The Great Lockdown and Herding Outlook during the COVID-19 Pandemic: A Changed World

Shaista Jabeen[*], Muhammad Farhan[†]

Abstract

The Coronavirus pandemic (Covid-19) is not only a healthcare crisis but also a global disaster. This novel virus has forced the world to enforce "The Great Lockdown" to flatten the curve of the infections. In the name of social distancing, this lockdown has confined billions of people to their homes, causing various businesses to shut down and ceasing almost all economic activity. Pakistan is also expected to face a loss of up to 4% of GDP due to fluxes in various sectors such as hospitality and tourism, aviation, potential contraction of foreign direct investment and remittances and disruption in trade, caused by the lockdown imposed in the country. The current panic market conditions have induced investors to set aside their peculiar information and follow the decisions of other investors or market leaders, so lead to the occurance of herd behavior. Following this notion, the present study intends to investigate the herding prospects of investors during the COVID-19 Outbreak. Referring this, the KSE-100 Indexed companies of Pakistan Stock Exchange (PSX) have been taken in the loop to instigate such behavior. Results revealed that the KSE-100 Index exhibits herding behavior during the sample time period. Herding is profound, especially during the overall market and bearish market trend as compared to the bullish market.

Keywords: *herd behavior, COVID-19, CSAD, Pakistan Stock Exchange*

Introduction

The Outbreak of Covid-19 all over the globe has disturbed the religious, financial, economic, social and political structure of the whole world. The biggest economies such as Italy, France, Germany, UK, China, USA and various others are on the verge of collapse. Global stock markets have crashed, and oil prices have seen the highest fall of history (Mahar, 2020). This Pandemic is severe and unique. Our lives are being changed by the unprecedented economic and health crisis created by this Pandemic. There are three reasons which make it unique. Firstly, it is a rolling mixture of economic crisis and health pandemic. Secondly, the global spread of the crisis in record time. Thirdly, it is both supply and demand-side shock for all the global economies (Izvorski et al., 2020).

As far as the effect of the Covid-19 Pandemic is concerned, it can be divided into three categories. Firstly, the Human Suffering,

[*] PhD; *Corresponding Author*. Lecturer (Department of Management Sciences; Lahore College for Women University). Email: jabeen_pioneer@hotmail.com

[†] PhD; Assistant Manager (Askari Bank Limited). Email: farhanlatif12@hotmail.com

deterioration of health outcomes at an enormous scale, and the rapid loss of lives coupled with economic suffering through the loss of jobs and other incomes (Izvorski et al., 2020). The deadly COVID-19 virus has killed more than 1,683,000 people and infected more than 53.36 million, as of this writing (WHO, 2020). The Pandemic has hammered large, medium and small enterprises at a significant scale through the lockdowns, causing unemployment at an enormous scale. International Labor Organization (ILO) has predicted that nearly half of the world workforce (1.6 Billion) is at risk of losing their jobs. According to the ILO Director-General Guy Ryder "For millions of workers, no income means no food, no security and no future." It would be tough for these people to protect and feed their families when income vanishes. According to ILO stats, the income of informal workers is expected to fall by 81.6% in Americas and Africa; 70% in Central Asia and Europe and 21.6% in Pacific regions and Asia (Brownsell, 2020). If the situation prolonged as predicted by the experts, this will hurt people financially, mentally and emotionally, especially the poor (Izvorski et al., 2020).

Secondly, the Global Recession. In the mid of April, the IMF projected the global growth and forecasted that the global economy is expected to face its worst recession since the Great Depression of the 1930s. According to Kristalina Georgieva, MD of the IMF "a recession at least as bad as during the Global Financial Crisis or worse". The World Trade Organization's latest predictions are even more disturbing, as it has forecasted nearly -9 % growth for this year in the worst-case scenario. Moreover, the United Nations Department of Economic and Social Affairs (UNDESA) has also forecasted that the global GDP will shrink up to 1% (UNIDO, 2020). The below figure describes the world growth outlook: projected by various global organizations.

