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Investors' Imitation Behaviour: A Comparison of Islamic and Conventional Banks Stocks

ABSTRACT

This study aim is to investigate the existence of herding behavior in the banking sector; conventional banking and Islamic banking sectors. By using daily data, Cross-sectional Standard deviation (CSSD) and Cross-sectional Absolute Deviation (CSAD) based methods are employed to estimate herding behavior in the aforesaid market. The study finds no evidence of herding behavior for investors in conventional banks as well as for investors in Islamic banks. The study also highlights the non-existence of herding behavior in extreme market conditions for both types of banks.

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Author's contribution in the article: 1-Conceived and designed the analysis, 2-Reviewed and compiled the literature, 3-Collected the data, 4-Contributed data or analysis tools, 5-Performed the analysis, 6-Wrote the paper, 7-Financial support for the conduct of the study, 8-Other

1. INTRODUCTION

Many factors can influence the decision-making power of people, the choices made by other persons have a significant impact on their decisions of them De-Bondt (2008). The herding behaviour is explained as following the individuals who have experienced the same efforts in the past. People do herd not only in the daily routine of life but also in financial markets as stated by Devenow (1996). In stock markets, people do herd the financial expertise while making their investment decisions (Bikhchandani et al., 1992).

Fama (1970) advocates the traditional view of investment behavior and explains that the efficient market hypothesis of rationality holds if the information is perfect with fully confirmed prices. On the other hand, Barberis (2003) is in favor of the psychological impacts of investors on behavioral finance. There is widespread empirical evidence on the significant impacts of investor psychology on financial markets.

Both economists and specialists in stock markets have been analyzing the herding behavior for some years. In the stock markets of South Korea and Taiwan, Chang et al. (2000) and the Athens stock market, Tessaromatis and Thomas (2009) reported the presence of herding behavior. Researchers also reported the same in the Chinese stock market (Chang et al. 2000; Tan et al. 2008). Similarly, there is positive evidence of herding behavior in the developed economies of the European Union (Khan, 2011; Chiang & Zheng, 2010). Saastamoinen (2008) and Ohlson (2010) reported herding behavior exists in investors in the stock markets of Finland and Sweden. The findings of Christie and Huang (1995) also show the herding behavior presence in major sectors of NYSE.

Herding in stocks would mean that investors copy the behavior of others instead of relying on their information. In the present study, we tried to examine the existence of herding behavior in stocks of conventional banks and Islamic banks. Several studies tried to analyze the presence of herding behavior in the financial markets of various countries. There exist only a few studies related to the Karachi Stock Market (KSE)1 which analyzed the existence or non-existence of herding behavior. None of the studies try to investigate the difference in the behavior of the investors in Islamic banking and conventional banking. This is important to analyze as investors in both banking systems may differ from each other in terms of their investment behavior.

The main objective of the research is to investigate the existence of the herding behavior in the stocks of the banking sector; Islamic banking sector and conventional banking sector.

Following the introduction, section 2 presents a detailed review of empirical studies conducted in the field. Section 3 elaborated on the methods used, and section 4 contains the description of the data. Results and their discussion are presented in section 5. In the end, the conclusion of the study is presented in section 6.

2. LITERATURE REVIEW

There are two main approaches to investing in the stock market. First are the rational expectations, according to which investment decisions are made on the analysis of individual investors as stated by Falkenstein (1996). The second approach is the adaptive expectations in which investors mimic others Bikhchandani et al. (1992). In the stock market, investment managers mimic others for the sake of keeping their reputation in the market and to lessen the risk (Trueman, 1994; Scharfstein & Stein, 1990).

[1] On January 9, 2016 Karachi Stock Exchange (KSE) along with Islamabad Stock Exchange (ISE) and Lahore Stock Exchange (LSE) are incorporated in the Pakistan Stock Exchange (PSX).

Herding can be of three types; reputational earning, information cascade, and characteristic herding. In reputational earning, the individual investor follows the peer group. An information cascade can also encourage investors to mimic others mainly due to differences in information among investors. The last type of herding is characteristic herding. Under characteristic herding, there are different proffered stocks of common characteristics and because of this, the investors in their investigation regarding the optimal stocks reach the same conclusion. Other than these, investigative herding can be considered as another type of herding. The investigation of characteristics of some particular stock by the investors leads them to reach the same conclusion. So, a preference of investors for that particular stock can be seen based on their decision made by their judgment and it shows that they herd around the stock market (Froot et al., 1992; Hirshleifer & Teoh, 2003).

