and monthly stock prices were collected from PSX and business recorder. Stock returns were calculated by applying the formula LN(Pt/Pt-1)*100. The herd behaviour was investigated through the CSAD measure explained later in this section. The data was analysed through descriptive statistics, stationarity test, and regression analysis.

Research Model

Chang, Cheng, and Khorana (2000) presented a modified version of the CSSD model. This model is more sophisticated as it focuses on herd behaviour 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 the standard deviation of returns. The model is derived through the CAPM model. The existence of herd behaviour results in the clustering of returns of individual securities around the market return. It means investors set aside their private information and follow the information of the Market. The model is tested through the following equation:

$$\mathrm{CSAD} = \frac{1}{\mathrm{N}} \sum_{\mathrm{i}=1}^{\mathrm{N}} \left|\mathrm{R_{i,t}} - \mathrm{R_{m,t}}\right| \quad (1)$$

$R_{i,t}$ = 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 parameters of market return 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. In the absence of herd behaviour, individual security returns and the market move in different directions, directing to an increased linear relationship. During herding, the association between individual security returns and corresponding dispersion decreases or at least increases at a less than proportionate rate as the market return. The relationship is performed through

$$CSAD = \alpha + \gamma_1 \left|\mathrm{R_{m,t}}\right| + \gamma_2 R_{m,t}^2 + \varepsilon \quad (2)$$

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

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

$$CSAD_t^{UP} = \alpha + \gamma_1^{UP} \left|R_{m,t}^{UP}\right| + \gamma_2^{UP} (R_{m,t}^{UP})^2 + \varepsilon_t \quad \text{if} \quad R_{m,t}^{UP} > 0 \quad (3)$$

$$CSAD_t^{DOWN} = \alpha + \gamma_1^{DOWN} \left|R_{m,t}^{DOWN}\right| + \gamma_2^{DOWN} (R_{m,t}^{DOWN})^2 + \varepsilon_t \quad \text{if } R_{m,t}^{DOWN} < 0 \quad (4)$$

Empirical Results

Table 1. *Daily descriptive statistics of Cross-Sectional Absolute Deviation (CSAD) and Market Return (R_m)*

		CSAD				R_m			
S #	Sector	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum
	All Sectors (PSX)	2.386	1.621	.0272	57.346	.023	.868	-14.990	20.0849
1	AA	1.932	2.008	.008	63.279	5.846	.004	232.988	0.000
2	AP&A	2.423	3.882	0	122.552	.053	3.081	-121.603	86.914
3	C&EG	2.502	4.661	0	133.315	.030	3.426	-93.921	110.548
4	Cem.	2.116	1.391	.0001	25.720	.033	1.636	-15.431	14.481
5	Chem.	2.007	1.577	.031	36.912	.055	1.379	-21.147	18.945
6	CEMF	3.341	4.938	.018	104.172	3.341	4.938	.018	104.172
7	CB	1.512	1.017	.104	32.703	.027	1.534	-10.092	19.219
8	Eng.	2.254	3.988	0	134.937	.040	2.640	-91.386	74.497
9	Fer.	1.273	1.919	.010	73.240	.013	2.001	-54.148	54.592
10	F&PCP	2.145	5.643	.016	169.331	.062	4.884	-151.415	202.595
11	G&C	2.497	3.558	.012	95.790	.030	2.561	-72.883	63.322
12	Ins.	1.889	1.794	.008	44.660	.007	1.256	-26.623	21.229

13	IB/IC/SC	2.683	2.251	.023	53.042	-.004	2.170	-29.904	43.642
14	Jute	4.578	7.851	.014	149.661	.027	8.134	-85.739	85.739
15	LC	2.947	3.193	.003	33.600	-.008	2.415	-17.530	19.486
16	L&T	2.290	4.455	.0003	134.028	.039	3.583	-123.499	100.075
17	Misc.	2.328	3.050	.008	71.808	.026	2.057	-45.061	50.266
18	Mod.	3.242	2.764	.008	57.840	.020	2.015	-18.350	35.650
19	O&GEC	1.184	1.290	.0006	34.968	.061	1.846	-34.461	18.145
20	O&GDC	1.459	2.639	.002	97.297	.029	2.197	-62.590	63.951
21	P&B	2.129	3.881	.002	75.884	.022	2.491	-48.783	48.765
22	Pharma.	1.690	3.659	.014	112.344	.056	3.028	-112.344	88.775
23	PG&GD	2.395	2.118	.036	66.075	.005	1.963	-40.417	37.443
24	S&R	2.116	3.023	.040	76.177	.012	2.254	-60.147	64.412
25	Ref.	1.554	2.139	.001	68.248	.032	2.538	-48.620	91.590
26	S&AI	2.639	2.730	.006	57.154	.034	1.839	-20.622	36.262
27	T&C	1.918	1.508	.018	51.189	.002	2.120	-29.184	16.513
28	TC	5.483	4.559	.002	97.292	.012	3.368	-30.376	22.732
29	TS	3.205	3.072	.105	62.190	.024	1.963	-26.750	58.326
30	TW	2.860	5.237	.007	153.434	.005	3.836	-115.803	117.998
31	Tob.	2.062	6.089	.0003	162.596	.116	4.729	-121.947	119.976
32	Trans.	1.937	2.755	.002	109.409	.030	2.591	-66.034	87.721
33	V&AI	1.995	3.175	.0185	68.656	.046	2.271	-42.215	33.246
34	Wool.	1.763	2.727	.0008	56.570	-025	4.832	-139.686	139.756

Table illustrates daily descriptive statistics of *CSAD* and R_m for PSX as well as the sectoral distribution of PSX. The data ranges from June 1998 to June 2018.

Table 1 shows descriptive statistics of CSAD and Rm of PSX and all of its sectors. To avoid the repetition, intraday, weekly and monthly statistics are not presented here. However, intraday and daily data vary from 2469 to 4935 days, whereas the data consist of around 975 weeks and 235 months. The values of mean and standard deviation increase from intraday to monthly level. High mean values suggest increased market differences across industry returns. High standard deviation indicates that surprising shocks or events cause extraordinary cross-sectional inconsistencies in the stock market and its sectors.

Table 2. *Intraday and daily stationarity results of Cross-Sectional Absolute Deviation (CSAD), Absolute Market Return $|R_m|$, and Market Return Squared* ($R^2_{m,t}$)

