Demonetisation Announcement and Price Movement of Indian Sectoral Indices

M.Babu, J. Gayathri, G.Indhumathi, C. Hariharan

Abstract*: The information about changes in economic policies in a country may influence its stock market. The demonetisation has its impact on various segments of the economy. Thus the study aims to analyse the price movement of Indian sectoral indices around the demonetisation announcements. The daily price returns were tested using GARCH (1, 1) Model and it found that low volatility was found in the post announcement period compared to the pre-announcement period. Thus the present study confirmed that Indian sectoral indices were influenced by the demonetization announcement. Therefore, investors should be aware of economic events while investing in the stock market.

Key Words: Demonetisation, Price Movement, Sectoral Indices, Stock Market Volatility.

I. INTRODUCTION

Whenever economic reforms are implemented by the government or any other agencies, it always has some negative impact on the particular countries' capital markets. In India, 8th November 2016, the Indian government has implemented the demonetization. It was mainly suffered by the Indian people towards the day to day activities in a negative way but ultimately the overall reactions of the common man became positive at later period (Prabhsimran Singh (2018). The implementation of demonetization reduced the indices to lowest among the half yearly period in the announcement week (Kumar (2017). Hence the study analysed the indices around the demonetisation announcements.

Revised Manuscript Received on July 22, 2019.

Dr. M.Babu, Assistant Professor, Bharathidasan School of Management (BSM), Bharathidasan University, Thiruchirappalli, Tamil Nadu, India -620024.Email: drbabu@bdu.ac.in.

Dr. J. Gayathri, Assistant Professor, Department of Commerce and Financial Studies, Bharathidasan University, Thiruchirappalli, Tamil Nadu, India -620024. E-mail: gayajayapal@gmail.com.

Dr.G.Indhumathi, Assistant Professor, Department of Commerce, Mother Teresa Women's University, Kodaikanal, Tamil Nadu, India – 624101. E-mail: indhunila2000@gmail.com

C. Hariharan, Ph.D Research Scholar, Bharathidasan School of Management (BSM), Bharathidasan University, Thiruchirappalli, Tamil Nadu, India -620024.Email: harisraj7791@gmail.com.

II. REVIEW OF LITERATURE

In this section, the study presented various national and international levels of existing literatures. Srinivasan P. and Kalaivani M.(2013) tested the effect of information flow on Indian stock market, the results of the study confirmed that the asymmetric effects were employed in Indian benchmark indices, namely, NSE-Nifty and BSE-SENSEX.

Aguda niyi, (2016) found that the significant volatility effect of exchange rate in West African Economies. Gang-Jin Wang et al, (2016) examine the world gold markets for spillover effects and it concluded that the risk and its spillover effects are controlled. Davies and Studnicka (2017) concluded that UK firms recorded negative market reactions, during the periods of various economic events of the UK nations. Rashi Gupta (2017), Lourdunathan F and Xavier P (2017) found that the GST implementation has influenced the Indian economy. Veerangna Singh (2017) has found significant price fluctuations in the Indian stock market around demonetization. Madhu Iyengar (2017) found that the long term effect of demonetization on the Indian capital market. Zeckhauser and Ziegler (2018) concluded that 2016 US Presidential election influenced the stock market fluctuations. Ch. Balaji (2018) examine the influences of general election results on Indian stock market. It was found that Indian general election results have a short term effect in the stock market.

III. AIM OF THE STUDY

The aim of the study is to analyse the price volatility of sectoral indices, during pre and post demonetisation period. The present study also formulated the following objectives for the analysis.

i) To test the normality and stationarity in sample sectoral indices.
ii) To analyse the volatility in sample sectoral indices.

IV. NULL HYPOTHESES OF THE STUDY

NH_{01}: Daily price returns of sample sectoral indices are not normally distributed and not attained stationarity NH_{02}: There is no volatility in daily price returns of sample sectoral indices.

V. METHODOLOGY

A. SAMPLE SELECTION

The present study used the eleven sectoral indices selected from NSE India Ltd. The list of sample sectoral indices was presented in the Table – I.