The behavior of investment in herding can be considered rational or irrational. The behavior of investors is considered irrational when they blindly follow others instead of their own beliefs. Managers who want to maintain a reputation in the market follow their peer group. This is rational behavior under the principal-agent model (Froot et al., 1992). The investors take into account the informational flow of leading investors, which leads them to follow the flow (Bikhchandani et al., 1992).

Chang et al. (2000) examine individual investor's herding behavior by introducing the cross-sectional standard deviation (CSSD) and using dummies for each extreme to deal with both extreme market conditions. They propose herding behavior exists in extreme market conditions, as investors copy the behavior of others by ignoring their instincts and asset pricing realities in panic situations. This method has some problems like the selection of lower and upper limits of the markets due to time-variant features of the markets and less efficiency because of the small sample size.

Chang et al. (2000) also used the CSAD method to analyze herding behavior in the normal condition of the markets. By using the CSAD method, Chang et al. (2000) found no significant evidence of herding for developed equity markets. However, they found some evidence of herding behavior in developing markets e.g. South Korea and Taiwan. Another study by Demirer and Kutan (2006) use data of daily stock returns from 1999 to 2002 and investigate the herding behavior in the Chinese stock markets. They employed the CSAD method and analysis is carried out for 375 Chinese stocks. They report no evidence of herding.

During the periods of market stress herding behavior may become more important. So, Christie and Huang (1995) used 5% and 1% values as the cut-off point to identify the lower and upper tails of the return distribution and only during the periods of extreme returns capture herding. Chiang and Zheng (2010) analyzed Shanghai and Shenzhen stock markets using the quantile regression equation for aggregate and sector level. They employed data from 1996 to 2007. The authors concluded that there is more tendency of herding at lower quantiles as compared to higher quantiles.

The herding behavior may exist due to the type of data set employed in the analysis. Tan et al. (2008), for both local and international investors, investigate herding behavior in the Chinese stock markets with the application of CSSD and CSAD. They reported the presence of herding behavior in case of daily data but no herding behavior at the weekly and monthly time horizon.

Sias (2004) finds mutual funds not to follow the actions of other mutual funds normally, but to follow their trade patterns. Significant evidence for this type of herding behavior in the trading of mutual funds is reported. Similarly, Hung et al. (2010), investigating the mutual funds in the Taiwan stock market, reported that institutional funds have herding behavior trends.

Investigating stock exchanges of four countries (Italy, Spain, Greece, and Portugal), by using CSSD and CSAD Economou et al. (2011) concluded the existence of herding in all four markets and also reported that herding is most likely observed in upper or lower market conditions.

The impact of extreme market conditions on herding might vary in different regions. Lao and Singh (2011) analyze Chinese and Indian markets by using CSSD and CSAD methods. For the Chinese market, the authors report that herding is more likely in bad market conditions. On the other hand, for the Indian market, the authors revealed that herding is more likely in good market conditions. The difference in rules and regulations along with dissimilarities in the characteristics of the markets can be counted as possible reasons. Gebka and Wohar (2013), using sector wise data with CSSD and CSAD, report no significant evidence of international herding. By contrast, the authors reported evidence of herding for some sectors: consumer services, basic materials, and oil and gas stocks worldwide. Using data of Spanish mutual funds and portfolios, Gavriilidis et al. (2013) find institutional herding at the national and the industry level. They also report that sectors with high information flow will have a high level of herding and vice versa.

Klein (2013) using CSSD and CSAD methods concludes that the United States and Euro-area markets have significant herding behavior. The existence of herding might be because the beliefs of investors affect the expectations of other shareholders. According to Rangvid et al. (2013), shareholders' expectations are formed in line with market harmony. Using quantitative data, the authors also report that young investors are more likely to be influenced by the market consensus. Lin and Lin (2014) investigate information-related and event-based herding for Taiwan's stock exchange. Strong evidence of both types is found in the analysis.