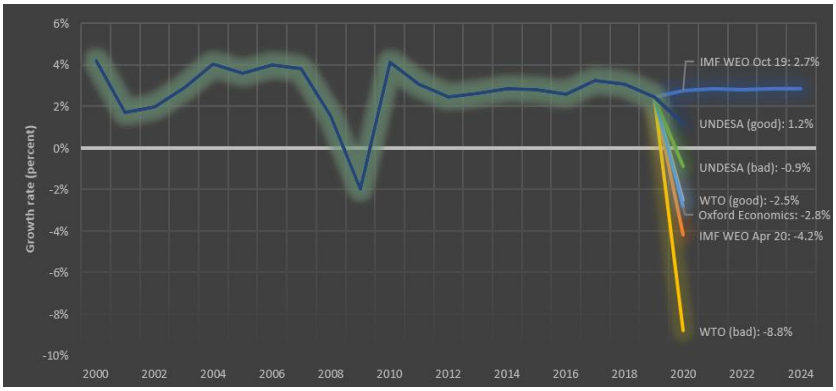

Figure 1: World Growth Outlook: Latest Projections
Source: UNIDO elaboration based on WTO (2020), UNDESA (2020), IMF (2019 & 2020) and *Oxford Economics (2020)*

The IMF has predicted an overall contraction in the global economic growth with some regional differences. The Fund has predicted that the crisis caused by Covid-19 would hit the advanced countries by the hardest. Moreover, countries in the Sub-Saharan and Africa, Middle East and Central Asia, Latin America and the Caribbean, Emerging and Developing Europe, Emerging and Developing Asia, and Emerging Market and Developing Economies have seen the highest downward revision of Gross Domestic Product (GDP) growth predictions. Figure 2 exhibits these predictions as projected by the IMF. The crisis has also affected Foreign Direct Investment. The world has seen extraordinary capital outflow from emerging markets. The capital flow is flooding back to advanced countries. According to the United Nations Conference on Trade and Development (UNCTAD), the foreign direct investment could fall between -30 % and -40% in 2020-2021 (UNIDO, 2020). According to an estimate, $83 billion has already flown out of the emerging markets since the Outbreak of the Pandemic (Mahar, 2020).

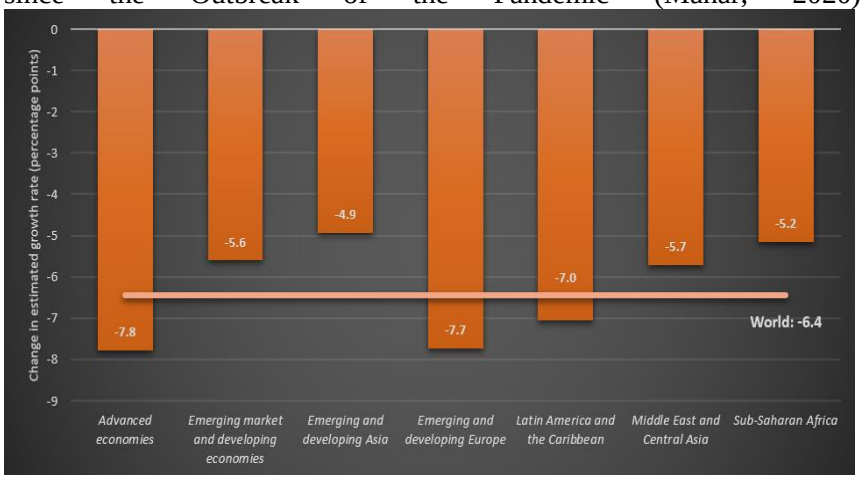

Figure 2: Regional Projection of GDP Growth
Source: UNIDO elaboration on the basis of the IMF projections (2019, 2020a)

Thirdly, Deep Corporate and Financial sector Suffering. It is anticipated that the corporate and financial sector will have the most profound fall due to the pandemic crisis. The financial sector is under deep stress with high anticipation of non-performing loans, which can lead to the collapse of many financial institutions. Moreover, the corporate sector has already taken a big hit. The chances of large-scale bankruptcies are increasing every day (Izvorski et al., 2020). Moreover, the most affected

sectors have become vulnerable such as transportation, consumer electronics, sports events, restaurants, hotels, tourism and travel-related industries (Mahar, 2020). "The Great Lockdown" has forced various local and international firms to either close their business or significantly reduce their activities due to low demand (Jurczenko, 2020).

Kristalina Georgieva, the managing director of the IMF, has suggested four essential measures to fight against the Pandemic and to minimize or avoid the losses. Firstly, support of the health system by continuing with containment measures. Secondly, the implication of timely targeted financial and fiscal policies to shield the affected humans and organizations. Thirdly, reducing the stress of the financial system and staying away from con tangent. Lastly, rigorous recovery planning to minimize the scaring effects of the Pandemic through policy implication. Keeping in view, worsening, severe and alarming situation around the globe, countries need coordination and corporation among themselves along with sensible behavior of their people to fight against Covid-19.

