

PalArch's Journal of Archaeology of Egypt / Egyptology

COVID-19 EFFECT ON HERDING BEHAVIOUR IN INDIAN CAPITAL MARKET

S.C.B. Samuel Anbu Selvan¹, Ramraj G²,

¹Department of Commerce, The American college Madurai.

²Department of Commerce, VHNSN College, Virudhunagar.

S.C.B. Samuel Anbu Selvan, Ramraj. Covid-19 Effect On Herding Behaviour In Indian Capital Market--Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(4), 2432-2440. ISSN 1567-214x

Keywords: COVID-19, Herding Behaviour, Emerging Markets, BSE, NSE, CSAD.

ABSTRACT

This study aims to test whether the pandemic of COVID-19 has an effect on herding behaviour on the Indian capital market. Using the data on a daily basis and using Cross-Sectional Absolute Deviation (CSAD) Approach for a sample of the Bombay stock exchange (BSE) and National stock exchange (NSE), for the period from November 2015, to November 2020 (1246 daily data). The results reveal a non-linear link between the cross-sectional absolute deviation of stock returns and the market portfolio return. This decreases the dispersion with the rise in the market rates of return, which means that investors emulated market performance during the study period without paying attention to stock risk and return characteristics, suggesting that the pandemic COVID-19 increases herding behaviour in the capital markets of India.

INTRODUCTION

The coronavirus (COVID-19) outbreaks in December 2019 in China, in the city of Wuhan (Hubei region). From the sellers of live fish, poultry and animals to the public consumption. Later it continues to spread across the world. On January 20, 2020, the World Health Organisation (WHO) monitored the situation and released daily reports about the new cases of infection and death numbers in the Chinese region and outside of China. WHO has an international concern declared emergency? Due to this announcement, very first in Shanghai stock market rushed 8% low on the first week of February 2020, and the shock rapidly spread over international financial markets. Initially ignored by most of the countries, the COVID-19 effect raised severe concern since the infection rapidly propagated outside of China. The first week of February 2020, WHO declared more the 90,000 people are affected in more than 60 countries. In India, January 30, 2020, was the first case of coronavirus identified in the state of Kerala by an

immigrant person from Italy. Later it started massive spread over the nation. The Central Government took the initiative of nationwide Lockdown on March 24 2020, and it is still extending to more weeks. This Lockdown has been the most stringent to contain the pandemic; this virus panic affects entire economic and financial sectors. This situation makes herding behaviour among the investors, to understanding herd behaviour in the stock exchange has received considerable attention by economists and investors in the stock exchange. It isn't easy to make a precise definition of what is herding. Generally, it is a correlated behavioural pattern across individuals. Theoretically, herding behaviour is human behaviour that imitates other people's behaviour and actions. Many kinds of herding behaviour, for example, information-based herding, reputational herding and compensatory herding, and fake herding. During COVID – 19, herding behaviour in two directions. First, investors faced with the decline of the economy and medical and social uncertainty, consider the information available to maintain and invest in capital markets based on their beliefs, or second, they take into account other agents who are more informed and follow their behaviour. This paper explores whether the pandemic of COVID-19 increases herding behaviour on Indian capital markets.

REVIEW OF LITERATURE

In recent years, the herd behaviour of investors in the capital markets has been dramatically examined. The fundamental methods of herding have not been studied directly in the herding literature; contrary to traditional models, empirical researchers have found methods in a specific market or group of market players to detect the herding behaviour by clustering investor decisions. The following research studies on herding behaviour and the impact of COVID-19 on stock markets are selected. The studies chose either because they contributed to significant progress in research or because of their relevance for comparison with this study. Very Firstly (Lakonishok J. a., 1992) Proposed a quantitative approach to investigate whether herding among pension fund managers has been demonstrated. The analysis simultaneously studied the convergence of trade-in acquisition and sales of assets between market participants. Test findings did not demonstrate the herding conduct of pension fund managers.

Later, this approach developed by (Lakonishok J. a., 1992) is commonly used in other studies to analyse herding behaviour between domestic and foreign investors. (Christie, 1995) Suggested a new approach called the Cross-Sectional Standard Deviation (CSSD) to research herding behaviour in the overall market by looking at how individual stock returns to return to the market in the event of major price fluctuations. The study was carried out because, under market stress, individual investors suppress their opinions and take investment decisions based on a market consensus. The study applied the method of return dispersion on daily and monthly observations by New York stock exchange and Amex companies during the year 1962-88. The study showed that over the course of the study showed that throughout the high price movements dispersion is significantly increasing, and the results of the study are consistent with the asset price models. Therefore, herding behaviour cannot be detected in this approach.