		Intraday			Daily		
S #	Sector	CSAD	$\|R_m\|$	$R^2_{m,t}$	CSAD	$\|R_m\|$	$R^2_{m,t}$
	All Sectors (PSX)	-22.117***	-35.453***	-60.530***	-38.385***	-51.500***	-66.080***
1	AA	-47.984***	-55.849***	-54.962***	-58.322***	-60.480***	-67.154***
2	AP&A	-33.307***	-25.480***	-60.965***	-45.065***	-56.428***	-67.805***
3	C&EG	-30.091***	-40.105***	-59.485***	-42.564***	-55.771***	-52.784***
4	Cem.	-31.171***	-39.349***	-58.298***	-48.807***	-57.203***	-53.610***
5	Chem.	-40.048***	-52.923***	-46.759***	-47.923***	-54.823***	-52.675***
6	CEMF	-47.204***	-47.177***	-59.592***	-49.022***	-53.396***	-63.613***
7	CB	-45.605***	-48.989***	-56.382***	-48.262***	-49.969***	-59.365***
8	Eng.	-58.742***	-60.764***	-66.960***	-47.048***	-50.371***	-61.408***
9	Fer.	-49.187***	-51.749***	-56.165***	-65.581***	-62.726***	-69.848***
10	F&PCP	-54.581***	-58.168***	-66.302***	-51.105***	-57.747***	-65.485***
11	G&C	-40.884***	-45.148***	-40.373***	-46.039***	-52.474***	-61.251***
12	Ins.	-41.275***	-52.485***	-49.706***	-55.457***	-61.430***	-67.901***
13	IB/IC/SC	-31.193***	-31.624***	-35.930***	-28.042***	-30.354***	-31.984***
14	Jute	-42.269***	-48.636***	-51.658***	-47.040***	-53.312***	-57.273***
15	LC	-41.574***	-46.346***	-53.923***	-44.956***	-49.923***	-56.789***
16	L&T	-45.653***	-47.102***	-47.549***	-48.705***	-55.802***	-60.506***
17	Misc.	-48.287***	-57.147***	-68.471***	-47.645***	-54.734***	-59.723***
18	Mod.	-39.404***	-55.606***	-61.715***	-41.005***	-49.445***	-46.295***
19	O&GEC	-48.460***	-52.949***	-64.129***	-51.245***	-53.372***	-64.840***
21	P&B	-54.459***	-54.827***	-63.430***	-42.803***	-45.901***	-45.834***
22	Pharma.	-53.891***	-58.779***	-62.792***	-36.677***	-39.773***	-48.040***
23	PG&GD	-54.994***	-59.328***	-69.264***	-56.948***	-59.871***	-69.121***
24	S&R	-54.728***	-57.549***	-61.389***	-54.084***	-57.938***	-65.838***
25	Ref.	-46.507***	-54.891***	-53.941***	-42.905***	-46.325***	-50.986***
26	S&AI	-43.124***	-57.658***	-59.503***	-27.977***	-32.379***	-56.737***
27	T&C	-46.786***	-54.409***	-54.611***	-52.827***	-55.816***	-62.674***
28	TC	-21.082***	-21.767***	-85.933***	-26.567***	-24.524***	-28.922***
29	TS	-26.749***	-48.553***	-52.644***	-28.395***	-19.145***	52.439***
30	TW	-47.821***	-54.401***	-62.124***	-55.663***	-59.677***	-67.609***
31	Tob.	-50.589***	-52.231***	-61.347***	-55.010***	-54.792***	-60.601***
32	Trans.	-38.960***	-39.289***	-43.813***	-48.384***	-51.592***	-63.673***
33	V&AI	-36.786***	-41.783***	-44.986***	-38.679***	-41.254***	-44.098***
34	Wool.	-35.724***	-36.503***	-38.749***	-33.804***	-37.163***	-46.533***

Table shows intraday and daily stationarity values of CSAD, $|R_m|$, and (R_m^2). These values are calculated by applying ADF. Significance level is also mentioned.
*Statistical significance at 10% level
** Statistical significance at 5% level
*** Statistical significance at 1% level.

Table 3. *Weekly and monthly stationarity results of Cross-Sectional Absolute Deviation (CSAD), Absolute Market Return ($|R_m|$) and Market Return Squared* ($R^2_{m,t}$)

		Weekly			Monthly		
S #	Sector	CSAD	$\|R_m\|$	$R^2_{m,t}$	CSAD	$\|R_m\|$	$R^2_{m,t}$
	All Sectors (PSX)	-23.880***	-26.765***	-30.213***	-8.366***	-13.093***	-12.929***
1	AA	-24.712***	-26.640***	-29.766***	-10.572***	-11.896***	-12.274***
2	AP&A	-17.810***	-21.981***	-24.109***	-8.657***	-11.812***	-10.807***
3	C&EG	-19.831***	-24.697***	-26.609***	-10.095***	-12.404***	-13.783***
4	Cem.	-16.967***	-23.973***	-29.723***	-12.455***	-15.824***	-10.384***
5	Chem.	-20.552***	-25.270***	-27.606***	-12.197***	-14.230***	-13.555***
6	CEMF	-24.172***	-25.662***	-28.715***	-8.064***	-9.232***	-9.584***
7	CB	-24.093***	-22.220***	-18.692***	-11.625***	-14.718***	-15.335***
8	Eng.	-29.587***	-30.676***	-34.171***	-8.523***	-9.612***	-8.470***
9	Fer.	-29.770***	-28.518***	-30.959***	-12.932***	-12.524***	-10.195***
10	F&PCP	-25.976***	-28.368***	-30.486***	-9.614***	-11.793***	-9.632***
11	G&C	-22.013***	-24.142***	-26.353***	-10.903***	-12.870***	-13.182***
12	Ins.	-23.08***5	-26.781***	-30.293***	-10.861***	-14.302***	-14.789***
13	IB/IC/SC	-16.532***	-16.324***	-15.324***	-8.875***	-11.570***	-12.810***
14	Jute	-13.469***	-18.834***	-12.550***	-11.049***	-13.381***	-14.003***

15	LC	-19.658***	-25.278***	-27.585***	-9.492***	-15.045***	-11.467***
16	L&T	-21.008***	-23.741***	-28.417***	-9.537***	-13.378***	-14.234***
17	Misc.	-25.508***	-27.482***	-29.852***	-7.809***	-11.486***	-11.790***
18	Mod.	-20.565***	-24.750***	-27.890***	-9.039***	-10.859***	-10.437***
19	O&GEC	-25.463***	-25.450***	-29.736***	-13.050***	-14.241***	-15.362***
20	O&GDC	-26.431***	25.914***	-27.793***	-12.590***	-12.059***	-13.642***
21	P&B	-24.946***	-25.952***	-24.143***	-9.668***	-11.000***	-11.023***
22	Pharma.	-20.401***	-27.418***	-30.651***	-9.198***	-9.018***	-8.830***
23	PG&GD	-19.242***	-24.002***	-21.429***	-12.039***	-14.288***	-15.499***
24	S&R	-21.082***	-26.072***	-29.885***	-7.182***	-12.579***	-14.096***
25	Ref.	-25.080***	-25.249***	-30.267***	-11.655***	-12.051***	-12.020***
26	S&AI	-22.789***	-26.627***	-30.632***	-8.306***	-10.048***	-9.093***
27	T&C	-25.665***	-27.265***	-29.820***	-12.470***	-13.358***	-14.685***
28	TC	-20.642***	-22.816***	-28.808***	-8.160***	-12.044***	-12.508***
29	TS	-19.827***	-25.507***	-28.182***	-7.289***	-11.844***	-12.498***
30	TW	-24.077***	-23.797***	-22.394***	-13.050***	-13.165***	-13.540***
31	Tob.	-20.240***	-20.968***	-19.124***	-9.320***	-10.016***	-9.527***
32	Trans.	-23.031***	-25.613***	-29.280***	-9.847***	-10.275***	-8.972***
33	V&AI	-19.391***	-18.895***	-18.612***	-11.120***	-11.422***	-11.892***
34	Wool.	-17.288***	-18.784***	-23.424***	-11.089***	-9.874***	-8.843***

Table exhibits weekly and monthly stationarity values of CSAD, $|R_m,|$ and (R_m^2).
*Statistical significance at 10% level** Statistical significance at 5% level*** Statistical significance at 1% level.

Table 2 and 3 show the intraday, daily, weekly, and monthly stationarity values. The augmented dickey fuller test is applied to find out the stationarity of variables. The null hypothesis deals with the presence of unit root, and it is rejected at all levels. In other words, all variables are found to be stationary at their levels. This shows that data is constant over time. It also means that mean, variance, and autocorrelation show consistency with time.