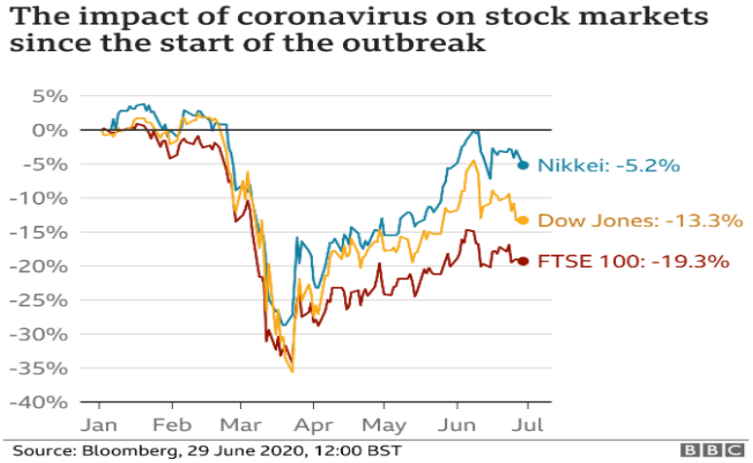

Figure 3: Impact of Coronavirus on Stock Markets

In Pakistan, Covid-19 confirmed cases have crossed 460,000 with more than 9,474 deaths, as of this writing. The Government is encouraging social distancing and has banned large social gatherings. All travellers coming from abroad are quarantined, and the policy-makers are planning to impose smart lockdown on the base of 'tracking-tracing-screening'. However, as per the ministry of planning, the Pandemic's impact on the Pakistani economy is expected to be 0.8-1.3% of Gross Domestic Product. Exports are expected to be decreased by 10-20% and imports by 50-60%. Loss of employment is estimated to be at nearly 20%. All economic targets of the year are expected to be missed. Moreover, the economy is expected

to contract by negative 1-1.5% in the current year as compared to 2.4% growth (Flanders, 2020).

Previous researches highlight that panic market conditions induce investors to set aside their peculiar information and follow the decisions of other investors or market leaders, so herd behavior occurs. The literature revealed that herding is a blend of behaviors. These behaviors happened when investor imitate other knowledgeable investors for making investments. Van Campenhout and Verhestraeten (2010) explained that herding represents a situation where investors set aside their own information and imitate the group, knowing that their own information is correct. Investors follow others to enhance their confidence or to curtail their uncertainty (Hogg & Vaughan, 2008). Scholars have presented positive and negative viewpoints about herding. Some argue that herding is based on fundamental information and so leads to price variability (Venezia, Nashikkar, & Shapira, 2011). However, some others claim that herding is driven form fundamental information which causes quick price adjustments to new information and leads to efficient markets (Choi & Skiba, 2015).

Inspiring from the ongoing researches on the financial and economic impact of COVID-19, the motive of this paper is to explore the impact of Pandemic on the herding behavior of investors in Pakistan Stock Exchange (PSX). The context of the present research is to find out the effect of COVID-19 on the imitative behavior of investors by taking into a loop the KSE-100 Index companies, as to date, no any study is available in Pakistan demonstrating the relationship of COVID-19 Outbreak and herd behavior. The current study contributes to the existing literature by presenting significant insights into the association between the addressed variables. To achieve the research objective, the following research question has been developed and it leads to the development of hypothesis;

Research Question

Does COVID-19 pandemic affect the herding behavior?

Research Hypothesis

There is significant association between COVID-19 pandemic and herd behavior.

Literature Review

Mixed evidence is available about the presence of herd behavior in financial markets; even the behavior is assessed in the same market.

Ramadan (2015) noticed its existence in Amman stock market. The existence of herd behavior was presented in the Tunisian stock market from 2000-2012. Likewise, Rahman, Chowdhury, and Sadique (2015) illustrated the same results in the Saudi stock market. Similarly, the robust herding was found in US stock markets during up and down market trends.

Chen, Wu, and Huang (2017); Chong, Liu, and Zhu (2016) also reported the existence of herding in Chinese stock market Similarly, Hwang, Kim, and Shin (2016) demonstrated the imitating behavior in Korean stock market. Moving ahead, Litimi (2017) noticed the presence of herd behavior in the French market. The sectoral evidence of herding was found in nine Asian stock markets (Zheng, Li, & Chiang, 2017). However, Mertzanis and Allam (2018) did not find herding evidence in Egyptian market during bullish and bearish trends. The same results were reported by Sharma (2018) during the same market trend in Indian stock market.

