



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2017; 3(8): 684-691
www.allresearchjournal.com
Received: 17-06-2017
Accepted: 21-07-2017

Dr. Vipin Kumar
Associate Professor,
Sri Aurobindo College,
New Delhi, India

Bunny Singh Bhatia
Assistant Professor,
Sri Aurobindo College,
New Delhi, India

The effect of demonetisation in Indian stock market: An event study of sectorial indices

Dr. Vipin Kumar and Bunny Singh Bhatia

Abstract

Purpose: This paper attempts to find out the effect of demonetization on various sectorial indices of Indian stock market. This paper can give insights to policy makers with respect to vulnerable sectorial index and first one of its type to do a rigorous study on four different sectorial indexes.

Methodology: This study has applied event study methodology to diagnosis the effect of demonetisation decision on four different major sectorial indexes like BSE Reality, BSE Auto, BSE FMCG and BSE Bank. Event study methodology will provide CAAR and AAR Values across the event of demonetisation.

Findings: With the help of event study, we are able to find out that banking index shows high positive abnormal return post demonetisation. Whereas Reality index shows sharp decline after the announcement. The adversely affected sectors are automobile sector and realty sector. Automobile sector have shown negative CAAR of -10.54% for (-21, +10) days after announcement, whereas BSE BANK have shown positive CAAR of 4.99% for (-21, +8) days after announcement. Banking sector has seen boom after demonetisation. Realty index have shown negative CAAR of -18.39% for (-21, +8) days after announcement on the other hand, FMCG sector is not much affected by demonetisation. The interesting finding is that index shows negative abnormal return prior to the announcement of demonetisation.

Keywords: Demonetisation, Event study, S&P India. CAAR

Introduction

Prime Minister Mr. Narendra Modi, on November 8, 2016, took the historic decision of demonetising two of the highest currency denominations of our country. This initiative caused a lot of repercussions on the Indian economy. Sensex dropped by 3.8% that day, as investors started reacting adversely to the announcement. Money in circulation in India, consisted of around 12% of GDP is highest among the world. Therefore, demonetisation of 86% of monetary base led to severe impact on Indian economy.

It reflected through the immediate reaction of stock market post demonetisation. BSE Sensex witnessed largest fall that day as compare to other countries index. In this context, this paper attempts to find out the effect of demonetization on various sectorial indices of Indian stock market. The most impacted sector included banking, auto, FMCG & realty. Though banking sector got a lot of boost due to this move, demonetization impacted almost all the sectors of our economy. Few sectors saw a hike, others moved in the reverse direction. The objective of this paper is to find out the impact of demonetisation on various sectorial indexes like BSE Reality, BSE Auto, BSE FMCG and BSE Bank. There are very few studies which have done a detailed investigation of the demonetisation impact on sectorial indices of Indian stock market. Singh (2017)^[9] investigated the demonetization effect on performance and volatility of the sectorial indices in India. The analytical results exhibit that after demonetization, the closing values of all sectorial indices plummet, except for the energy and metal indices, where the closing values show a decline post-demonetization. But no study has conducted an event study on the sectorial indices. The application of event study will ensure that only the event of demonetisation has a bearing on our data.

We selected the index of four prime sectors, and with the help of event study methodology, analyse the effect of demonetisation on these sectorial indices. Market return and sectorial index have been taken from S&P BSE.

Correspondence
Dr. Vipin Kumar
Associate Professor,
Sri Aurobindo College,
New Delhi, India

Moreover, event study enabled us to find out Cumulative Average Abnormal Return (CAAR) post and pre demonetisation announcement.

Data Collection and Research Methodology

This paper is based on secondary data since this event is a recent one and very few studies have provided theories and research papers to assess the impact of demonetisation on Indian stock market. The data related to sectoral indices has been collected from BSE website. The study used adjusted closing price index for the period from January 1, 2015, to December 8, 2016, which contains 293 observations. This period has been divided into an estimation window of 250 observations along with an event window of 43 observations.

Descriptive analysis

In the following section, descriptive statistics are given with respect to the relationship between market index and sectoral indices.