Table 4. *Intraday regression results*

		Overall Market			Up Market			Down Market		
S #	Sector	α	γ_1	γ_2	α	γ_1^{UP}	γ_2^{UP}	α	γ_1^{DOWN}	γ_2^{DOWN}
	All Sectors	1.449***	.544***	.082***	1.128***	1.197***	.072	1.239***	1.104***	.054***
	(PSX)	(38.21)	(15.55)	(4.36)	(47.45)	(13.11)	(1.47)	(74.08)	(33.48)	(7.90)
		R^2			0.633		0.595			0.679
1	AA	1.331***	.332***	.101***	1.250***	.500***	.077***	1.436***	.113**	.141***
		(48.95)	(7.21)	(8.53)	(43,22)	(11.55)	(7.48)	(43.25)	(2.14)	(9.48)
		R^2			0.555		0.664			0.435
2	AP&A	.588***	.759***	.011**	.567***	.887***	.005***	.576***	.662***	.012***
		(13.07)	(16.03)	(2.23)	(18.36)	(24.58)	(3.14)	(19.09)	(18.09)	(3.14)
		R^2			0.826		0.766			0.885
3	C&EG	-2.502**	1.270***	-.009***	.206***	.186***	.014***	-.186	.7336***	-.003
		(-2.07)	(6.07)	(-4.09)	(9.26)	(12.26)	(11.52)	(-0.74)	(2.98)	(-1.39)
		R^2			0.869		0.953			0.967
4	Cem.	1.490***	.339***	.036***	1.169***	.6821***	.033***	1.101***	.600***	.032***
		(45.09)	(10.91)	(8.22)	(51.78)	(28.40)	(10.05)	(33.88)	(13.97)	(4.65)
		R^2			0.715		0.741			0.659
5	Chem.	1.101***	.772***	.073***	1.027***	.874***	.079***	1.067***	.781***	.087**
		(56.26)	(23.77)	(20.62)	(50.34)	(29.94)	(14.91)	(28.74)	(8.08)	(2.42)
		R^2			0.836		0.914			0.488
6	CEMF	.931***	1.080***	.010***	.850***	1.125***	.009***	.752***	1.257***	-.001
		(26.97)	(47.92)	(8.44)	(26.60)	(39.24)	(6.96)	(16.65)	(32.27)	(-0.40)
		R^2			0.838		0.852			0.822
7	CB	1.117***	.239***	.055***	1.102***	.286***	.064***	.928***	.493***	.002
		(36.05)	(4.11)	(3.72)	(38.34)	(6.42)	(5.85)	(34.84)	(9.61)	(0.20)
		R^2			0.544		0.617			0.467
8	Eng.	.753***	1.148***	.040***	.780***	1.076***	.062***	.741***	1.173***	.033***
		(25.12)	(20.63)	(3.59)	(30.97)	(26.69)	(9.76)	(23.95)	(22.78)	(4.07)
		R^2			0.793		0.803			0.787
9	Fer.	.783***	.233***	.060***	.777***	.313***	.046***	.716***	.237***	.066***
		(27.25)	(4.36)	(4.40)	(29.64)	(6.81)	(3.54)	(20.35)	(3.54)	(3.44)
		R^2			0.500		0.433			0.556
10	F&PCP	.800***	1.098***	.039***	.773***	1.139***	.037***	.759***	1.162***	.047***
		(44.78)	(41.95)	(24.83)	(31.64)	(3.550	(19.65)	(35.15)	(31.60)	(8.90)
		R^2			0.963		0.978			0.719

11	G&C	.733***	1.251***	.013***	.720***	1.288***	.014***	.652***	1.307***	.010***
		(24.84)	(40.64)	(7.94)	(18.67)	(31.95)	(7.08)	(17.99)	(34.17)	(9.15)
		R^2			0.816		0.813			0.819
12	Ins.	.849***	1.153***	.010***	.775***	1.315***	.006***	.785***	1.202***	.042*
		(46.30)	(41.01)	(13.80)	(48.52)	(59.87)	(10.60)	(34.34)	(21.26)	(1.90)
		R^2			0.858		0.910			0.643
13	IB/IC/SC	1.468***	.812***	.024***	1.238***	1.017***	.019***	1.312***	.988***	.010***
		(41.88)	(36.55)	(8.80)	(30.29)	(24.77)	(3.04)	(35.65)	(27.57)	(2.63)
		R^2			0.656		0.687			0.620
14	Jute	.261***	.920***	.001***	.305***	.896***	.002***	.248***	.931***	.001***
		(5.47)	(62.00)	(4.06)	(4.38)	(37.66)	(3.48)	(3.81)	(49.49)	(3.35)
		R^2			0.942		0.934			0.949
15	LC	.617***	1.627***	-.021***	.454***	1.709***	-.023***	.546***	1.745***	-.027***
		(18.43)	(54.12)	(-6.43)	(13.22)	(45.09)	(-5.49)	(11.93)	(38.90)	(-5.85)
		R^2			0.794		0.815			0.772
16	L&T	.382***	1.333***	-.004	.388***	1.283***	.0002	.338***	1.430***	-.011
		(12.79)	(32.52)	(-0.75)	(9.17)	(21.82)	(0.03)	(7.68)	(22.51)	(-1.40)
		R^2			0.806		0.820			0.793
17	Misc.	.957***	1.146***	.018***	.817***	1.286***	.010***	.822***	1.380***	.008***
		(42.88)	(51.51)	(12.79)	(38.05)	(54.24)	(9.91)	(32.88)	(43.76)	(4.43)
		R^2			0.769		0.770			0.770
18	Mod.	1.538***	1.129***	.025**	1.153***	1.489***	.008	1.247***	1.522***	.004
		(35.64)	(24.61)	(2.34)	(28.49)	(26.23)	(0.70)	(28.07)	(26.06)	(0.40)
					0.669		0.676			0.662
19	O&GEC	.371***	1.319***	.0151***	.350***	1.365***	.011***	.363***	1.315***	.016***
		(27.66)	(62.55)	(8.02)	(18.49)	(43.78)	(4.47)	(21.10)	(50.19)	(6.69)
		R^2			0.940		0.928			0.950
20	O&GDC	.702***	.332***	.020***	.698***	.371***	.0223***	.583***	.404***	.017***
		(28.66)	(12.87)	(16.59)	(18.71)	(7.74)	(3.08)	(16.66)	(10.78)	(14.71)
		R^2			0.509		0.432			0.570
21	P&B	.371***	1.319***	.015***	.963***	.407***	.023**	.837***	.336***	.038
		(27.66)	(62.55)	(8.02)	(31.86)	(8.18)	(1.92)	(22.09)	(4.08)	(1.48)
		R^2		0.326		0.345				0.315
22	Pharma.	.924***	.460***	.072***	.859***	.664***	.005	.902***	.419***	.103***
		(42.06)	(9.17)	(3.84)	(30.07)	(9.63)	(0.21)	(42.36)	(11.09)	(8.05)
		R^2			0.475		0.450			0.516

23	PG&GD	1.298***	.829***	.019***	1.257***	.943***	.0170***	1.162***	.892***	.017***
		(54.98)	(36.77)	(27.11)	(37.24)	(28.06)	(16.08)	(38.71)	(28.73)	(18.93)
		R^2			0.800		0.807			0.794
24	S&R	.362***	1.530***	.014*	.409***	1.437***	.034***	.312***	1.615***	.003
		(23.19)	(45.56)	(1.66)	(22.90)	(41.21)	(4.00)	(12.78)	(29.52)	(0.29)
		R^2			0.884		0.883			0.887
25	Ref.	1.143***	.119***	.0484***	1.135***	.271***	.031**	1.041***	.036	.076***
		(37.59)	(2.94)	(4.75)	(29.290	(4.92)	(2.40)	(28.13)	(0.69)	(5.83)
		R^2			0.225		0.208			0.251
26	S&AI	1.094***	.940***	.085***	.947***	1.254***	.037	.935***	1.310***	.0286**
		(44.65)	(17.64)	(3.57)	(35.65)	(16.95)	(1.07)	(31..95)	(16.15)	(0.80)
		R^2			0.602		0.604			0.600
27	T&C	1.136***	.448***	.028***	1.088***	.571***	.024***	1.046***	.452***	.026***
		(48.24)	(19.75)	(8.00)	(36.38)	(18.81)	(5.34)	(36.45)	(16.66)	(7.72)
					0.605		0.646			0.568
28	TC	.513***	.780***	-.0009**	.578***	.687***	.007***	.556***	.725***	-.0007
		(31.48)	(54.81)	(-2.35)	(34.68)	(31.82)	(4.06)	(31.66)	(52.60)	(-1.00)
		R^2			0.934		0.939			0.942
29	TS	1.159***	1.272***	-.023*	.724***	2.135***	-.084***	.726***	2.175***	-.061**
		(25.80)	(31.28)	(-1.76)	(23.89)	(25.55)	(-2.84)	(26.45)	(31.74)	(-3.36)
		R^2			0.636		0.618			0.656
30	TW	.652***	1.533***	.003*	.613***	1.552***	.007**	.564***	1.640***	-.001
		(28.910	(63.90)	(1.78)	(23.35)	(48.17)	(1.93)	(19.23)	(48.47)	(-1.25)
		R^2			0.843		0.851			0.835
31	Tob.	.436***	.950***	.003***	.634***	.695***	.038***	.367***	1.039***	.001
		(13.98)	(31.28)	(2.85)	(16.41)	(17.98)	(7.89)	(8.85)	(25.17)	(2.14)
		R^2			0.718		0.653			0.790
32	Trans.	.183***	1.473***	.017***	.194***	1.467***	.019***	.174***	1.473***	.016***
		(13.63)	(83.63)	(5.77)	(10.70)	(70.27)	(5.87)	(8.88)	(52.86)	(3.84)
		R^2			0.944		0.937			0.951
33	V&AI	.184***	1.006***	-.0443***	.123**	1.062***	-.043***	.208***	.951***	-.038**
		(4.02)	(19.18)	(-4.87)	(2.01)	(14.46)	(-3.33)	(3.06)	(11.02)	(-2.86)
		R^2			0.583		0.636			0.532
34	Wool.	.174***	1.007***	.045***	.124**	1.056***	.044***	.208***	.876***	.037*
		(3.02)	(17.19)	(4.01)	(2.30)	(13.55)	(3.21)	(3.10)	(12.05)	(3.74)
					0.556		0.645			0.517