(Chang, 2000) The study claimed that the Indian stock market does not obey the behaviour of the herd. The nature of herd behaviour was also examined during the rising market situation, declining market form, high volume, low volume, pre-crisis, crisis and post-crisis times. The results of the annual herding activity in the Indian stock market during the time. Investors' action tends to be completely reasonable on the Indian stock exchange. (Demirer, 2006) The Chinese market was examined by considering individual inventories and sectoral observations. The analysis attempted to investigate the sector-level herding of the Chinese stock exchanges in Shanghai and Shenzhen. The findings found no signs of herding at the level of the industry. The scientists also say that Chinese stock market investors rationally formulate investment decisions.

The study was also carried out for both Chinese stock markets and produced similar results that focused on traders of both exchanges having the same kind of information. Later (Chiang, 2010) The herding behaviour on the global market has been examined between 1988 and 2009. To explore the same methodology, CSSD and CSAD were used. Their research shows that herding is presented in developed stock markets except in the United States. Besides, it was introduced in both increasing and declining market directions and was not found in the United States and Latin America. The study showed herding behaviour in Asian markets more than decreasing market trends during the rising markets. (Garg, 2013) Existing herding behaviour on the Indian stock market has been investigated by taking into account daily, weekly, and monthly securities data in the period 2000-2013 listed in CNX 500. (Poshakwale, 2014) The herding effect in the Indian stock market was investigated. The CSSD and CSAD methodology has been tested. The result is that there is no herding behaviour in Indian markets.

(Ashraf, 2020), (Espinosa-M{\e}ndez, 2020) Report that the steady rise in the overall registered circumstances and the total number of COVID-19 deaths had a negative effect on the inventory returns of 1579 corporate shares included in the Hang Seng and Shanghai Stock Exchange Composite Index from 10 January to 16 March 2020. Similarly, (Baig, 2020) It shows that stock market volatility has significantly increased in countries such as the United States, the United Kingdom, Germany and South Korea from the epidemic (December 2019 to March 10 2020) to the pandemic period (post-March 10, 2020). (Mazur, 2020) Find that high positive returns are being produced for the supply of natural gas, food, health and software. At the same time, the value of equity in the crude, immobilisation, entertainment and hospitality sectors decreased significantly in March 2020 for 1,500 Standard and Poor's firms. The aspect that has not yet been discussed in this context is whether COVID-19 has an impact on herding behaviour.

The available resources show that herding behaviour in developed countries has been less studied; very few studies have been carried out so far, especially in emerging countries in India. There were still no definitive findings from the tests. Besides, very few reviews have been found to analyse the herding actions of the impacts of COVID-19 on the Indian stock markets of BSE and NSE over the five years.

IMPORTANCE OF THE STUDY

This standard analytical study, with a particular reference to Bombay stock exchanges and National stock exchange, is of deep concern to the herd behaviour of economists and investors in financial markets, especially during COVID-19 period. So, the importance of the current study to address those research gap

OBJECTIVES OF THE STUDY

- ✓ To investigate the stationarity of the NSE and BSE market returns data series.
- ✓ To examine the covid-19 effect on herding behaviour in Indian capital markets

RESEARCH METHODOLOGY

This study is wholly based on secondary data, and it conducted several tests and analysis, which can be called as data-oriented and empirical model oriented in terms of their purpose. Usually, all tests and analysis use data; however, one checks the reliability and validity of the data and makes sure it for empirical research. All the data used for this study was acquired from the official website of Bombay Stock Exchange (Sensex) and National Stock Exchange. The daily market data were collected for the period between November 2015 to November 2020 (daily observation). The data were converted into returns, and the logarithmic difference has calculated it as per the following equation 1,

$$R_t = (P_t) - (P_{t-1}) / (P_{t-1}) \quad \text{---- (1)}$$

Where R_t is the daily market index at time t . P_t denotes the market index at time period t , and P_{t-1} represents the market index in the selected market at time period $t-1$. For analysis, the data “Eviews 10” statistical software package and Microsoft Excel were used to perform econometric analysis such as the Jarque-Bera test is a goodness-of-fit measure of departure from normality, based on the sample kurtosis and skewness. Augmented Dickey-Fuller (Stationarity) test applied to validate the stationarity of the various data series, Durbin-Watson test, were applied to check the normality, the autocorrelation of the error terms also conducted a Cross-Sectional Absolute Deviation