Can and Dizdarlar (2019) investigated herd behavior in Istanbul Stock Exchange form 2011-2017. Herding prevailed at 1%; however, at 5%, it existed only during upper extremes. Economou (2019) studied the herding effects in Balkan exchanges (Bulgaria, Croatia, Romania and Slovenia) from 2000-2016 by using CSAD measure with particular focus on global financial crisis and Eurozone crisis. The Balkan regions exhibited herding effects within the region as compared to within each stock market individually, with Romania demonstrated the strong effects among all. Shantha (2019) tried to explore the evolutionary nature of herding in the Colombo Stock Exchange from 2000-2018 by using CSAD measure and quantile regression. The herding phenomenon was observed to be of twisted nature. It was mostly observed during up and down markets and Civil War; however, it was crooked to negative herding after the Civil War and resulted in the stock market crash. Conversely, it was extinct irrespective of herd motives prevailed in the society Stavroyiannis and Babalos (2019) found the negative herding behavior in Eurozone stock markets during the time span of 2000-2016 by employing Capital Asset Pricing Model-based procedure.

Ju (2019) used CSAD measure and contended that herding prevailed in both A and B share markets. The investors of the A-share market herd on growth stocks and B share market on different styles like value and growth stocks. Indārs et al. (2019) examined herding extent towards the market in Russian Stock Exchange by using fundamental and non-fundamental information and established that investors herding is not based on fundamental factors, however, keeping in view the Ukraine

crisis, herding was merely dependent on fundamental factors. Moreover, herding evolution was found to be of progressive nature based on market nature and investor sentiments.

Concerning the studies conducted in Pakistan, scholars have found mixed shreds of evidence even assessing the same sample at similar time periods. They have identified existence as well as absence or week presence in the Pakistan stock market. Javaira and Hassan (2015) and Javed et al. (2013) used daily & monthly data and CSSD & CSAD measures from 2002-2007 and were unable to detect herding in Karachi Stock Exchange. On the other hand, Malik and Elahi (2014) used least-square & quantile regression analysis and illustrated the signs of herding during bullish and bearish trends. Similar results were presented by Zafar and Hassan (2016). Moving further, Shah et al. (2017) found herd behavior in some sectors of PSX.

Moreover, Khan and Rizwan (2018) examined this behavior in 18 sectors of PSX through CSSD and CSAD measures, out of which it was present in just three sectors of PSX. Likewise, Yousaf, Ali, and Shah (2018) examined herding in KSE-100 Index by using the same measure but with reference to Ramadan effects. Herding was observed during 2006-07 crisis period. However, Jabeen and Rizavi (2019) used Chiang and Zheng (2010) measure and could not find herd behavior in PSX, though they noticed its existence in some sectors of PSX. Similarly, Kiran et al. (2020) used CSSD & CSAD and they did not detect herding in PSX.

Internationally, limited studies are available investigating the impact of the pandemic on herd behaviour, but to date, researchers could not find any paper exploring such relationship in Pakistan. Asia (2020) investigated the herd behaviour during the whole, pre and post-pandemic time span in the Indian National Stock Exchange at the industry level. The findings revealed the absence of herding at sectoral levels; however, it was observed during the bullish and bearish trends. Moreover, Allam et al. (2020) observed the impact of the virus on the herding attitude of investors in Egypt stock market

The Performance of Pakistan Stock Market

As far as the performance of the stock market is concerned, mixed effects have been seen from January 2020 to April 2020. The start of the year was full of hope and optimism for the economy and stock market. Economists and analysts forecasted very favorable upward trends. The PSX experienced a bullish trend in the index in a sense it rises from 34000 points 40000 points from July 2019 to January 2020. Moreover, the index

touched the record 17 months peak of 43207 points. This boost was observed at the start of January 2020 and then resulted in extreme bearish trends. The streams of bearish trend spread in February as well. The plunge of 1000 points was experienced at the start of the month. This "depression phase" was attributed to extensive selling of stocks, political instability, and COVID-19 (Ahmed, *2020*).