Intraday regression estimates. The results during up and down market condition are also specified. The data ranges from June 1998 to June 2018.
* Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level.

The regression results of intraday trading data during overall market conditions and bullish and bearish market trends are presented in table 4. The time-series data is also monitored for autocorrelation and heteroscedasticity. Herding prevails when the values of the coefficient (y2), are negative and statistically significant. It shows a non-linear relationship between CSAD and $R^2_{m,t}$. Herd behaviour is found in cable & electric goods, leasing, textile composite, textile spinning, and vanaspati & allied industries. These sectors demonstrate that cross-sectional absolute returns increase at a decreasing rate or decreases as average price movement's increases. In these sectors, the returns of individual stocks cluster the market returns, thereby negating the asset pricing model. However, herding does not exist in PSX, directing that overall investors in PSX believe in rational decision making. Focusing on up and down market conditions, up market deals with positive stock returns, whereas down market means stock returns are negative. Like the overall Market, herding does not exist in PSX, but some sectors represent its existence. For example, leasing, textile spinning, and vanaspati & allied products show herd behaviour in bullish and bearish trends. This suppression directs that in these sectors investors forego their private information and follow the trends of market. It can be inferred that during bullish/bearish market trends, high/low stock returns boost the investors to follow the market by foregoing their own information to avoid further losses.

Table 5. *Daily regression results of Cross-Sectional Absolute Deviation (CSAD)*

		Overall Market			Up Market			Down Market		
S #	Sector	α	γ_1	γ_2	α	γ_1^{UP}	γ_2^{UP}	α	γ_1^{DOWN}	γ_2^{DOWN}
	All Sectors (PSX)	1.921***	.678***	.100***	1.611***	1.293***	.0767***	1.750***	.845***	.164***
		(45.03)	(6.98)	(6.83)	(24.35)	(9.29)	(12.86)	(35.91)	(7.48)	(5.22)
		R^2			0.671		0.678			
1	AA	1.232***	.595***	.032***	.922***	.596***	-.001***			
		(28.03)	(10.88)	(7.20)	(10.91)	(10.99)	(-10.67)			
		R^2			0.804		0.898		0.694	
2	AP&A	.506***	1.553**	-.004***	.552***	1.518***	-.001**	.464***	1.571***	-.004***
		(10.22)	(31.92)	(-6.27)	(7.15)	(19.17)	(-1.92)	(6.13)	(21.88)	(-8.34)
		R^2			0.887		0.867		0.915	
3	C&EG	.555***	1.487***	-.001	.575***	1.524***	-.002**	.547***	1.433***	.0007
		(5.15)	(15.24)	(-0.72)	(4.35)	(12.94)	(-1.89)	(3.34)	(9.80)	(0.34)
		R^2			0.905		0.904		0.915	
4	Cem.	1.504***	.396***	.061***	1.451***	.493***	.059***	1.346***	.479***	.069***
		(57.11)	(11.71)	(7.78)	(36.36)	(7.66)	(3.90)	(43.69)	(13.30)	(11,98)
		R^2			0.621		0.612		0.631	
5	Chem.	1.219***	.808***	.045***	1.172***	.900***	.046***	1.194***	.789***	.047***
		(49.97)	(20.12)	(7.77)	(37.87)	(18.98)	(8.10)	(32.77)	(13.93)	(6.90)
		R^2			0.784		0.804		0.761	
6	CEMF	.818***	1.244***	-.001	.743***	1.278***	-.002***	.850***	1.217***	.001
		(11.66)	(29.39)	(-0.89)	(9.11)	(27.60)	(-3.14)	(14.66)	(36.13)	(1.29)
		R^2			0.875		0.871		0.887	
7	CB	1.135***	.220***	.062***	1.105***	.274***	.067***	.919***	.514***	.007
		(43.25)	(5.30)	(6.96)	(42.81)	(8.65)	(13.62)	(33.97)	(10.65)	(0.59)
		R^2			0.603		0.703		0.482	
8	Eng.	.565**	1.576***	.0001	.600***	1.563***	.002**	.577***	1.534***	-.0006
		(11.52)	(26.82)	(0.11)	(6.80)	(15.80)	(1.95)	(8.26)	(17.30)	(-0.67)
		R^2			0.918		0.920		0.911	
9	Fer.	.535***	.590***	.014***	.738***	.414***	.016****	.306***	.800***	.008***
		(9.27)	(10.08)	(13.18)	(26.69)	(14.31)	(33.56)	(2.91)	(7.40)	(4.39)
		R^2			0.820		0.849		0.815	
10	F&PCP	.521***	1.768***	-.005***	.389***	1.911***	-.006***	.647***	1.610***	-.003***
		(9.63)	(24.69)	(-13.18)	(4.94)	(18.24)	(-11.98)	(10.10)	(18.35)	(-6.01)
		R^2			0.953		0.937		0.971	