THEORETICAL FRAMEWORK OF THE STUDY

Financial studies were aiming to understand the behaviour of investors is a very challenging and exciting task for all the researchers and market intermediaries. Among those, (EMH) Efficient Market Hypothesis is one of the oldest and traditional methods to understanding the investment behaviour. The theory is the basis of the effective market hypothesis of arbitration and the rational conduct of investors. With regard to rational behaviour, all investors' behaviour should be rational, even if the behaviour of some investors were irrational; the stock price will not be affected because investors' conduct is random and will be annulled. Although investors' behaviour were irrational and non-random, Arbitrage is going to eliminate irrational price compliance and due to numerous studies in the 1960s and 1970s, which supported Efficient Market Hypothesis, was a success Experimentally and theoretically.

Later, in the 1980s, a group of experimental results that contradicted the Efficient Market Hypothesis studies. Many researchers have developed a new model for understanding the herd in financial markets. (Christie, 1995) and (Chang, 2000) the Capital Assets Pricing Model (CAPM), and the market volatility Cross-Sectional Standard Deviation (CSSD) can be revealed through herding behaviour. If investors trust and follow the market expectations, they will not deviate from market returns whereas, given investors' overwhelming behaviour, their level of dispersion or variance between individuals' return and market return will not be zero. If stock returns differ from market returns, dispersion increases, and if investors meet market expectations, dispersion will be significantly less than the mean equation 2,

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

Where *CSSD* is the Cross-Sectional Standard Deviation for the *ith* firm on *tth* period and expresses the dispersion, *R_{m,t}* shall be the return of the for the *ith* firm on *tth* period. *R_{m,t}* is the average of the cross-sectional return of the market portfolio consisting of N shares during the *tth* period.

The testing behaviour of herds by dispersion according to Christie and Huang (1995) is based on conditional upon the study of fluctuations in immoderate market-rate values so that dispersion is revealed, usually at the end of the return distribution curve and we, therefore, examine whether the degree of dispersion differs from the mean dispersion throat, with statistical meaning through the following regression equation 3,

$$CSSD_{i,t} = \alpha + \beta_1 D_t^U + \beta_2 D_t^L + \varepsilon_t \text{ ----- (3)}$$

Where *CSAD_{i,t}* is the Cross-Sectional Standard Deviation for *ith* firm on *tth* period and expresses the dispersion. *D* is the dummy variables. *β* the coefficient to be estimated.

One of the major defects in the Cross-Sectional Standard Deviation (CSSD) approach used to express the degree of dispersion is the assumption that there is a linear relationship between the dispersion in stock returns and the return on market portfolios, as the changes in the dispersal of stock revenues have been similarly affected in the market return. Chang and Zheng (2010) proposed a new approach to examining herding behaviour, using the CAPM model, Cross-Sectional Absolute Deviation (CSAD), in the Indian capital markets equation 4

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 (R_{m,t})^2 + \varepsilon_t \text{ ----- (4)}$$

Where, *R_{m,t}* is the market return (equal-weighted average stock return), and *CSAD_t* is a measure of return dispersion calculated as 5,

$$CSAD_{m,t} = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}| \text{ ----- (5)}$$

Where, *|R_{m,t}|* and *R_{i,t}* are the absolute value of market returns and individual stock return of stock *I*, respectively. Specifically, to assess the effect of COVID-19 on herding, using the following equation 6,

$$CSAD_t = \alpha + \gamma_1 D_t^{Covid} |R_{i,t} - R_{m,t}| + \gamma_2 (1 - D_t^{Covid}) |R_{i,t} - R_{m,t}| (R_{m,t})^2 + \gamma_3 D_t^{Covid} (R_{m,t})^2 + \gamma_4 (1 - D_t^{Covid}) (R_{m,t})^2 + \varepsilon_t$$

The COVID dummy (D^{Covid}) equals one from November 2015 and zero before that. This above equation 4, is used to assess the presence of herding in Indian capital markets (BSE and NSE) before and after the reporting of the first case of COVID-19. A significantly negative value of γ_3 and γ_4 would indicate the presence of herding behaviour (Before) of COVID-19.