Pochea et al. (2017) found the presence of herding behavior in seven European countries. Chauhan et al. (2019) said during periods of turbulent uncertainty, people tend to follow others' decisions. According to Economou et al. (2018), market sentiments are an important part of herding behavior. The sentiment of the investors is linked to different external signals coming from different sources (Philippas et al., 2020). The overall market movements are affected significantly by the herding behavior. (Ph & Uchil, 2019; Jaiyeoba et al., 2018)

For Pakistan, there is one major study by Ilyas (2015) that investigates the herding behavior in KSE. The author also tries to find the existence of herding in extreme market conditions using CSSD and CSAD. The author reports that herding is subject to the sector as well period of analysis. Jamil et al. (2019) reported that there is some evidence of herding in KSE in bearish market conditions.

From the above-reviewed literature, it can be seen that none of the studies finds the presence of herding behavior in the conventional banking system and Islamic banking system. The present study aims to fill this gap and also to check the existence of herding in extreme market conditions for the banking sector.

3. METHODOLOGY

The study employs the methods introduced by Christie and Huang (1995) and Chang et al. (2000) to capture the presence of herding behavior in the banking sector. Both techniques are alike in spirit but sometimes they do not give the same conclusion. The method developed by Christie and Huang (1995) is based on the cross-sectional standard deviation (CSSD) while the method proposed by Chang et al. (2000) is based on a cross-sectional absolute deviation (CSAD).

3.1 Cross-Sectional Standard Deviation

Christie and Huang (1995) estimated the relation of the deviation in the average returns of the market and the cross-sectional deviation in the individual returns to estimate the presence of herding behavior in the equity market of the US. The general Capital Asset Pricing Models (CAPM) claims that there is a linear relationship between the spreading in an individual firm's returns and the spreading of average market returns. Treynor and Mazuy (1966) and Black (1972) report that individual returns increase nearly the same

as the increase in average market returns. They also report that this relation is affected by the market condition. In lower and higher extremes of the market, there is high stress, and investors are more likely to follow the market trend rather than their own beliefs.

Christie and Huang (1995) suggest the use of the CSSD of returns to identify herd behavior in a market setting. The underlying principle behind this measure is that the asset returns of an individual firm will move along with the returns of the overall market in the presence of herd behavior. This is because, in this situation, investors will make the decisions based only upon the communal market actions rather than on their own private opinion (information). As a result, cross-sectional dispersion would be lower than the natural dispersion. Hence, this would be symptomatic of the existence of herding behavior. The measure estimates the average closeness of the returns to the realized average. The authors argue that, since the individual assets vary in their sensitivity to market returns, the asset pricing models foresee the increase in the dispersion with the increase in market returns.

So, in the presence of herding behavior, individuals make their decisions only based on the communal market actions rather than on their private information, the return of the security will be closer to the return on the overall market. As a result, in the absence of herd behavior, there will be an increase in dispersion, and in case of severe herding, this behavior may lead to a decrease in dispersion. Christie and Huang (1995) define the CSSD as:

$$CSSD_t = \sqrt{\sum_{i=1} \frac{(R_{it} - R_{mt})^2}{N-1}} \quad (1)$$

here, R_{it} is the return for bank i at time t, R_{mt} is the cross-sectional average of the N returns in the portfolio of the banking sector (average return of all the banks) at time t, N is the total number of banks. According to the Capital Asset Pricing Theory (CAPM), portfolio returns are linearly associated with average market returns. Further, a non-linear association between them is an indicator of the existence of herding behavior. On the other hand, returns of the individual bank may decrease with the increased average return of the market. This indicates a negative relation between individual bank's return and market return dispersion. This is also an indication of herding behavior.

Christie and Huang (1995) treat extreme market conditions differently. According to them, in stressful situations, investors avoid following their own beliefs. Hence in this situation, herding is more probable. For analysis, they constructed dummy variables for both lower and higher extremes. These purely depend upon the market structure. There is no consensus among researchers on the definition of extreme market conditions. Different researchers used different percentages for up and bottom extreme market conditions. Studies like Chang et al. (2000), and Khan et al. (2013) use five percent values from top and five percent values from the bottom as the upper and lower extremes. Further, Christie and Huang (1995), Hwang and Salmon (2001), and Vieira and Pereira (2015) use one percent from upper and lower values along with five percent as the extreme market conditions.