R-square value of 0.50 establishes that there seems to be a moderate relationship between the market return and return from BSE Reality. The slope of 1.33 suggests that Reality returns are positively correlated with market return. If market return moves up by 1%, reality return goes up by 1.33%. Hence reality returns are more volatile as compared to market returns.

The returns of banking sectors also depends upon market return, it is clearly visible by the slope of 1.179. R-square of 0.73 explains good relationship between market return and BSE Bank return. Slope of 1.10 suggest that auto returns depend upon market return. If market return moves up by 1%, reality return goes up by 1.10%.

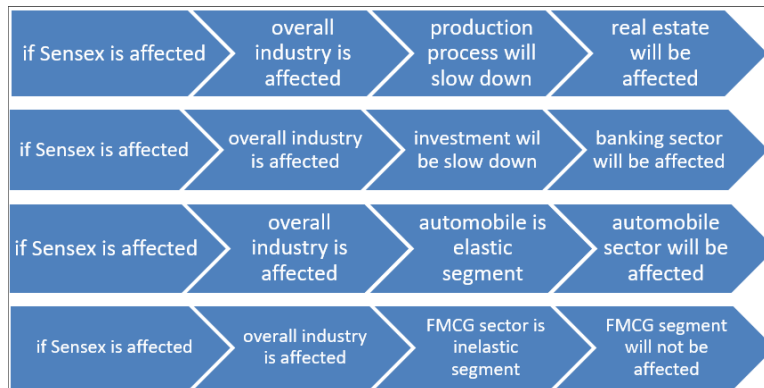
In contrast, slope of 0.78 suggests that market returns affect FMCG returns positively with relatively less magnitude. If market return moves up by 1%, reality return goes up by 0.78 % and that they are less dependent upon market return.

Table 1: Descriptive statistics

Hypothesis of the study	Reality Index	Bank Index	FMCG Index	Automobile Index
Intercept	0.000379	9.26939E-05	0.000153	0.000661
Slope	1.337936	1.179688111	0.783881	1.106536
R Square	0.506281	0.735872753	0.542517	0.692494
STD Error	0.01205	0.006456044	0.006544	0.0067

Descriptive statistics concluded that returns from reality index, bank index and automobile index are highly affected

by market returns, whereas FMCG index are less affected by market return. This can be easily understood as follows:



Hypothesis of the study

Keeping in view the implications of demonetisation and objective of the paper, the study proposes to test the following broader hypothesis which will allow us to achieve objective specified earlier.

H₀₁: Cumulative average abnormal returns and average abnormal return tends to be insignificant around announcement of demonetisation in BSE Reality

H₀₁: Cumulative average abnormal returns and average abnormal return tends to be insignificant around announcement of demonetisation in BSE Auto

H₀₁: Cumulative average abnormal returns and average abnormal return tends to be insignificant around announcement of demonetisation in BSE FMCG

H₀₁: Cumulative average abnormal returns and average abnormal return tends to be insignificant around announcement of demonetisation in BSE Bank

We have also conducted event study methodology on NSE-NIFTY constituent firms to know the effect of dividend reduction on share price for Indian companies. All data and Data and

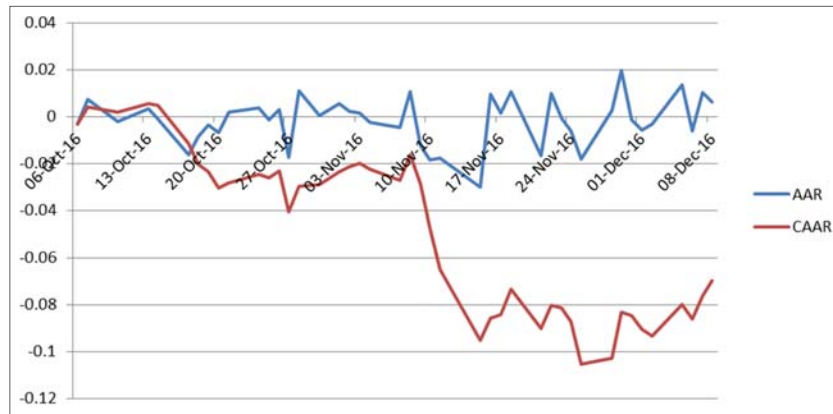
Results & Discussion

The AAR and CAAR of BSE Sectorial indices for the pre and post demonetisation have been presented in the graph. Further tables provide details for each day and its significance.