B. SOURCES OF DATA

The study used the daily prices of the sample sectoral indices, which were collected from the official website of National Stock Exchanges of India Ltd. Finally, the daily closing prices were transformed, by taking the natural log of the return data. The returns, used in each of the time series, were computed as follows:

$$r_t = log \frac{p_t}{p_{pt}}$$

Where

rt : the day return

Pt : the value of the index

Ppt: the value of the index the previous working day

C. PERIOD OF STUDY

The study covered four year period from 9th November 2014 to 7th November 2018. The study period was split into two parts, based on the date of demonetisation announcement (8th November 2016). The period from 9th November 2014 to 7th November 2016 was considered as the pre-demonetisation announcement period and from 9th November 2016 to 7th November 2018 was considered as the post-demonetisation announcement period.

D. TOOLS USED FOR THE STUDY

The study used the following statistical tools for testing the price behaviour of Indian stock market, during the period of pre and post demonetisation announcement.

a)Descriptive Statistics – it was used for testing the nature of the sample data.

b) Augmented Dickey-Fuller (ADF) Test – this test was used for knowing the stationarity of the sample data.

c)GARCH (1, 1) Model – it was used for testing the Indian stock market volatility, during the pre and post demonetisation announcement.

VI. LIMITATIONS OF THE STUDY

The study was confined to only Sectoral Indices of NSE India Ltd. The study was undertaken only for the pre-demonetisation announcement period of two years and post-demonetisation announcement period of two years. The study fully depended on secondary data, it may have some limitations in accuracy of the data.

VII. RESULTS AND DISCUSSION

The results of the Normality Test, Unit root Test and Volatility Test are covered in the results and discussion.

a) Results of Normality and Unit Root Test

Descriptive Statistics results for the sample indices, during the Pre and Post Demonetisation period are exhibited in Table – II. In the pre-demonetisation period, Nifty Pharma index (-0.000372) and Nifty IT Index (-0.000612) recorded negative mean return value, at the same time, the highest standard deviation values (risk) were found in Nifty Metal Index and Nifty PSU Bank Index with the higher mean return at 0.002788 and 0.002013. In the same way, all the sample sectoral indices had a positive mean return value, except the Nifty Pharma index (0.00095), during the post announcement period. In the pre announcement period, the values of the Skewness for daily returns of Nifty IT Index, Nifty PHARMA Index and Nifty REALTY Index were negatively skewed and in post-demonetisation period, Nifty AUTO, Nifty FMCG, Nifty MEDIA, Nifty PHARMA and Nifty REALTY were negatively skewed. The values of Kurtosis for the daily returns of all the sample sectoral indices were greater than three and it indicated leptokurtic distribution. Jarque-Bera indicates normal distribution during both the periods.

The Augmented Dickey-Fuller Test values in Table –III were less than the test critical values at all levels which indicated the stationarity, at the level difference, during pre and post-demonetisation periods.

The results of Descriptive Statistics and Augmented Dickey Fuller Test denoted that daily price returns of sample sectoral indices were normally distributed and attained stationarity during the pre and post-demonetisation periods, Hence the study rejected the null hypothesis, NH01, "Daily price returns of sample sectoral indices are not normally distributed and not attained stationarity during the pre and post Demonetisation periods". These results confirmed that sample data can be used for further analysis.

b) Results Volatility Test

Table- IV reveals that the alpha (**α** or ARCH (1)) and beta (**β** or GARCH (1)) values confirmed volatility of daily price returns of the sample sectoral indices around demonetisation announcement. During pre announcement PSU Bank index recorded high volatility compared to other sample indices and Low volatility was found in IT Index.

At the same time, Nifty Private Bank index price return was highly volatile than the other sample sectoral indices and lowest volatility was noted in Nifty FMCG Index. Normally, when price fluctuations are high, investors can make more returns from the investment. Daily price returns' volatility of sample sectoral indices was low in post-demonetisation period compared to pre-period. Hence, the study rejected the Null Hypothesis NH02, "There

is no volatility in daily price returns of sample sectoral indices during the Pre and Post Demonetisation periods".