However, the starting days of March were seemed to be some green days. The index jumped 1000 points and signalled hopes for the investors. The same situation continues and to govern it, the lockdown was employed as a final strategy. The lockdown was anticipated to bring difficulties for the operations of PSX. Many of the listed companies were temporarily closed up to April 6, 2020. Moving further, excessive Market Halts were triggered to safeguard the stock market and investors. The Market Halt is activated when the KSE-100 Index moved 4% or 5% either way and continued for five consecutive minutes. During such a halt, every kind of market activity is deferred, and it is known as "cooling off" period. PSX faced Market Halts at 9th, 12th, 13th, 16th, 18th, 24th, March 25, 2022, at different time spans. At the Market Halt of March 24, 2020, PSX launched two Exchange Traded Funds (ETFs) to join the list of world stock exchanges offering the ETFs. During these Market Halts, Index plunged by hundreds or even thousands of points (*Ahmed, 2020*).

The nightmare continues till March 2020, following the "green zone" at the start of April 2020. KSE-100 Index drifted by 1000 points. The approval of the IMF loan of $ 1.4 billion played a vital role in achieving such a dream. This loan was approved to deal with the challenges of COVID-19. The quick response was observed by an upward climb of 900 points in KSE-100 Index. Continuing the bullish growth, the end of the month also brings hopes for the investors. KSE-100 Index was up over 900 points and crossed 34000 points limit (*Ahmed, 2020*).

Methodology

Researchers have developed different measures to detect herd behavior in financial markets. The famous measures are known as Cross-Sectional Standard Deviation (CSSD); Cross-Sectional Absolute Deviation (CSAD); Hwang and Salmon (2004); Chiang and Zheng (2010) and some others. CSSD mesasure is pioneer one about market-wide herding. The model focuses on the closeness of returns of individual stock to the returns of market. Howevere, it is affected from the outlier. To cater this, the current study is intended to employ CSAD to get in-depth insights into the herding effects. The motivation behind using this measure is the

low dispersion of returns around the cross-sectional averages, which identify the imitation of investors towards the correlated trading pattern of market leaders by foregoing their personal beliefs. The model is represented as:

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

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

CSAD is regressed on two 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, the returns of individual security as well as the market move in different directions, directing to increased linear relationship and vice versa. 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

For bullish and bearish trend:

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

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

Data Collection

The present study intends to investigate the herding prospects of investors during the COVID-19 Outbreak. The KSE-100 Indexed companies of Pakistan Stock Exchange (PSX) have been taken in the loop to instigate such behaviour. The indexed companies have been targeted as these are the reflection of top performers of all listed companies in any exchange. PSX consists of 35 sectors, and the KSE-100 index is

constituted from the best-performing companies of these sectors. The time span covering such research ranges from January 2020 to April 2020. Such range has been selected as the gradual spread of Pandemic has been happened in Pakistan from the starting month of the current year, i.e. January to date (April). Purposive sampling has been employed asd the study is intended to achieve some specific objectives. Referring the secondary data based research, daily stock prices have been collected from the official website of PSX. The stock returns are calculated by using the formula $LN(P_t/P_{t-1})*100$, which focuses on the price change component of the returns. The herding was measured with the help of CSAD measure, mentioned above. The data was analyzed through descriptive statistics, stationarity test, and regression analysis.

Analysis & Findings

Table 1: Descriptive Statistics and Stationarity Results

KSE-100 Index	Variables	Mean	Standard Deviation	Minimum	Maximum	DF CSAD	DF Rm2
Time Span (January-April)	CSAD	1.960365	1.046622	0	6.438254	-6.121***	-4.594***
	R_m	-.2352924	2.111539	-6.656935	4.7535		

Table 1 shows the descriptive statistics and stationarity results of CSAD and R_m of the KSE-100 Index of Pakistan Stock Exchange (PSX). For stationarity, Augmented Dickey-Fuller (ADF) is used. The null hypothesis assumes that data is non-stationary, and it is rejected for both of the variables. The variables are found to be stationary at their levels. It means data has no unit root issue. It implies that data is constant over time. The standard deviation of R_m for the index and individual months is comparatively more significant than CSAD. High standard deviation suggests that the index has unusual cross-sectional disparities. Conversely, the mean values of R_m are higher than CSAD. These higher mean values demonstrate significantly increased differences from the Index return.