11	G&C	.562***	1.529***	-.002**	.581***	1.540***	-.002	.432***	1.610***	-.003**
		(8.08)	(22.51)	(-2.19)	(5.10)	(13.91)	(-1.35)	(3.75)	(14.74)	(-2.26)
		R^2			0.838		0.814		0.862	
12	Ins.	.946***	1.267***	.019***	.903***	1.334***	.021**	.874***	1.360***	.017**
		(33.71)	(25.28)	(3.74)	(20.64)	(16.61)	(2.03)	(21.55)	(18.86)	(2.20)
		R^2			0.805		0.826		0.789	
13	IB/IC/SC	1.412***	.944***	.009***	1.339***	1.035***	.004***	1.408***	.914***	.015***
		(36.34)	(27.27)	(3.41)	(35.52)	(30.44)	(2.85)	(34.36)	(24.36)	(5.32)
		R^2			0.767		0.776		0.763	
14	Jute	.172	.967***	.0005	.242	.946***	.0007	.103	.990***	.0002
		(1.09)	(15.71)	(0.68)	(1.32)	(12.82)	(0.76)	(0.40)	(9.78)	(0.22)
		R^2			0.730		0.721		0.738	
15	LC	.773***	1.486***	-.004	.633***	1.571***	-.008	.691***	1.577***	-.007
		(20.84)	(42.91)	(-1.10)	(14.38)	(32.74)	(-1.50)	(14.67)	(35.00)	(-1.48)
		R^2			0.799		0.817		0.779	
16	L&T	.272***	1.463***	-.002***	.346***	1.362***	.00001	.254**	1.515***	-.003***
		(3.90)	(22.74)	(-2.81)	(4.59)	(21.70)	(0.02)	(2.20)	(13.68)	(-4.42)
		R^2			0.887		0.935		0.851	
17	Misc.	.847***	1.502***	.001	.850***	1.537***	-.001	.800***	1.496***	.005
		(21.20)	(29.43)	(0.43)	(17.90)	(28.25)	(-0.74)	(11.45)	(16.95)	(1.05)
		R^2			0.871		0.848		0.895	
18	Mod.	1.747***	1.191***	.011***	1.490***	1.392***	.003*	1.643***	1.244***	.035***
		(40.59)	(33.03)	(5.67)	(32,51)	(31.59)	(1.65)	(27.26)	(16.09)	(2.82)
		R^2			0.750		0.795		0.707	
19	O&GEC	.311***	1.381***	-.002*	.155	1.552***	-.004*	.058	1.675***	-.006***
		(3.66)	(13.86)	(-1.69)	(0.86)	(7.61)	(-1.72)	(0.49)	(12.44)	(-6.21)
		R^2			0.915		0.919		0.921	
20	O&GDC	.706***	.341***	.021***	.736***	.340***	.023***	.563***	.444***	.018***
		(24.08)	(10.96)	(8.04)	(19.59)	(7.47)	(3.34)	(11.69)	(8.70)	(7.37)
		R^2			0.552		0.405		0.636	
21	P&B	.328***	1.680***	-.002	.244***	1.815***	-.005**	.402***	1.550***	.001
		(7.44)	(13.64)	(-1.53)	(3.05)	(17.51)	(-2.00)	(11.28)	(32.72)	(0.95)
		R^2			0.891		0.876		0.912	
22	Pharma.	.311***	1.381***	-.002*	.155	1.552***	-.004*	.402***	1.550***	.001***
		(3.66)	(13.86)	(-1.69)	(0.86)	(7.61)	(-1.78)	(13.32)	(78.63)	(2.54)
		R^2			0.076		0.807		0.987	

23	PG&GD	1.368***	.784***	.021***	1.342***	.872***	.020***	1.232***	.842***	.019***
		(52.41)	(32.57)	(17.13)	(40.69)	(28.57)	(20.06)	(34.19)	(24.13)	(18.59)
		R^2			0.806		0.810		0.805	
24	S&R	.484***	1.659***	-.008***	.510***	1.645***	-.006***	.415***	1.724***	-.010***
		(14.95)	(41.38)	(-8.32)	(14.59)	(39.11)	(-8.64)	(7.13)	(23.11)	(-8.33)
		R^2			0.884		0.871		0.897	
25	Ref.	.683***	.609***	.002	1.070***	.391***	.003***	.895***	.308***	.022***
		(4.26)	(4.80)	(1.54)	(26.51)	(11.95)	(10.07)	(17.45)	(6.71)	(6.71)
		R^2			0.620		0.652		0.793	
26	S&AI	1.056***	1.554***	.002	.944***	1.642***	-.001	.994***	1.602***	.018
		(37.21)	(45.75)	(0.79)	(41.74)	(65.05)	(-0.82)	(17.40)	(14.55)	(0.98)
		R^2			0.892		0.908		0.881	
27	T&C	1.221***	.349***	.042***	1.106***	.536***	.0275***	1.164***	.319***	.045***
		(45.28)	(13.16)	(11.97)	(37.67)	(18.27)	(6.13)	(37.06)	(11.08)	(15.31)
		R^2			0.691		0.637		0.742	
28	TC	1.434***	1.577***	.020	1.617***	1.361***	.049	1.393***	1.646***	.011
		(10.83)	(10.22)	(0.91)	(5.45)	(3.89)	(0.97)	(10.05)	(10.52)	(0.50)
		R^2			0.832		0.842		0.830	
29	TS	1.250***	1.730***	-.009***	1.015***	2.012***	-.016***	1.0005**	1.932***	-.022
		(10.36)	(13.69)	(-5.26)	(7.39)	(14.19)	(-7.41)	(13.52)	(24.66)	(-1.57)
		R^2			0.740		0.730		0.757	
30	TW	.582***	1.704***	-.004***	.643***	1.643***	-.002***	.498***	1.783***	-.005***
		(11.19)	(36.99)	(-6.42)	(7.43)	(21.40)	(-5.01)	(11.12)	(47.61)	(-17.03)
		R^2			0.946		0.954		0.939	
31	Tob.	.196	1.198***	.001	.335***	1.070***	.002***	.053	1.346***	-.00002
		(1.50)	(11.03)	(1.39)	(3.17)	(13.43)	(3.29)	(0.20)	(5.70)	(-0.01)
		R^2			0.937		0.959		0.922	
32	Trans.	.524***	1.030***	.001	.624***	1.039***	-.0004**	.574***	.878***	.011***
		(9.03)	(20.96)	(0.75)	(19.66)	(64.05)	(-1.95)	(11.72)	(19.77)	(17.78)
		R^2			0.825		0.845		0.885	
33	V&AI	-.013	1.019***	-.005***	-.206	1.143***	-.006***	-.159	1.100***	-.006***
		(-0.10)	(11.65)	(-9.73)	(-0.81)	(7.34)	(-5.67)	(-0.75)	(7.96)	(-7.52)
	R^2			0.766	0.774	0.758				
34	Wool.	-.012	1.011***	.065**	-.254	1.235***	.065***	-.165	1.187***	.003***
		(-0.11)	(11.54)	(-9.54)	(-0.76)	(7.65)	(5.09)	(-0.77)	(7.65)	(7.43)
		R^2			0.732		0.734		0.876	

The table depicts daily regression estimates. The results during up and down market condition are also specified. The data ranges from June 1998 to June 2018.
* Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level.

Table 5 illustrates daily regression results during all market conditions. It is observed that values of adjusted R2 progressively increases from intraday to daily level. Like intraday level, herding does not exist in PSX, but some sectors represent its evidence during all market conditions. These sectors are automobile parts & accessories, food & personal care products, glass & ceramics, leather & tanneries, oil & gas distribution, synthetic & rayon, pharmaceuticals, textile spinning, textile weaving, and vanaspati & allied products. In these sectors, stock returns show closeness to the market returns, thereby supporting the asset pricing model. Daily trading data exhibits a greater herding tendency at daily level than at intraday level.

Table 6. *Weekly regression results of Cross-Sectional Absolute Deviation (CSAD)*