VIII. CONCLUSION

1. The study used GARCH (1, 1) model to analyse the price fluctuations (volatility) of sample sectoral indices, during the pre and post-demonetization period. The results of the GARCH (1,1) Model revealed that the sample sectoral indices of NSE India Ltd was volatile, in both pre and post-demonetisation periods. Among the sample sectoral indices, Nifty PSU Bank, Nifty Auto, Nifty Bank, Nifty Financial Service sectors recorded high volatility during the pre and post-demonetisation periods. It is interesting to note that between the pre and post-demonetisation periods, the volatility was low in the post-demonetisation period. In general, when the price volatility was high, the investor may get more return. Therefore the investors should monitor the day to day market movements, while investing their funds into the stock market, especially during this type of economic events.

S.No	*Sample Indices*	*S.No*	*Sample Indices*
1	Nifty Auto	7	Nifty Metal
2	Nifty Bank	8	Nifty Pharma
3	Nifty Financial Services	9	Nifty Private Bank
4	Nifty FMCG	10	Nifty PSU Bank
5	Nifty IT	11	Nifty Realty
6	Nifty Media		

Table- II: Results of Descriptive statistics for daily returns of sample sectoral indices of Indian stock market during pre and post Demonetisation period

	Nifty Auto	*Nifty Bank*	*Nifty Financial Services*	*Nifty FMCG*	*Nifty IT*	*Nifty Media*	*Nifty Metal*	*Nifty Pharma*	*Nifty Private Bank*	*Nifty PSU Bank*	*Nifty Realty*
Pre Demonetization											
Mean	0.00150 1	0.00132 1	0.001194	0.00073 7	-0.00061	0.00090 5	0.00278 8	-0.00037	0.00129 6	0.00201 3	0.00153 3
Std. Dev.	0.01245 8	0.01228 7	0.011386	0.01065 8	0.01065 6	0.01428 5	0.01762 2	0.01132 7	0.01198 5	0.02317 6	0.01867 4
Skewness	0.19773 1	0.23980 4	0.020631	0.43665 7	-0.07159	0.17982 5	0.43860 5	-0.32328	0.19130 9	0.52297 7	-0.20162
Kurtosis	4.02883 9	4.35427 8	4.230722	5.68519 8	4.47965 9	4.54323 7	7.63459 3	4.9663	4.30454 5	5.19254 2	5.14756 6
Jarque-Bera	9.51672 1	15.7475 3	11.87831	63.9014	17.3108 3	19.6689 4	174.283 4	33.5610 7	14.4778 3	46.3251 3	37.4014 8
Post Demonetization											
Mean	0.00044 1	0.00113 7	0.00123	0.001 4	0.00048 2	0.0003 8	0.00136 4	-0.00095	0.00114 9	0.00037 3	0.00250 2
Std. Dev.	0.01079 1	0.00887 7	0.008436	0.01144 4	0.01001 2	0.01205 8	0.01490 4	0.01175 8	0.00893 1	0.01653 2	0.01791 6
Skewness	-0.96752	0.26594 4	0.083218	-0.65474	0.31290 8	-0.42787	0.23866 4	-0.04355	0.00361 1	0.23275 7	-0.11428
Kurtosis	7.37029	4.53872	4.39566	9.41234	5.38638	4.24857	4.51119	3.72165	4.61018 4	7.51239	5.98666 2
Jarque-Bera	191.317 2	22.1886 9	16.54556	358.725 8	50.9743	19.1890 7	21.0543 2	4.42505	21.7142 5	172.381 6	75.1457 8

REFERENCES

[1]. Balaji, K. C., & Balaji, K. (2017). A study on demonetization and its impact on cashless transactions. International Journal of Advanced Scientific Research & Development, 4(3), 58-64.

[2] Davies R B & Studnicka Z, The heterogeneous impact of Brexit: Early indications from the FTSE. *European Economic Review*, 110, 2018, pp.1-17.

[3]. Fernholz R T, Mitchener K J & Weidenmier M, Pulling up the tarnished anchor: The end of silver as a global unit of account. *Journal of International Money and Finance*, *74*, 2017, pp.209-228.

[4]. Gupta R, Goods and Service Tax-A Positive Reform in Indian Taxation System. *International Journal of Management Research and Reviews*, *7*(6), 2017, pp.674.

Iyengar, M., Iyengar, N., & Sampat, H. (2017). Impact of US election results on Indian stock market: An event study approach. International Journal of Applied Research, 3(5), 9-13.

[5]. Kumar V, GST-A boon or a bane for India. *International journal for innovative research in multidisciplinary field*, 2(9), 2017, pp.315-319.