In our data, there are more cases of positive returns and fewer cases of negative returns. Due to the difference in the number of days having positive and negative returns, in the present study, we employed one percent from lower and five percent from the bottom as extreme market conditions. Therefore, the regression equation after the incorporation of dummy variables can be written as follows:

$$CSSD_t = \alpha + \beta^L D_t^L + \beta^U D_t^U + \varepsilon_t \quad (2)$$

where D_t^L is a dummy variable having value 1 at time t if the return of the market is in the bottom one percent of its distribution, and 0, otherwise. Likewise, D_t^U is a dummy variable having value 1 at a time if

the return of the market lies in the top five percent of its distribution and 0, otherwise. Here, negative and significant values of the coefficients of these dummy variables indicate the presence of herding behaviour, whereas insignificant values of coefficients of these dummy variables indicate evidence of no herding behaviour in extreme conditions.

3.2. Cross-Sectional Absolute Deviation (CSAD)

The CSAD model is an extension of the CSSD model, it also follows the same spirit. Both of these models estimate the market-wide herding. Christie and Huang (1995) focused on extreme market conditions and cover both lower and upper tails by the introduction of dummy variables. Chang et al. (2000) argue that other than stress conditions herding can also exist in normal market conditions. They proved that the rational asset pricing model predicts equity return dispersions as a linearly increasing function of the market returns. Instead, if the market participants during periods of high price movements ignore their own beliefs and try to follow aggregate market behaviour, then this increasing effect and linear relation among the market return and dispersion will no longer hold. The non-linearly increasing relation may even become decreasing. This intuition is the basis of our empirical model.

Herding behaviour can be defined as a non-linear increasing function or decreasing function. Here in the particular market, the non-linear increasing function will exhibit less severe herding and the decreasing function indicate the severe type of herding. To capture the non-linearity in the market, Chang et al. (2000) introduce the square of market returns as an independent variable along with the absolute value of the market return. At the first stage following formula is used to calculate the $CSAD$ at time$t$:

$$CSAD_t = \frac{1}{N}\sum_{i=1}|R_{it} - R_{mt}| \quad (3)$$

This equation is similar to the CSSD except it uses absolute deviation. To analyze the non-linear relationship of the market returns and the individual return generally, we use the following equation:

$$CSAD_t = \gamma_0 + \gamma_1|R_{mt}| + \gamma_2|R_{mt}|^2 + \varepsilon_t \quad (4)$$

From the above equation, the coefficient of $|R_{mt}|^2$ must be negative and significant as proof of the existence of a nonlinear relationship between individual stock returns and average market returns. Correspondingly, equations (5) and (6) are used to identify the asymmetry and herding behaviour in both extremes, separately. Equation 5 is used to analyze herding behaviour in the upper extreme and equation 6 is for the lower extremity.

$$CSAD_t^{UP} = \alpha + \gamma_1^{UP}\left|R_{mt}^{UP}\right| + \gamma_2^{UP}(R_{mt}^{UP})^2 + \varepsilon_t \quad (5)$$
$$CSAD_t^{DOWN} = \alpha + \gamma_1^{DOWN}\left|R_{mt}^{DOWN}\right| + \gamma_2^{DOWN}(R_{mt}^{DOWN})^2 + \varepsilon_t \quad (6)$$

In equation (5), a negative and significant value of γ_2^{UP} indicates the presence of herding activity in the superior extreme. Similarly, in equation 6, a negative and significant value of γ_2^{DOWN} is evidence of herding behavior in the lower extremity. This approach is also used by Demirer and Kutan (2006), Tan et al. (2008), Javed et al. (2013), and Ilyas (2015) to estimate the existence of herding behavior.

Both CSAD and CSSD can be used to find the existence of herding behavior in extreme market conditions. The difference between both is that Chang et al. (2000) have associated the positive return values with higher extreme and negative return values with lower extreme. On the other hand, Christie and Huang (1995) consider top and bottom 5% values as extreme values. In our study, we used the bottom 5% as lower extreme while the top 5% as upper extreme.