BSE AUTO

This index was constructed to measure the performance of automobile sector. It consisted of manufacturing of cars, motorcycles, heavy vehicles, auto ancillaries & tyres etc. This was at 10079.7 on November 8, 2016 & move upto 8915.6 level on November 17, 2016. It witnessed a down fall in automobile due to cash crunch post demonetization.

Auto return



Graph 1: AAR and CAAR of BSE AUTO vis a vis Market return

Table 2: AAR and CAAR of BSE Auto vs Market return

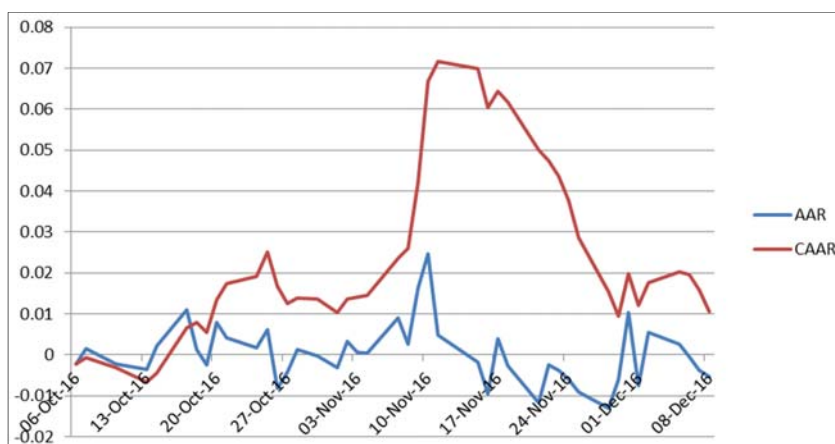
DAY	AUTO			
	d IER	AAR	CAAR	T TEST
-21	-0.00384	-0.00303	-0.00303	-0.45273
-20	-0.00111	0.007275	0.004242	1.085873
-19	0.001497	-0.00222	0.002019	-0.33184
-18	-0.01665	0.003498	0.005517	0.522068
-17	0.001882	-0.00088	0.004638	-0.13116
-16	-0.00508	-0.01613	-0.0115	-2.40792
-15	0.021599	-0.0087	-0.0202	-1.29895
-14	-0.00196	-0.00343	-0.02363	-0.51261
-13	0.006413	-0.0068	-0.03043	-1.01432
-12	-0.00141	0.00199	-0.02844	0.29701
-11	0.004677	0.003736	-0.0247	0.55754
-10	-0.00278	-0.00148	-0.02618	-0.22069
-9	-0.00938	0.002962	-0.02322	0.442149
-8	0.003817	-0.01738	-0.0406	-2.59395
-7	0.001676	0.010949	-0.02965	1.634198
-6	0.000214	0.00055	-0.0291	0.082142
-5	-0.00146	0.005509	-0.02359	0.822308
-4	-0.01321	0.002346	-0.02124	0.350214
-3	-0.00324	0.001339	-0.0199	0.199821
-2	-0.00564	-0.0026	-0.0225	-0.38763
-1	0.00816	-0.00455	-0.02705	-0.67893
0	0.005987	0.010708	-0.01634	1.598194
1	-0.01292	-0.01232	-0.02867	-1.83918
2	0.011427	-0.0185	-0.04717	-2.7616
3	-0.02744	-0.0179	-0.06507	-2.67206
4	-0.02055	-0.03014	-0.09521	-4.49853
5	0.000411	0.009377	-0.08583	1.399528
6	-0.00233	0.001676	-0.08416	0.250163
7	-0.0026	0.010771	-0.07339	1.60768
8	-0.01563	-0.01683	-0.09022	-2.51182
9	0.009063	0.009796	-0.08042	1.4621
10	0.004541	-0.0008	-0.08122	-0.11905
11	-0.00748	-0.00595	-0.08717	-0.88878
12	0.02018	-0.0182	-0.10537	-2.71567
13	0.002084	0.002562	-0.10281	0.382438
14	0.002502	0.019526	-0.08328	2.914286
15	0.011511	-0.0015	-0.08478	-0.2242
16	-0.0032	-0.00562	-0.0904	-0.83837
17	-0.01306	-0.00306	-0.09345	-0.45615
18	0.005658	0.013528	-0.07993	2.019025
19	0.002495	-0.00629	-0.08622	-0.93867
20	-0.00587	0.010116	-0.0761	1.509905
21	0.019952	0.006385	-0.06972	0.952952