		Overall Market			Up Market			Down Market		
S #	Sector	α	γ_1	γ_2	α	γ_1^{UP}	γ_2^{UP}	α	γ_1^{DOWN}	γ_2^{DOWN}
	All Sectors	4.211***	.454***	.085***	3.985***	.731***	.084***	4.261***	.196*	.105***
	(PSX)	(25.54)	(3.43)	(8.08)	(23.07)	(5.12)	(14.60)	(27.09)	(1.70)	(7.07)
		R^2			0.681		0.663			0.727
1	AA	2.576***	.535***	.017***	2.420***	.662***	.013***	2.978***	.237***	.032***
		(12.90)	(5.80)	(3.64)	(8.04)	(5.17)	(3.96)	(16.83)	(3.09)	(21.80)
		R^2			0.754		0.793			0.724
2	AP&A	1.973***	1.066***	.007***	2.725***	.683***	.031***	2.241***	.867***	.009***
		(6.94)	(8.23)	(2.97)	(8.03)	(4.31)	(4.87)	(8.23)	(6.98)	(6.92)
		R^2			0.809		0.798			0.891
3	C&EG	2.952***	.886***	.0001	2.691***	1.116***	-.001	2.679***	.828***	.0004
		(11.35)	(10.43)	(0.5)	(5.00)	(5.75)	(-0.97)	(7.15)	(6.56)	(0.51)
		R^2			0.741		0.803			0.688
4	Cem.	2.949***	.440***	.006**	3.152***	.344***	.018***	2.749***	.425***	.010
		(26.78)	(11.41)	(2.13)	(25.27)	(6.10)	(4.34)	(15.45)	(3.43)	(0.90)
		R^2			0.464		0.643			0.315
5	Chem.	3.095***	.585***	.025***	2.934***	.736***	.024***	3.152***	.434***	.032***
		(19.95)	(6.85)	(17.71)	(13.04)	(6.14)	(11.20)	(24.20)	(6.74)	(7.65)
		R^2			0.683		0.743			0.515
6	CEMF	2.527***	.894***	.001	2.332***	.964***	.002	2.616***	.841***	.003**
		(14.45)	(17.12)	(1.64)	(13.14)	(18.49)	(0.04)	(11.97)	(12.00)	(2.56)
		R^2			0.823		0.832			0.820
7	CB	1.815***	.503***	.001	2.13***	.269**	.029**	1.781***	.510***	-.003
		(21.13)	(9.37)	(0.23)	(12.16)	(2.01)	(1.94)	(15.76)	(8.14)	(-0.76)
		R^2			0.546		0.616			0.553
8	Eng.	2.137***	1.181***	.0008	1.944***	1.318***	.002	2.568***	.885***	.002***
		(9.57)	(11.08)	(0.69)	(5.77)	(8.37)	(1.47)	(13.05)	(9.64)	(3.14)
		R^2			0.889		0.883			0.932
9	Fer.	1.513***	.395***	.016***	1.851***	.260***	.018***	1.087***	.572***	.011***
		(9.88)	(5.68)	(15.15)	(14.57)	(5.01)	(13.37)	(3.85)	(4.39)	(5.86)
		R^2			0.806		0.824			0.802
10	F&PCP	1.734***	1.491***	-.003***	2.085***	1.302***	-.003***	1.945***	1.404***	-.002**
		(8.27)	(13.48)	(-8.31)	(5.83)	(7.15)	(-3.99)	(7.77)	(9.55)	(-3.04)
		R^2			0.941		0.925			0.959

11	G&C	1.944***	1.206***	.002	2.223***	1.126***	.003**	1.407**	1.395***	.0004
		(5.40)	(8.01)	(1.46)	(7.84)	(10.43)	(2.38)	(1.98)	(4.52)	(0.12)
		R^2		0.777			0.858			0.719
12	Ins.	2.980***	.536***	.055***	2.725***	.732***	.051***	2.824***	.617***	.043
		(21.36)	(4.30)	(4.31)	(9.25)	(2.95)	(2.77)	(16.12)	(3.27)	(1.46)
		R^2			0.617		0.641			0.572
13	IB/IC/SC	3.785***	.667***	.006***	3.651***	.811***	.003***	3.869***	.441***	.024***
		(23.41)	(13.40)	(6.70)	(18.37)	(10.63)	(3.63)	(22.42)	(6.90)	(6.89)
		R^2			0.686		0.722			0.655
14	Jute	.420	1.127***	--.006***	2.057***	.633***	.003***	-.576	1.221***	-.006**
		(-0.40)	(13.80)	(-8.67)	(5.30)	(8.40)	(4.31)	(-1.15)	(9.47)	(-7.58)
		R^2			0.560		0.744			0.509
15	LC	2.876***	1.145***	-.0005	2.430***	1.403***	-.007**	2.374***	1.232***	.002
		(10.40)	(18.43)	(-0.23)	(12.31)	(17.58)	(-2.01)	(10.54)	(10.73)	(0.33)
		R^2			0.648		0.700			0.588
16	L&T	1.627***	1.111***	-.0006	1.382***	1.158***	-.001	1.601***	1.107***	-.0007
		(3.58)	(5.26)	(-0.48)	(4.26)	(10.20)	(-1.37)	(6.54)	(11.09)	(-1.22)
		R^2			0.858		0.906			0.814
17	Misc.	2.581***	1.187***	.009**	2.713***	1.222***	.005	2.324***	1.206***	.011***
		(13.38)	(11.08)	(2.44)	(11.29)	(8.89)	(0.77)	(7.08)	(6.72)	(3.11)
		R^2			0.828		0.786			0.867
18	Mod.	4.350***	.889***	.008	4.225***	1.016***	.005	4.289***	.664***	.039***
		(20.08)	(8.91)	(1.37)	(21.17)	(10.10)	(0.88)	(20.37)	(6.81)	(7.20)
		R^2			0.663		0.688			0.655
19	O&GEC	.752***	1.455***	.001	.878***	1.391***	.004*	.755***	1.451***	-.00008
		(2.92)	(11.64)	(0.48)	(4.97)	(14.42)	(1.80)	(1.35)	(5.49)	(-0.02)
		R^2			0.863		0.896			0.834
20	O&GDC	1.099***	.416***	.004*	.969***	.491***	.001	1.511**	.168***	.018***
		(8.67)	(7.20)	(1.88)	(6.58)	(7.80)	(1.65)	(10.78)	(2.63)	(7.31)
		R^2			0.604		0.622			0.649
21	P&B	.750***	1.490***	.010***	.877***	1.391***	.034*	.757	1.449***	-.0001
		(2.89)	(11.59)	(0.40)	(4.92)	(14.42)	(1.89)	(1.30)	(5.52)	(-0.01)
		R^2			0.875		0.892			0.838
22	Pharma.	1.187***	1.009***	-.002***	1.006	1.083***	-.002*	-1.135**	1.985***	-.006**
		(3.48)	(6.48)	(-3.30)	(1.65)	(4.07)	(-1.78)	(-2.32)	(26.44)	(-24.44)
		R^2			0.860		0.868			0.859

23	PG&GD	3.176***	.450***	.020***	3.248***	.441***	.029***	3.117***	.389***	.020***
		(281.0)	(8.47)	(4.61)	(23.23)	(7.30)	(7.35)	(24.37)	(7.36)	(11.51)
		R^2			0.689		0.825		0.578	
24	S&R	1.374***	1.491***	-.005**	1.898***	1.285***	.006**	.810	1.671***	-.009**
		(4.79)	(10.74)	(-1.89)	(5.01)	(7.04)	(2.25)	(1.54)	(5.75)	(-2.85)
		R^2			0.746		0.759		0.804	
25	Ref.	1.801***	.367***	.001	2.172***	.332***	.003	2.979***	-.439***	.053***
		(7.57)	(4.79)	(0.76)	(16.72)	(8.30)	(0.59)	(11.35)	(-3.49)	(6.81)
		R^2			0.358		0.429		0.656	
26	S&AI	3.142***	.986***	.013***	2.903***	1.136***	.094**	2.532***	1.259***	.008
		(18.09)	(8.41)	(4.38)	(11.40)	(8.30)	(2.35)	(6.69)	(4.97)	(1.48)
		R^2			0.765		0.811		0.723	
27	T&C	2.750***	.306***	.016***	2.711***	.436***	.009***	2.643***	.222**	.022***
		(17.63)	(3.98)	(2.59)	(19.07)	(10.13)	(4.56)	(12.73)	(2.05)	(2.52)
		R^2			0.618		0.590		0.647	
28	TC	4.991***	.710***	.057***	3.778***	1.202***	.035***	3.737***	1.226***	.033***
		(15.33)	(3.68)	(3.22)	(12.15)	(7.15)	(3.60)	(11.14)	(6.83)	(3.21)
		R^2			0.659		0.767		0.610	
29	TS	4.619***	.764***	.033***	4.796***	.7654***	.035***	3.673***	.898***	.093***
		(18.48)	(6.71)	(10.83)	(14.43)	(5.76)	(6.06)	(11.20)	(3.08)	(2.76)
		R^2			0.470		0.482		0.500	
30	TW	1.805***	1.484***	-.003***	1.864***	1.487***	-.003***	1.393***	1.614***	-.004**
		(7.41)	(15.99)	(-5.46)	(4.35)	(9.41)	(-3.26)	(5.63)	(16.18)	(-6.06)
		R^2			0.917		0.933		0.900	
31	Tob.	.175	1.199***	-.001	.145	1.198***	-.001	.374	1.114***	.001
		(0.31)	(6.09)	(-0.75)	(0.11)	(3.05)	(-0.79)	(0.53)	(3.78)	(0.85)
		R^2			0.764		0.732		0.826	
32	Trans.	.968***	1.005***	-.001	1.251***	1.000***	-.002***	1.501***	.626***	.015***
		(3.20)	(9.08)	(-1.48)	(5.04)	(10.63)	(-2.56)	(8.11)	(8.14)	(14.22)
		R^2			0.775		0.846		0.864	
33	V&AI	.574	.860***	-.004***	-.365	1.098***	-.006***	.931**	.762***	-.003**
		(1.60)	(7.59)	(-6.17)	(-0.41)	(4.18)	(-3.20)	(2.34)	(5.69)	(-4.09)
		R^2			0.617		0.664		0.565	
34	Wool.	.565	.812***	.032***	-.370	1.099***	.001*	.945**	.770***	.012**
		(1.64)	(7.52)	(6.21)	(-0.43)	(4.22)	(-3.35)	(2.37)	(5.75)	(4.11)
		R^2			0.689		0.675		0.562	