4. DATA AND SUMMARY STATISTICS

The data of two Islamic banks and eighteen conventional banks are collected from Karachi Stock Exchange[2] and Business Recorder[3]. The daily data of opening and closing prices are accumulated from May-2006 to May-2016. Allied Bank Limited (ABL), Askari Commercial Bank (ASK), Bank Alfalah, *Standard Chartered Bank,* Bank Al-Habib, Habib Metropolitan, Bank of Punjab, Faysal Bank, Habib Bank, Jahangir Siddiqui (JS) bank, Muslim Commercial Bank, National Bank, Nordic Investment Bank (NIB), Samba Bank, Soneri Bank, Silk Bank, Summit Bank, The Bank of Khyber, United Bank are taken as conventional banks whereas Bank Islami and Meezan Bank are chosen as Islamic banks for the analysis. Among the conventional banks, MCB bank has the highest market capitalization while Silk bank has the lowest market capitalization in the stock market. On the other side, among the Islamic banks, Meezan Bank has a higher market capitalization as compared to Bank Islami.

The average market return is a key indicator of trade in that particular market. Likewise, the average return of the specific stock also attracts its selling and purchasing. The CSSD and CSAD of banks are calculated based on their average return. In this study, returns are calculated by the differences in daily log prices.

Table 1 shows a brief explanation of the average returns of selected banks. In the first row, the maximum and minimum average return of the banking sector is given: the average return of overall banks is negative with 1.3 units standard deviation. The Islamic banks have the maximum amount of average return is equal to 7.40 with a negative (-0.0003) mean. A maximum average return of 7.72 is given for the conventional banks, with a standard deviation of 1.32.

Table 1 depicts the CSSD of both categories of banks. As mentioned above, the CSSD is used to measure the dispersion of individual returns from the average market return to analyze the existence of herding behavior in upper and lower extremes. CSSD is calculated using equation 1. The conventional banks have higher returns than the Islamic banks under the maximum value of CSSD, and in mean value, conventional banks are superior too.

Table 1: Summary Statistics of Average Returns, CSSD, and CSAD

	Minimum	Maximum	Mean	Std. Deviation	Obs.
Average Returns					
Banking sector	-8.2021	7.4511	-0.0394	1.2925	2488
Islamic banks	-12.6390	7.4050	-0.0003	1.6615	2488
Conventional banks	-8.5183	7.7247	-0.0432	1.3208	2488
Cross-Sectional Standard Deviation (CSSD)					
Banking sector	0.0000	26.7278	1.6456	1.2841	2488
Islamic banks	0.0000	20.9446	1.2784	1.3452	2488
Conventional banks	0.0000	28.1031	1.6297	1.3414	2488
Cross-Sectional Absolute Deviation (CSAD)					
Banking sector	0.0000	11.1032	1.1527	0.7031	2488
Islamic banks	0.0000	14.8101	0.9040	0.9512	2488
Conventional banks	0.0000	12.2095	1.1430	0.7416	2488

Source: Author's calculations.

[2] Following the merger of Islamabad Stock Exchange, and Lahore Stock Exchange in Karachi Stock Exchange, the new name of the exchange is Pakistan Stock Exchange.

[3] Business Recorder is the first financial Newspaper of Pakistan, for detail see www.brecorder.com.

5. RESULTS

The present study employs the methodology developed by Christie and Huang (1995) and Chiang and Zheng (2010) to check the existence of herding behavior in banking sectors. In subsection 5.1, results based on methodology by Christie and Huang (1995) are presented. It checks the existence of herding behavior in lower and upper extreme market conditions. They use dummy variables for lower and upper extremes, and statistically significant negative values of the parameters of these dummies will be evidence for herding behavior in that particular banking sector. Results based on the methodology presented by Chang et al. (2000) are presented in subsection 5.2. To check herding behavior in a bull market, it uses data for which returns are positive. On the other hand, to check herding behavior in the bear market, it uses data for which returns are negative.

5.1. Results of Herding Behaviour based on CSSD

In the economy, the stock market is considered a volatile market. Good and bad news affect investors' decisions differently in the market. The results of equation 2 are used to check the existence of herding behavior in extreme conditions, presented in Table 2. Christie and Huang (1995) report that good news has a relatively smaller effect than bad news. This implies that chances of herding in the lower extreme of the market are higher than the chances of herding in normal conditions and upper extreme.