Chellasamy, (2017) ^[10] has conducted least square regression result for Auto Returns and find out that the expected average return of Auto sector before demonetisation period is -0.075 and the expected average return after demonetisation is -0.367 (-0.075+0.292). It indicates that the average return in automobile sector has decreased by 0.292 that is by 29.2 percent. More importantly, all purchases, except two-wheelers, have mandated PAN card disclosure in the automobile industry. This had allowed cash transactions for buying two wheelers. With demonetisation, a reduction in cash transactions has restrained the demand for two-wheelers and has had a short run adverse impact on the industry. Secondly, luxury car segments have been a safe haven for spending unaccounted money. With demonetisation and massive withdrawal of money in circulation, the sector is likely to have a significant impact, with the resultant impact being seen in the index.

BSE-BANK

This indices shows the performance of banking sector in capital market. Banking indices was at 19500.8 level on November 8, 2016 & move up to 19087.85 level. This is the major sector of Indian economy which comes in picture due to demonetization. Around 410 point (2.1%) downfall in banking sectors shows that due to demonetization banking also got negative impact in short run. It may be due to liquidity crunch, banks are not able to fulfil public demand of cash in starting days of demonetization.

It is clearly visible from the graph that prior to announcement CAAR was positive up to 2 % and it rises further sharply after 8 November, before settle down to positive 1%. The biggest impact of CAAR remains between *(-21, +10) days, when CAAR was positive 7%. But it again starts falling down. A day after the announcement AAR rises by more than 2% which was significant as well, which implies investors from banking sectors have positively reacted. On 13 day AAR falls by 1.5% and which was significant as well.



Graph 2: AAR and CAAR of BSE Bank vs Market return

Table 3: AAR and CAAR of BSE Bank vs Market return

Day	Bank Aar	CAAR	T test
-21	-0.00232	-0.00232	-0.35995
-20	0.00152	-0.0008	0.235455
-19	-0.00233	-0.00313	-0.36077
-18	-0.00353	-0.00667	-0.54737
-17	0.002197	-0.00447	0.340296
-16	0.011077	0.006608	1.715829
-15	0.001294	0.007901	0.200368
-14	-0.00248	0.00542	-0.38437
-13	0.007956	0.013375	1.232296
-12	0.004022	0.017397	0.622967
-11	0.001666	0.019063	0.258062
-10	0.006082	0.025145	0.942022
-9	-0.00834	0.016808	-1.29143
-8	-0.00423	0.012576	-0.65547
-7	0.001258	0.013834	0.194807
-6	-0.00032	0.013509	-0.05021
-5	-0.00313	0.010375	-0.48552
-4	0.003167	0.013542	0.490589
-3	0.000582	0.014124	0.090146
-2	0.000418	0.014542	0.064744
-1	0.00893	0.023472	1.383172
0	0.002503	0.025975	0.387699
1	0.016159	0.042134	2.502974
2	0.024694	0.066829	3.824977