[6].Kim, K., Mithas, S., & Kimbrough, M. (2017). Information Technology Investments and Firm Risk Across Industries: Evidence from the Bond Market. MIS Quarterly, 41(4), 1347-1367.

[7]. Lourdunathan F & Xavier P, A study on implementation of goods and services tax (GST) in India: Prospectus and challenges. *International Journal of Applied Research*, *3*(1), 2017, pp.626-629.

[8].Srinivasan, P., & Kalaivani, M. (2013). DETERMINANTS OF FOREIGN INSTITUTIONAL INVESTMENT IN INDIA: AN EMPIRICAL ANALYSIS. Journal of Academic Research in Economics, 5(3).

[9]. Singh P, Sawhney R S &Kahlon K S, Sentiment analysis of demonetization of 500 & 1000 rupee banknotes by Indian government. *ICT Express*, *4*(3), 2018, pp.124-129.

[10]Singh, V. (2017). An Analysis of the Demonetization Effect on Sectorial Indices in India. International Journal of Engineering Technology, Management and Applied Sciences, 5(4), 378-382.

[11]. Tschoegl A E, The international diffusion of an innovation: The spread of decimal currency. *The Journal of Socio-Economics*, *39*(1), 2010, pp.100-109.

[12]. Umaru, H., Aguda Niyi, A., & Davies, N. O. (2018). The Effects of Exchange Rate Volatility on Economic Growth of West African English-Speaking Countries. International Journal of Academic Research in Accounting, Finance and Management Sciences, 8(4), 131-143.

[13]. Wagner A F, Zeckhauser R J & Ziegler A, Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 2018.

[14]. Wang G J &Xie C, Tail dependence structure of the foreign exchange market: A network view. *Expert Systems with Applications*, *46*, 2016, pp.164-179.

[15]. Wu S B, Wirthensohn M G, Hunt P, Gibson J P & Sedgley M, High resolution melting analysis of almond SNPs derived from ESTs. *Theoretical and Applied Genetics*, *118*(1), 2008, pp.1-14.

AUTHORS PROFILE

Dr. M. Babu is presently working as Assistant Professor in Bharathidasan School of Management, Bharathidasan University, Tiruchirappalli, TamilNadu. He holds MBA Degree from the University of Madras and Doctorate from Bharathidasan University, Tiruchirappalli, TamilNadu. He has published 71 articles in reputed peer-reviewed National and International Journals and 11 chapters in Edited Books. He has attended/presented the research papers in various Seminars, Conferences and Workshop at National and International level. He has also organized various Seminar and Workshop at National and International level. He has made significant contributions to research in the field of Financial Services and Markets, Financial Engineering and Behavioural Finance. He can be reached at: drbabu@bdu.ac.in

Dr.G.Indhumathi is presently working as Assistant Professor of Commerce, Mother Teresa Women's University, Kodaikanal, Tamil Nadu. She holds Master of Commerce Degree and Doctorate from Bharathidasan University, Tiruchirappalli, Tamil Nadu. She has published 38 articles in reputed National and International Journals, One Book and 6 chapters in Edited Books. She has attended/presented more than 150 research papers in various Seminars, Conferences and Workshop at National and International level. She has also organized various Seminar and Workshop at National and International level. She has made significant contributions to research in the field of Corporate Finance and Financial Services and Markets. She can be reached at: indhunila2000@gmail.com.

Dr. J. Gayathri is presently working as Assistant Professor in Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, TamilNadu. Her area of specialization is Finance and International Finance. She has 11 years of teaching experience. She holds M.Com, M.B.A and Ph.D Degrees. She has published 42 articles in reputed peer-reviewed National and International Journals and 9 chapters in Edited Books. She has participated in 43 workshops/ seminars and presented papers in 58 seminars/ conferences at National and International level. She has also organized 8 Seminars and Workshop at National and International level.

Mr. C. Hariharan is currently pursuing his Doctoral Programme in Bharathidasan School of Management, Bharathidasan University, Tiruchirappalli, TamilNadu. His field of specialization is International Financial Markets and Behavioural Finance. He has published 18 articles in reputed peer-reviewed National and International Journals and one chapter in Edited Book. He has attended/presented the research papers in various Seminars, Conferences and Workshop at National and International level. He can be