ANALYSIS AND INTERPRETATION

Descriptive Statistics

Table -1 presents the descriptive statistics of the Bombay stock exchange and National stock exchange returns.

Statistics	BSE Return	NSE Return
Mean	13.95310	3.906702
Std. Dev	374.3298	110.4219
Skewness	-1.480812	-1.417545
Kurtosis	22.16891	20.34915
Jarque-Bera	17385.56	16043.84
Probability	0.0000	0.0000

Source: Author’s Calculation.

As per the table, it is observed that the average mean returns of the Bombay stock market return are higher than the National stock exchange return. A higher mean value suggests significantly higher market variations across stock returns. And Standard deviation of BSE return is very high, which denotes the BSE market is more volatile, and it's perilous too. A higher standard deviation may suggest that markets have unusual cross-sectional variations due to unexpected events. The skewness for the returns for both the returns is negative, which means it is an asymmetric effect in the market. The kurtosis value is higher than 3, indicating that the data is leptokurtic. The Jarque-Bera test for normality portrays a significance level of 5%, showing much higher than the critical value. Hence, the rejection of the null hypothesis that means the time series data are not normally distributed

Augmented Dickey-Fuller Unit Root Test

Before examining the Cross-sectional Absolute Deviation in Indian capital markets, it is essential to check the univariate properties of the data series are nonstationary, or they contain a unit root. For that, the ADF unit root test was calculated as per the following equation 7,

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \text{ ----- (7)}$$

Where δY_{t-1} is the first difference operation, $\beta_1, \beta_2 t$ are coefficient to be estimated. $\delta = 0, \varepsilon_t$ Is white noise error term, if the estimated slope of coefficient n_t in this regression δ (hypothesis) is zero or not. if it is zero, then

Y_t Is nonstationary. The ADF null hypothesis is there as unit root in the time series, whereas, the alternative is - no root unit and stationery. It observed and presented in table 2

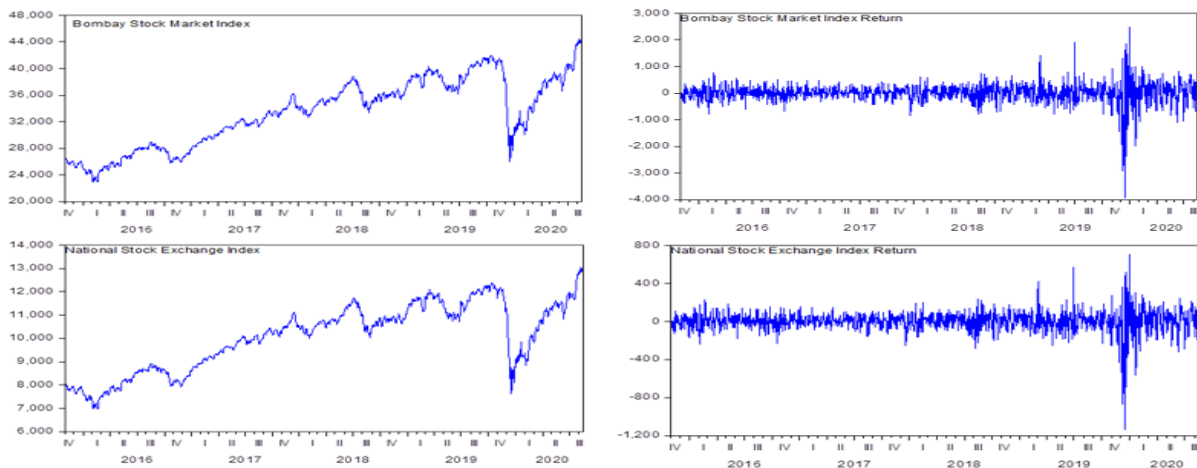
Table – 2

ADF Levels	Coefficient (BSE)	Probability	Coefficient (NSE)	Probability
At level	-0.96156	0.7685	-1.18263	0.6839
1 st Difference	-14.2580	0.0000	-14.2834	0.0000

Source: Author’s Calculation.