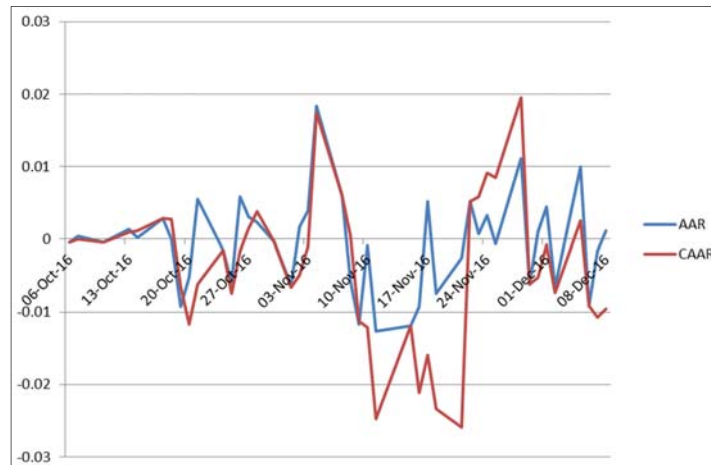
3	0.004796	0.071625	0.74293
4	-0.00185	0.069775	-0.28653
5	-0.00947	0.060301	-1.46751
6	0.003964	0.064265	0.614051
7	-0.00265	0.061612	-0.41102
8	-0.01166	0.049948	-1.80655
9	-0.00252	0.047431	-0.38989
10	-0.00376	0.043676	-0.5817
11	-0.00594	0.03774	-0.91934
12	-0.0091	0.028638	-1.40994
13	-0.01319	0.015445	-2.04341
14	-0.00598	0.009465	-0.92626
15	0.010324	0.019789	1.599065
16	-0.00763	0.01216	-1.18173
17	0.005353	0.017513	0.829112
18	0.002631	0.020144	0.407553
19	-0.00051	0.01963	-0.07952
20	-0.00381	0.015821	-0.59009
21	-0.00528	0.010536	-0.8185

Chellasamy, (2017) ^[10] indicates the expected average returns of Banking Sector before demonetisation and the value is -0.014. The coefficient value -0.166 reveals the difference in returns during pre and post demonetisation. It can also be inferred from the result that the average return for the post demonetisation is -0.18(-0.014+-0.166). Despite the wide uncertainty on the effects of demonetisation in the economy, the banking sector has been positively affected. With a rise in deposits both for current and savings accounts and falling interest rates, demonetisation is expected to spur liquidity and treasury gains. However, table indicates that the average post demonetisation returns for the banking sector is 0.16% less than the return before demonetisation. This requires segregating the sector into the public and private segments. The result also shows that the public banking sector recorded a higher average return of 0.40 percent post demonetisation. This rise could be attributed to the fact that public banks have a major share (approximately 80% as of March 2016) in Jan DhanYojna accounts. With the old Rs 500 and Rs 1000 notes becoming invalid, these

accounts and hence the public sector banks may witness a huge inflow of deposits. The private banking sector, in contrast, witnessed negative impact, a drop of 0.28 percent due to demonetisation. One possible reason may be that due to the intertwined structure of various sectors with banking one of the reasons for the opposite effect across the two banking segments may be due to the base effect for public banks since the profitability of public banks is one-fourth of the private banks. To summarise, although public sector banks have reflected positive returns post demonetisation, the effect is not strong enough to offset the negative impact on the private banking sector.

BSE-FMCG

These indices cover all the fast moving consumer goods. It was on 21902.85 level, which moves down to 20154 level. This sector shows a downfall by around 8%. It may be due to liquidity crunch in short run in our system. So people are not able to buy much immediately.



Graph 3: AAR and CAAR of BSE FMCG vs Market return

Slope of 0.78 suggest that FMCG returns are positively correlated with market return. If market return moves up by

1%, reality return goes up by 0.78 %. They are less dependent upon market return.