The table depicts weekly regression estimates. The results during up and down market condition are also specified.
* Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level.

Table 6 deals with the weekly regression results. Herd behaviour prevails in food & personal care product, jute, pharmaceuticals, synthetic & rayon, textile weaving, and vanaspati & allied products. Still, it does not exist in PSX, just like intraday and daily levels. It also suggests that overall investors in PSX believe in rational decision making, and they avoid following the crowd. Comparing the daily level, limited evidence of herding is observed at weekly level. The reason may be the short term nature of herding. It can also be inferred that investors may find a long time to process the information in the long run, giving priority to their own decision-making.

Table 7. *Monthly regression results of Cross-Sectional Absolute Deviation (CSAD)*

		Overall Market			Up Market			Down Market		
S #	Sector	α	γ_1	γ_2	α	γ_1^{UP}	γ_2^{UP}	α	γ_1^{DOWN}	γ_2^{DOWN}
	All Sectors	8.914**	.266*	.039**	9.083***	.0348	.067	7.889***	.522*	.037*
	(PSX)	(21.97)	(1.74)	(2.49)	(11.20)	(0.07)	(1.38)	(12.98)	(1.68)	(1.71)
		R^2			0.423		0.418			0.428
1	AA	6.743***	.370**	.007	6.187***	.511***	-.0008	7.735***	-.252	.070**
		(15.61)	(2.51)	(0.76)	(13.46)	(3.53)	(-0.10)	(9.16)	(-0.64)	(2.38)
		R^2			0.336		0.345			0.902
2	AP&A	9.022***	-.260	.050***	8.845***	-.410	.062***	8.621***	-.109	.046***
		(13.23)	(-1.43)	(4.68)	(8.74)	(-1.10)	(2.86)	(9.97)	(-0.57)	(7.32)
		R^2			0.697		0.723			0.676
3	C&EG	8.071***	.241**	.015***	9.552***	.075	.017***	7.367***	.238**	.016***
		(13.32)	(2.31)	(10.46)	(6.54)	(0.30)	(5.37)	(10.10)	(2.03)	(13.19)
		R^2			0.853		0.844			0.865
4	Cem.	6.626***	.292***	.005***	6.547***	.318***	.005**	6.647***	.128	.016*
		(18.35)	(5.58)	(3.39)	(14.79)	(4.28)	(2.50)	(11.65)	(0.73)	(1.80)
		R^2			0.603		0.675			0.511
5	Chem.	8.091***	.143	.021***	8.618***	.128	.022**	7.092***	.207	.022
		(16.29)	(1.07)	(2.86)	(13.38)	(0.71)	(2.40)	(9.24)	(0.89)	(1.61)
		R^2			0.504		0.596			0.338
6	CEMF	5.939***	.541***	.004**	6.364***	.587***	.004*	5.107***	.525***	.004
		(9.76)	(5.65)	(2.20)	(6.70)	(4.47)	(1.69)	(6.77)	(3.81)	(1.63)
		R^2			0.805		0.741			0.867
7	CB	3.758***	573***	-.007***	4.977***	.129	.018**	3.817***	.533***	-.006***
		(10.82)	(8.81)	(-3.57)	(6.26)	(0.71)	(2.25)	(9.67)	(6.47)	(-5.01)
		R^2			0.410		0.430			0.445
8	Eng.	7.749***	.428***	.011***	8.143***	.460***	.0107***	6.894***	.463***	.012***
		(17.86)	(6.08)	(12.57)	(13.36)	(5.44)	(10.47)	(12.28)	(5.19)	(10.44)
		R^2		0.906		0.899			0.918	
9	Fer.	3.914***	.303	.012	4.889***	.025	.019**	2.974***	.559*	.007
		(5.46)	(1.15)	(0.89)	(9.29)	(0.17)	(2.46)	(3.03)	(1.67)	(0.47)
		R^2			0.412		0.301			0.431
10	F&PCP	5.504***	1.050***	.001	5.318***	.955***	.002	5.927***	.939***	.005***
		(7.85)	(6.33)	(1.42)	(3.49)	(2.60)	(1.24)	(9.49)	(7.63)	(4.11)
		R^2			0.931		0.930			0.946

11	G&C	6.625***	.644***	.010***	8.579***	.270*	.021***	4.785***	1.003***	.002
		(7.42)	(3.57)	(2.52)	(9.12)	(1.83)	(7.21)	(3.35)	(2.97)	(0.68)
		R^2			0.720		0.714			0.783
12	Ins.	6.458***	.644***	-.001	7.312***	.284	.022*	5.395***	.967***	-.014*
		(13.43)	(4.50)	(-0.20)	(8.40)	(1.15)	(1.75)	(11.65)	(5.38)	(-1.70)
		R^2			0.347		0.325			0.382
13	IB/IC/SC	3.473***	.822***	-.002	7.050***	.587***	.002	7.305***	.514***	.005*
		(2.86)	(5.65)	(-1.42)	(17.99)	(8.75)	(1.31)	(9.65)	(4.25)	(1.91)
		R^2			0.659		0.783			0.581
14	Jute	2.797***	.816***	-.001	3.664***	.614***	.0009	1.072	1.138***	-.005
		(2.45)	(4.45)	(-0.56)	(2.82)	(3.33)	(0.35)	(0.50)	(3.06)	(-1.05)
		R^2			0.446		0.544			0.399
15	LC	7.123***	.715***	.005	6.936***	.847***	-.0003	6.506***	.724***	.011*
		(11.56)	(5.75)	(1.02)	(5.59)	(3.36)	(-0.05)	(10.37)	(3.85)	(1.73)
		R^2			0.494		0.412			0.579
16	L&T	5.902***	.497***	.005**	5.467***	.456***	.008***	4.283***	.810**	.003
		(10.13)	(4.03)	(2.39)	(7.61)	(5.46)	(9.72)	(3.27)	(2.39)	(1.15)
		R^2			0.825		0.905			0.738
17	Misc.	7.597***	.491***	.021***	7.841***	.199	.047**	7.639***	.278	.033***
		(13.41)	(3.22)	(4.57)	(10.95)	(0.81)	(2.51)	(9.28)	(1.63)	(10.23)
		R^2			0.677		0.551			0.814
18	Mod.	9.332***	.311**	.019***	9.988***	.260	.021**	6.995***	.852***	.007
		(14.32)	(2.17)	(3.59)	(14.94)	(1.33)	(2.33)	(12.01)	(4.38)	(1.51)
		R^2			0.570		0.514			0.638
19	O&GEC	4.289***	1.053***	.003	4.201***	1.079***	.0002	5.008***	.814***	.0140***
		(4.43)	(5.69)	(0.76)	(4.59)	(6.34)	(0.11)	(3.95)	(3.57)	(2.76)
		R^2			0.739		0.776			0.758
20	O&GDC	2.015***	.497***	.002	2.383***	.435***	.004***	1.208**	.658***	-.001
		(6.18)	(6.78)	(1.23)	(6.27)	(6.55)	(3.28)	(2.31)	(5.15)	(-0.37)
		R^2			0.751		0.745			0.768
21	P&B	4.205***	1.043***	.056***	4.110***	1.810***	.019	5.017***	.820***	.023***
		(4.40)	(5.71)	(0.71)	(4.51)	(6.30)	(0.21)	(3.98)	(3.55)	(2.80)
		R^2			0.741		0.780			0.760
22	Pharma.	5.693***	.299***	.0005***	5.570***	.332***	.0004	5.443***	.338***	.0003
		(10.26)	(6.93)	(2.93)	(11.73)	(5.48)	(1.66)	(10.37)	(3.77)	(0.97)
		R^2			0.888		0.899			0.876