Besides, the maximum and minimum values are also mentioned in the table

Table 2: Regression Results

	Overall						Up					Down				
S #	KSE-100 Index	α	γ_1	γ_2	R^2	Durbin Watson	α	γ_1^{UP}	γ_2^{UP}	R^2	Durbin Watson	α	γ_1^{DOW}	γ_2^{DOW}	R^2	Durbin Watson
1	Overall Time Span (January-April)	1.032769 (6.90)***	.90986 38*** (5.83)	-.09348 33*** (-3.37)	0.4512	2.205	1.29728 1*** (6.90)	.71598 93*** (2.83)	-.06115 2 (-1.01)	0.4605	2.088	.999447 7*** (7.37)	.87473 74*** (5.48)	-.08611 43*** (-3.56)	0.5464	1.930

The table depicts the regression estimates of $CSAD = \alpha + \gamma_1 |\mathrm{R_{m,t}}| + \gamma_2 R^2_{m,t} + \varepsilon$.

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

Table 2 represents the regression results of the KSE-100 Index during overall, bullish and bearish market conditions. As per the time-series nature of data, it is investigated for autocorrelation and heteroscedasticity. The values of Durbin Watson and heteroscedastic-t statistics are also reported in the table. Focusing on the overall market conditions, the value of R^2 is comparatively low for the aggregate index. $|R_{m,t}|$ represents the linear relationship between CSAD and $|R_{m,t}|$. In other words, 1 unit change in absolute market return causes corresponding changes in cross-sectional absolute deviation, on the average. The significant and negative value of coefficient (y_2) demonstrates the existence of herding. In other words, a significant non-linear association exists between CSAD and $R^2_{m,t}$, leading to the presence of herd behavior. KSE-100 Index is exhibiting the herd behavior for the sample time period.

During the bullish market trends, herding was not observbed for the cumulative time period. It seems that high returns boost investors to focus on their peculiar information irrespective of following the crowd. Conversely, the bearish market trend validates the presence of herding for

the aggregate time. It illustrates that during panic market conditions; investors set aside their private information and follow other knowledgeable investors for the sake of their investment and to avoid further losses. In such a condition, the rational asset pricing model is contradicted. The results are supported by some previous researchers, who found herding tendency in KSE-100 Index at some other time periods. Malik and Elahi (2014) used least-square & quantile regression analysis and illustrated the signs of herding during bullish and bearish trends. Similar results were presented by Zafar and Hassan (2016). Likewise, Yousaf, Ali, and Shah (2018) examined herd behaviour in KSE-100 Index by using the same measure but concerning Ramadan effects. Herding was observed during 2006-07 crisis period. Moreover, the findings of current study are also backed by some international researchers (Allam et al. 2020; Asia, 2020)

Discussion and Conclusion

The present research work has been conducted to explore the impact of COVID-19 Pandemic on the imitating behavior of investors. Results revealed that investors in the KSE-100 index of PSX do herding during the overall market trends and the bearish trends as well. However, herd behavior could not be observed during the bullish trend. It is evident that panic market conditions induce investors to set aside their peculiar information and track the market. Moreover, investors may have a fear of losses, and they may have the uncertainty of losing their valuable investments, so they shake their confidence and try to track the other market leaders. The fallouts of COVID-19 Pandemic are also witnessed to be the same. As it is mentioned earlier in this research that, the Outbreak of novel coronavirus all over the globe has disturbed the religious, financial, economic, social and political structure of the whole world. Besides, in Pakistan the state has imposed lockdown in the whole country.The lockdown was anticipated to bring difficulties for the operations of PSX. Excessive Market Halts were triggered to safeguard the stock market and investors (*Ahmed, 2020)*.

It is concluded that the KSE-100 Index exhibits herding behavior during the sample time period. Herding is profound, especially during the overall market and bearish market trend as compared to the bullish market. It seems that the panic market conditions affect the psychology of investors and induce them to follow the market leaders for decision making.

Limitations and Implications

The current research has some limitations which can be overcome in future researches so as to make significant contributiuons in the field of COVID-19 research. The present study has been conducted during the early era of pandemic as it has covered the time span of January-April, 2020. Moreover, it has just focused on KSE-100 Index. The future researchers can conduct their research by taking into loop the overall stock market in order to have an in-depth exposure about herding tendency of investors during the pandemic. Moreover, prospect researchers can concentrate on the Pre-COVID and COVID time span for a comprehensive and comperative study.

The current research has some implications for investors and policy makers as well. The investors must keep in mind herding content and they must focus on acquiring the detailed information at the times of panic market condition just like what has happenend during the pandemic so that they can protect them from further losses. The policy makers must devise such a comprehensive framework which can lead to transparent and accurate information processing in order to provide the timely and updated market exposure to the stock market participants.

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