Table 4: AAR and CAAR of BSE FMCG vs Market return

	FMCG		
Day	Aar	CAAR	T test
-21	-0.00045	-0.00045	-0.06942
-20	0.000424	-3.1E-05	0.064743
-19	-0.00042	-0.00045	-0.06361
-18	0.001389	0.000942	0.212299
-17	0.000158	0.0011	0.024076
-16	0.002802	0.002802	0.428108
-15	-4E-05	0.002761	-0.00614
-14	-0.00921	-0.00644	-1.40668
-13	-0.00527	-0.01171	-0.80501
-12	0.005525	-0.00619	0.844351
-11	-0.00148	-0.00148	-0.22611
-10	-0.006	-0.00747	-0.91613
-9	0.005862	-0.00161	0.895759
-8	0.003085	0.001472	0.471475
-7	0.002344	0.003816	0.358205
-6	-0.00036	-0.00036	-0.05465
-5	-0.00626	-0.00662	-0.95671
-4	0.001703	-0.00492	0.26024
-3	0.003915	-0.001	0.598325
-2	0.018369	0.017369	2.807032
-1	0.006063	0.006063	0.926527
0	-0.0057	0.000364	-0.87089
1	-0.01166	-0.01129	-1.78119
2	-0.00083	-0.01212	-0.12719
3	-0.01266	-0.02479	-1.9353
4	-0.01191	-0.01191	-1.81985
5	-0.00925	-0.02116	-1.4129
6	0.005235	-0.01592	0.799982
7	-0.00748	-0.0234	-1.14296
8	-0.00253	-0.02593	-0.38722
9	0.005178	0.005178	0.791317
10	0.000682	0.00586	0.104217
11	0.003254	0.009114	0.497258
12	-0.00068	0.008432	-0.10428
13	0.011118	0.01955	1.698952
14	-0.00619	-0.00619	-0.94628
15	0.001013	-0.00518	0.154826
16	0.004416	-0.00076	0.674857
17	-0.0066	-0.00737	-1.00895
18	0.009945	0.00258	1.519791
19	-0.00915	-0.00915	-1.39783
20	-0.00164	-0.01079	-0.25037
21	0.001171	-0.00961	0.178968

Chellasamy, (2017) ^[10] find out FMCG (Fast moving consumer goods) witnessed a decline of 0.29% after demonetisation. According to the report, it is revealed that the sudden drop in money supply and increased incidence of deposits have had an adverse effect on consumption in the economy. This sudden demand reduction further leads to a multiplier effect due to decline in consumer confidence. With consumers preferring to hold cash in hand, consumers will stick to purchasing necessities and postpone/cancel

buying premium FMCG products. Similarly, producers will curb production in order to avoid stock pile up.

BSE-Reality

These represent our infrastructure sector, which is known for huge currency investment. This sector move by around downfall of 19.2%. There is lot of involvement of black money in this sector so in the stage of liquidity crunch this sector got affected by maximum points.

Table 5: AAR and CAAR of BSE Reality vs Market return

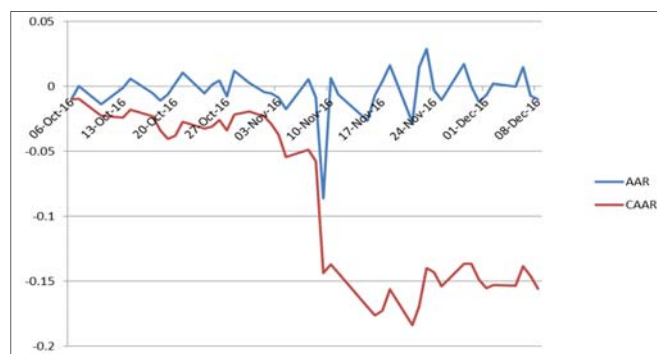
	Ireality		
Day	Aar	CAAR	T test
-21	-0.00969	-0.00969	-0.80411
-20	0.00044	-0.00925	0.03654
-19	-0.01346	-0.02271	-1.11744
-18	-0.0012	-0.02391	-0.0993
-17	0.00609	-0.01782	0.505379
-16	-0.00535	-0.02317	-0.44383