23	PG&GD	5.852***	.408***	.005***	4.753***	.733***	-.001	6.660***	.135	.012***
		(15.35)	(5.80)	(2.94)	(13.91)	(9.46)	(-0.47)	(11.55)	(1.10)	(2.75)
		R^2			0.574		0.698			0.422
24	S&R	5.382***	.941***	-.005	6.486***	.325***	.035***	2.598*	1.459***	-.010
		(7.11)	(6.84)	(0.75)	(13.77)	(3.00)	(7.75)	(1.73)	(3.10)	(-1.45)
		R^2			0.577		0.845			0.485
25	Ref.	5.116***	.269***	-.001	4.894***	.354***	-.001	5.347***	.119	.001
		(8.04)	(3.04)	(-0.57)	(6.23)	(2.74)	(-0.32)	(5.27)	(0.82)	(0.54)
		R^2			0.143		0.271			0.059
26	S&AI	8.818***	.113	.037***	9.242***	(0.49)	.041***	7.681***	.245	.038***
		(21.81)	(0.95)	(9.47)	(15.18)		(8.69)	(12.62)	(1.12)	(3.10)
		R^2			0.696		.093			0.632
27	T&C	6.255***	.264***	.009***	5.545***	.448***	.003	6.736***	.113	.015***
		(11.22)	(2.93)	(3.84)	(9.09)	(4.20)	(0.92)	(10.14)	(0.92)	(4.21)
		R^2			0.497		0.586			0.445
28	TC	10.959***	.409*	.020**	8.933***	.906***	.008	12.129***	-.483	.083***
		(10.60)	(1.72)	(2.28)	(10.01)	(3.39)	(0.85)	(7.26)	(-1.15)	(3.57)
		R^2			0.426		0.406			0.493
29	TS	9.043***	.820***	-.006	8.489***	.724**	.0121	7.829***	.572	.050**
		(13.48)	(5.26)	(-0.90)	(10.99)	(2.31)	(0.62)	(6.74)	(1.13)	(2.01)
		R^2			0.416		0.542			0.365
30	TW	4.337***	1.354***	-.002	6.135***	1.006***	.002	2.760	1.686***	-.006**
		(4.68)	(7.19)	(-1.21)	(7.40)	(5.85)	(1.64)	(1.36)	(3.98)	(-2.32)
		R^2			0.805		0.850			0.784
31	Tob.	3.498***	.862***	.0009	5.807***	.424***	.007***	1.628	1.275***	-.002
		(4.19)	(5.96)	(0.65)	(7.67)	(3.69)	(8.06)	(1.07)	(4.29)	(-1.38)
		R^2			0.769		0.852			0.776
32	Trans.	4.126***	.498***	.012***	4.741***	.5495***	.008***	3.809***	.388*	.016***
		(5.35)	(3.36)	(3.93)	(4.52)	(3.44)	(4.40)	(4.14)	(1.93)	(6.66)
		R^2			0.741		0.711			0.796
33	V&AI	3.013***	.565***	-.002**	2.146***	.703***	-.003***	3.835***	.429***	-.002**
		(3.95)	(4.68)	(-3.68)	(2.79)	(5.24)	(-3.86)	(3.96)	(3.15)	(-2.52)
		R^2			0.408		0.522			0.259
34	Wool.	3.011***	.560***	.010*	2.227***	.709***	-.019	3.881***	.420***	.045**
		(3.99)	(4.66)	(-3.70)	(2.81)	(5.22)	(-3.90)	(3.90)	(3.20)	(2.49)
		R^2			0.41		0.530			0.295

The table depicts the monthly regression estimates. The results during up and down market condition are also specified.
* Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level.

Table 7 reports monthly herding results during all market swings. The negative and statistically significant values of $R^2_{m,t}$ represent the presence of herding. Comparing the intraday, daily, and weekly levels, very limited evidence of herding is found at monthly level. However, PSX shows consistency about the non-existence of herd behaviour, just like intraday, daily, and weekly levels. The commercial bank is the only sector that depicts herding during overall market conditions.

Discussion

Herding has been examined in PSX and its sectors by using intraday, daily, weekly, and monthly trading data. At intraday level, the trend of herd behaviour was the same during overall, bullish and bearish market trends. It advocates that investors forego their own information and follow the same trends. Favourable market conditions show that asset prices will be high. Investors follow the decisions of other investors for security investment, and dispersion decreases. Apart from this, during an upward market, investors give priority to their own decisions and make investments in risky stocks. On the other hand, bearish market trends may create fear in investors' minds about wrong decision making, and they show particular concerns to avoid losses. In this way, they follow the decisions of other investors and do not invest to save their holdings. Comparing all four data streams, the existence of herd behaviour was more observed at daily level, comparatively low at intraday and weekly levels, and minimal signs have prevailed at monthly level. These progressions support the short term nature of herding.

Different authors for all data streams support the results. Henker et al. (2006) could not find the evidence of herding at intraday level, but some sectors exhibit its evidence. Zhou and Lai (2009) also explained that herding is a short-lived phenomenon, and they provided support for its sectoral evidence. Blasco et al.(2011) and Hsieh (2013) also noticed intraday herding. Considering the daily trading data, previous researchers supported the results of the current study. Shah et al. (2017) noticed herd behaviour in some sectors of PSX during upward market swings. Similarly, Malik and Elahi (2014) exhibited herding in the KSE-100 index. Moreover, Zafar and Hassan (2016) presented the evidence of herding in the Pakistan stock market. Besides, Khan and Rizwan (2018) observed it in just 3 sectors of PSX. On the other hand, Javaira and Hassan (2015) and Javed et al. (2013) could not provide any proof of herding. The possible reason may be the selection of a small sample size. Internationally, herding has also been observed at daily level, as mentioned in the literature review sections. The weekly results of herd behaviour are supported by Caporale et al. (2008), Pop (2012) in Romania as well as Purba and Faradynawati (2012) in Indonesia. Moreover, the minimal existence of herd behaviour at monthly level is backed by Holmes et al. (2013) in the Portugal market. In addition, Christie and Huang (1995) explained that monthly returns generate large dispersion as individual returns require more time to stray from the mean.

Conclusion and Future Directions

The present study investigates the herd behaviour in PSX and its sectors by using intraday, daily, weekly, and monthly stock returns. All data streams do not comprise of any unit root issue and so become stationary at levels. The signs of herding have not been identified in PSX, so it can be concluded that overall, investors in PSX focus on rational decision making. However, some sectors of PSX reveal this behaviour at all levels as mentioned by the negative values of R2m,t.. This suggests that absolute deviation decreases with the corresponding increase in market returns in these specific sectors. It also means that investors in these sectors forego their personal information and follow the decisions of crowd to avoid uncertain conditions. Herd behaviour is more likely to exist at daily level. The tendency of occurrence of the herding phenomenon gradually decreases at intraday and weekly levels. However, herding cannot be taken as a long term phenomenon as just a single sector is evidenced of its existence at montlhy level.

Future researchers can conduct their studies by developing an appropriate scale of herd behaviour to get real-life experiences of investors. Moreover, future researchers can make a comparative study by focusing on the stock markets of South Asian countries for in-depth insights into herding phenomenon.

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