In Table 2, β^U measures herding in the upper extreme of the particular banking sector and β^L measures the herding in the lower extreme. The negative and significant values of these coefficients demonstrate that the particular extreme has herding activities and investors use to follow others. On the other hand, a positive and significant coefficient represents the existence of no herding activity. Overall, results reveal that there is no herding in any of the banking sectors with any of the market conditions. It means that in a given sample, both Islamic banks and conventional banks do not herd in extraordinary situations.

Table 2: Herding Behavior in Extreme Conditions

Variables	Conventional Banks	Islamic Banks	Overall All Banks
Constant	1.5292	1.1541	1.5380
	(58.69)***	(45.08)***	(60.89)***
β^L	3.8821	3.8164	2.3546
	(14.70)***	(14.71)***	(13.15)***
β^U	1.2850	1.7724	1.2562
	(11.11)***	(15.59)***	(11.26)***
N	2488	2488	2488
Adj-R^2	0.1173	0.1525	0.1039
F-Statistics	166.17	224.69	145.19
P-Value	0.0000	0.0000	0.0000

Source: Author's estimations. *, **, and *** indicate significance at 10%, 5%, and 1% level of significance, respectively.

5.2. Results of Herding Behavior based on CSAD

In contrast to the CSSD, which is used only for extreme conditions, the CSAD method can also be used for normal conditions. Similarly, equation 4 is used to capture the non-linear relationship between individual investors and the banking sector. Table 3 shows the result of this equation for herding behavior in the normal market environment. The negative and significant values of γ_2 provide evidence for the existence of herding activities in a particular banking sector. Our analysis would be inconclusive if we find the value of γ_2 is insignificant, however, we find the positive and significant value of γ_2, so we concluded based on this data set there is no evidence of herding for Islamic as well as conventional banking stocks.

Table 3: Results of Herding Behavior in Normal Market Conditions

Variables	Conventional Banks	Islamic Banks	Overall All Banks
Constant	0.8412	0.5920	0.8458
	(39.72)***	(21.71)***	(41.71)***
γ_1	0.2925	0.14377	0.3235
	(10.27)***	(4.98)***	(11.47)***
γ_2	0.0240	0.0526	0.0149
	(4.21)***	(10.24)***	(2.53)**
N	2488	2488	2488
Adj-R^2	0.2822	0.2851	0.2783
F-Statistics	489.76	496.98	480.56
P-Value	0.0000	0.0000	0.0000

Source: Author's estimations. *, **, and *** indicate significance at 10%, 5%, and 1% level of significance, respectively.

To identify the asymmetry in the market, the equation 5 and 6 are used. The results of this equation are presented in Tables 4 and 5. To check the herding activity in the bullish market, only daily data for which returns are positive is utilized. As mentioned above, the value of γ_2^{UP} is used as a piece of evidence for herding behavior in a bullish market. Results presented in Table 4 show that there is no negative and significant value of the corresponding coefficient, which indicates that there is no evidence of herding activity in the given sample. The finding is true for both types of banking sectors.

Table 4: Results of Herding Behavior in Bull-Market

Variables	Conventional Banks	Islamic Banks	All Banks
Constant	0.9209	0.5311	0.9185
	(32.87)***	(11.71)***	(33.93)***
γ_1^{UP}	0.2329	0.3493	0.2824
	(5.85)***	(6.62)***	(7.18)***
γ_2^{UP}	0.0401	0.0056	0.0254
	(4.51)***	(0.53)	(2.82)***
N	1208	1182	1206
Adj-R^2	0.2972	0.2179	0.2897
F-Statistics	256.22	165.51	246.77
P-Value	0.0000	0.0000	0.0000

Source: Author's estimations. *, **, and *** indicate significance at 10%, 5%, and 1% level of significance, respectively.

Similar to the bullish market, we investigate the presence of herding behavior in the bearish market as well by using equation 6. For the existence of herding behavior, we must have a negative and significant value of the coefficient γ_2^{DOWN}. The results of possible herding behavior in the bearish market are presented in Table 5. Results indicate that, in any of the cases, there is no negative value of the parameter, which means that there is no evidence of herding behavior. The findings are similar for the banking sector comprising of conventional banks and Islamic banks.