On observing the table 2, it shows that at level BSE and NSE data series, critical values are more than the 5% confidence level, it’s called nonstationary data. While taking into first level difference, the critical values both the data series are less than the 5% confidence level. So, the null hypothesis has rejected the data found to be stationary. Hence, the data should be taken into the first level for further calculations. Graphical representations of the ADF test are following in figure 1.

Figure - 1



Source: Author’s Calculation.

From figure 1, depicts the stationary levels of BSE and NSE Index. On the observation (from clockwise) shows the raw data of the BSE Index and 1st level difference of BSE Index returns. 1st difference of NSE Index returns and raw data of NSE Index.

Results of Cross-Sectional Absolute Deviation

Table -3 presents the results of the regression analysis for CSAD based on equation 6

	BSE Return	NSE Return
γ_0	0.0704 (0.059)	0.7423 (0.072)

γ_1	0.6826 (0.189)	0.0257 (0.733)
γ_2	-0.9160 (0.124)	-0.2926 (0.160)
γ_3	0.1395 (0.189)	0.3506 (0.162)
Adjusted R ²	0.827	0.856
Durbin-Watson stat	2.026	2.092
N	1246	1246

The result of analysis at table 3 shows that the value of γ_2 has a negative value that differs from zero at the significance level 1%, which means that, during the period of the study, the investors in Indian capital market (BSE and NSE) were following the market's performance in terms of risk and return based. The adjusted R² value is around 0.85, which means the model is more predictive and Durbin Watson stat also equals to 2, it denotes that the positive serial correlation in the residuals. The model is best for study. Hence, it confirms that the strong evidence that COVID-19 has herd behaviour in Indian capital markets.

CONCLUSION

COVID-19 is a pandemic in numerous ways that have affected the world, especially the financial sector. Most of the research based on how this pandemic affects financial markets have been minimal and recent. The goal of this study was to investigate more closely the conduct of the COVID-19 pandemic on the Indian capital market or not? Usage of Bombay Stock Exchange Daily Data and National Stock Exchange Daily Data by cross-cutting Absolute Deviation (CSAD) for the period from November 2015 to November 2020. This analysis found that the data in the study were not stationary, but stationary while ADF was being tested at the first stage. The findings of CSAD have shown that the Covid-19 pandemic herding in Indian markets is on the rise. The non-linear relationship between the cross-section absolute divergence in share income returns and business returns was an inverse relationship as the dispersion decreased as market revenues grew. This suggests that Indian capital market investors have been watching the market performance in terms of risk and return, without any interest in equity real estate. In a simple example of herding behaviour, less-informed investors may understand the outcome, following more informed ones which in turn contributed to the erratic behaviour of capital markets. Fear and confusion about the consequences of a pandemic will lead the less educated to give up their views and adopt the more informed ones. The current study has helped to provide a new proof of investor behaviour in developing countries such as India and has helped small retail investors to gain more from this.

REFERENCES

- Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: cases or fatalities? *Research in International Business and Finance*, 249.
- Baig, A. M. (2020). Evidence of the COVID-19 virus targeting the CNS: tissue distribution, host--virus interaction, and proposed neurotropic mechanisms. *ACS chemical neuroscience*, 995-998.

- Chang, E. C. (2000). An examination of herd behavior in equity markets: An international perspective. *Journal of Banking & Finance*, 1651--1679.
- Chiang, T. C. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking & Finance*, 1911--1921.
- Christie, W. G. (1995). Following the pied piper: Do individual returns herd around the market? *Financial Analysts Journal*, 31-37.
- Demirer, R. a. (2006). Does herding behavior exist in Chinese stock markets? *Journal of international Financial markets, institutions and money*, 123--142.
- Espinosa-Mendez, C. a. (2020). COVID-19 effect on herding behaviour in European capital markets. *Finance research letters*.
- Garg, A. a. (2013). Do investors herd in Indian market. *Decision*, 181--196.
- Lakonishok, J. a. (1992). The impact of institutional trading on stock prices. *Journal of financial economics*, 32(1), 23-43.
- Lakonishok, J. a. (1992). The structure and performance of the money management industry. *Brookings Papers on Economic Activity. Microeconomics*, 339-391.
- Mazur, M. a. (2020). COVID-19 and the march 2020 stock market crash. Evidence from S&P1500. *Finance Research Letters*, 101690.
- Poshakwale, S. a. (2014). Investor behaviour and herding: evidence from the national stock exchange in India. *Journal of Emerging Market Finance*, 197-216.