Table 5: Results of Herding Behavior in Bear-Market

Variables	Conventional Banks	Islamic Banks	All Banks
Constant	0.8533	0.6558	0.8473
	(26.05)***	(18.46)***	(27.52)***
γ_1^{DOWN}	0.2447	0.0096	0.2786
	(5.82)***	(0.27)	(6.76)***
γ_2^{DOWN}	0.0288	0.0760	0.0208
	(3.69)***	(13.31)***	(2.58)**
N	1236	1258	1246
Adj-R^2	0.2642	0.3652	0.2628
F-Statistics	222.77	362.51	222.89
P-Value	0.0000	0.0000	0.0000

Source: Author's estimations. *, **, and *** indicate significance at 10%, 5%, and 1% level of significance, respectively.

6. SUMMARY AND CONCLUSION

The behavior of investors in stocks of conventional banks and Islamic banks might be different from each other. In the present study, we tested the existence of herding behavior in the banking sector by bifurcating it into conventional banks and Islamic banks. We also tested the existence of herding behavior in these sectors with extreme market conditions. For the analysis, the study used daily data of closing prices of eighteen conventional and two Islamic banks from May 2006 to May 2016.

The estimation is carried out for three different market conditions: normal market conditions, bearish and bullish market conditions, and extreme lower and extremely higher market condition. For normal market conditions, CSAD is employed to capture the asymmetric behavior of the investors during different market conditions as used by Chang et al. (2000). Likewise, CSSD is used to measure herding behavior in extreme market conditions as used by Christie and Huang (1995).

The estimated results based on the CSSD show that for both types of banks; conventional and Islamic banks, there is no evidence of herding behavior found in the upper and lower extremes of the market. Similarly, in the case of CSAD, no evidence of herding behavior in any of the banking sectors can be observed in bull-market, bear-market, or normal market conditions. If there exists some herding in the stock market then maybe due to lack of data our model is not able to capture it. This indicates that, while trading stocks for these banks, investors make decisions by their own beliefs rather than following the decisions of other investors. Here, results are not in line with the results of Chang et al. (2000), Christie and Huang (1995), and Ilyas (2015) who report that, during more volatile and stressful market conditions, investors by suppressing their own believes have higher tendency to mimic each other.

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REFERENCES

Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. *Handbook of the Economics of Finance*, 1, 1053-1128.

Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *Journal of Political Economy*, 100(5), 992-1026.

Black, F. (1972). Capital market equilibrium with restricted borrowing. *The Journal of Business*, 45(3), 444-455.

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.

Chauhan, Y., Ahmad, N., Aggarwal, V., Chandrad, A. (2019). Herd behavior and asset pricing in the Indian Stock Market. *IIMB Management Review*, 0–25.

Chiang, T. C., & Zheng, D. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking & Finance*, 34(8), 1911-1921.

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.

De-Bondt, W., Muradoglu, G., Shefrin, H., & Staikouras, S. K. (2008). Behavioral finance: Quo vadis?. *Journal of Applied Finance*, 18(2), 7.

Demirer, R., & Kutan, A. M. (2006). Does herding behavior exist in Chinese stock markets?. *Journal of International Financial markets, institutions and money*, 16(2), 123-142.

Devenow, A., & Welch, I. (1996). Rational herding in financial economics. *European Economic Review*, 40(3-5), 603-615.

Economou, F., Kostakis, A., & Philippas, N. (2011). Cross-country effects in herding behavior: Evidence from four south European markets. *Journal of International Financial Markets, Institutions and Money*, 21(3), 443-460.

Economou, F., Christis, H, & Nikolaos, P. (2018) Investors' fear and herding in the stock market. *Applied Economics* 50: 3654–63.

Falkenstein, E. G. (1996). Preferences for stock characteristics as revealed by mutual fund portfolio holdings. *The Journal of Finance*, 51(1), 111-135.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The journal of Finance*, 25(2), 383-417.

Froot, K. A., Scharfstein, D. S., & Stein, J. C. (1992). Herd on the street: Informational inefficiencies in a market with short-term speculation. *The Journal of Finance*, 47(4), 1461-1484.

Gavriilidis, K., Kallinterakis, V., & Ferreira, M. P. L. (2013). Institutional industry herding: Intentional or spurious?. *Journal of International Financial Markets, Institutions and Money*, 26, 192-214.

Gebka, B., & Wohar, M. E. (2013). International herding: Does it differ across sectors?. *Journal of International Financial Markets, Institutions and Money*, 23, 55-84.

Hirshleifer, D., & Hong Teoh, S. (2003). Herd behavior and cascading in capital markets: A review and synthesis. *European Financial Management*, *9*(1), 25-66.

Hwang, S., & Salmon, M. (2001). A new measure of herding and empirical evidence, *Financial Econometrics Research Centre*, Working Papers Series WP102-12.

Hung, W., Lu, C. C., & Lee, C. F. (2010). Mutual fund herding its impact on stock returns: Evidence from the Taiwan stock market. *Pacific-Basin Finance Journal*, 18(5), 477-493.

Ilyas, G. (2015). *Herding Behavior in Karachi Stock Market and in its Major Sectors*, MPhil thesis, Quaid-i-Azam University, Islamabad

Jaiyeoba, H., Adewale, A. A., Haron, R., Ismail, & C. M. (2018). Investment decision behaviour of the Malaysian retail investors and fund managers: A qualitative inquiry. *Qualitative Research in Financial Markets*, 10(9), 134–151.

Jamil, M., Ilyas, G., Iqbal, M., & Tanveer, Z. (2019). Do investors herd: Empirical evidence from Karachi Stock Exchange and its major Sectors. *Forman Journal of Economic Studies*, 15, 69-85.

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

Khan, H., Hassairi, S. A., & Viviani, J. L. (2011). Herd behavior and market stress: The case of four European countries. *International Business Research*, 4(3), 53-67.

Klein, A. C. (2013). Time-variations in herding behavior: Evidence from a Markov switching SUR model. *Journal of International Financial Markets, Institutions and Money*, *26*, 291-304.

Lao, P., & Singh, H. (2011). Herding behavior in the Chinese and Indian stock markets. *Journal of Asian Economics*, 22(6), 495-506.

Lin, A. Y., & Lin, Y. N. (2014). Herding of institutional investors and margin traders on extreme market movements. *International Review of Economics & Finance*, 33, 186-198.

Ohlson, P. (2010). *Herd Behavior in the Swedish Stock Exchange*. Master's Thesis, International Business School, Jönköping University.

Ph, H., & Uchil, R. (2019). Impact of investor sentiment on decision-making in Indian stock market: An empirical analysis. *Journal of Advances in Management Research*, 17(1), 66–83.

Philippas, D., Philippas, N., Tziogkidis, P., & Rjiba, H. (2020). Signal-herding in cryptocurrencies. *Journal of International Financial Markets, Institutions & Money*, 65, 1-16.

Pochea, Maria-Miruna, Angela-Maria Filip, & Andreea-Maria Pece. 2017. Herding behavior in CEE stock markets under asymmetric conditions: A quantile regression analysis. *Journal of Behavioral Finance* 18: 400–16.

Rangvid, J., Schmeling, M., & Schrimpf, A. (2013). What do professional forecasters' stock market expectations tell us about herding, information extraction and beauty contests?. *Journal of Empirical Finance*, 20, 109-129.

Saastamoinen, J. (2008). Quantile regression analysis of dispersion of stock returns-evidence of herding. *Keskustelualoitteita*, 57, 1-19.

Scharfstein, D. S., & Stein, J. C. (1990). Herd behavior and investment. *The American Economic Review*, 465-479.

Sias, R. W. (2004). Institutional herding. *The Review of Financial Studies*, 17(1), 165-206.

Tan, L., Chiang, T. C., 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.

Tessaromatis, N., & Thomas, V. (2009). Herding behavior in the Athens stock exchange. *Innovations*, 6, 3-10.

Treynor, J., & Mazuy, K. (1966). Can mutual funds outguess the market. *Harvard business review*, 44(4), 131-136.

Trueman, B. (1994). Analyst forecasts and herding behavior. *The Review of Financial Studies*, 7(1), 97-124.

Vieira, E. F. S., & Pereira, M. S. V. (2015). Herding behavior and sentiment: Evidence in a small European market. *Revista de Contabilidad*, 18(1), 78-86.