-15	-0.01064	-0.03381	-0.88296
-14	-0.00635	-0.04015	-0.52665
-13	0.002422	-0.03773	0.201017
-12	0.010734	-0.027	0.890824
-11	-0.00512	-0.03212	-0.4253
-10	0.001347	-0.03078	0.111791
-9	0.004771	-0.026	0.395952
-8	-0.00778	-0.03378	-0.64562
-7	0.011977	-0.02181	0.993927
-6	0.002727	-0.01908	0.22628
-5	-0.00415	-0.02323	-0.3447
-4	-0.00543	-0.02866	-0.45062
-3	-0.00855	-0.03721	-0.70922
-2	-0.0172	-0.05441	-1.42766
-1	0.005555	-0.04886	0.461013
0	-0.00859	-0.05745	-0.71285
1	-0.0863	-0.14375	-7.16226
2	0.00654	-0.13721	0.542741
3	-0.00638	-0.14359	-0.52945
4	-0.02606	-0.16965	-2.16227
5	-0.00668	-0.17632	-0.55396
6	0.003941	-0.17238	0.327021
7	0.016166	-0.15622	1.341578
8	-0.02776	-0.18398	-2.30417
9	0.014793	-0.16919	1.22765
10	0.029079	-0.14011	2.413235
11	-0.00308	-0.14319	-0.25564
12	-0.01056	-0.15375	-0.87605
13	0.017031	-0.13671	1.413395
14	4.33E-05	-0.13667	0.003597
15	-0.01195	-0.14862	-0.99174
16	-0.00682	-0.15545	-0.56639
17	0.002252	-0.15319	0.186881
18	-0.00015	-0.15334	-0.01222
19	0.014666	-0.13868	1.217087
20	-0.00733	-0.14601	-0.60865
21	-0.00996	-0.15597	-0.82679

Chellasamy, (2017)^[10] find out mean return of realty sector post demonetisation is 0.43% lower than pre demonetisation period. The realty stocks as the sector will be among the worst affected by the demonetisation move 4, it is revealed that Property is another dominant route for storing black money. This coupled with a multi layered tax system (Stamp duty and registration charges, VAT and Service Tax), the sale price of properties is generally higher than the documented price. Besides, the incidence of property undervaluation is very high in secondary markets. Demonetisation may navigate this sector to a more organised system. However, the short-term reduced volumes

in resale market and reduced demand has put downward pressure on land during these 43 day event window CAAR reaches -15.59 %. A day after th of announcement, AAR falls upto-8% which implies sharp negative reaction in the realty sector. However AAR is significant and negative only on one day and 10 day after the announcement. Prior to announcement, CAAR tends to negative but insignificant, there may be inside information to the market prior to announcement but there is no proof for that. From the graph it is easily visible that CAAR falls sharply after the announcement it remained negative even after 21 days.

Reality Index



Graph 4: AAR and CAAR of BSE Realty vs Market return

Conclusion

We can make a conclusive statement that demonetisation had affected market returns in the short run. The adversely affected sectors are automobile sector and reality sector. Automobile sector have shown negative CAAR of -10.54% for (-21, +10) days after announcement., whereas BSE BANK have shown positive CAAR of 4.99% for (-21,+8) days after announcement. Banking sector has seen boom after demonetisation. Reality index have shown negative CAAR of -18.39% for (-21, +8) days after announcement. On the other hand, FMCG sector is not much affected by demonetisation. The results indicate the event of demonetisation has affected stock market in diverse manner. There seems to be some glimpse of inside information much before demonetisation. Sector index slightly reacted, much before the date of announcement of demonetisation. Further we can say that the impact will be long lasted if proper packages are not given to these sectorial indexes.

References

1. <https://www.bseindia.com>.
2. Mehta S, Patel K, Mehta K. Demonetization: Shifting Gears from Physical Cash to Digital Cash. Voice of Research Volume 5, Issue 3 December 2016 ISSN 2277-7733.
3. Muthulakshmi Kamatchi E, Kalaimani G. Impact of Demonetization on Indian Economy. IOSR Journal of Humanities and Social Science (IOSR-JHSS) e-ISSN: 2279-0837, p-ISSN: 22790845, 2016, pp. 50-54.
4. Nongsiej W, Danny Debnath H. A Study on Impact of Demonetization. Journal of management in practice. 2017; 2(1):15, ISSN: 2456-1509.
5. Sinha A, Rai D. Aftermath of Demonetization on Rural Population. International Journal of Research in Economics and Social Sciences (IJRESS) Available online at: <http://euroasiapub.org>. 2016; 6(11):223-228. ISSN: 2249-7382.
6. Singh P, Singh V. Impact of Demonetization on Indian Economy. Indian federation of united nation associations, New Delhi, India, 2016. ISBN 978-93-86171-13-9.
7. Veerakumar K. A Study on People Impact on Demonetization, International Journal of Interdisciplinary Research in Arts and Humanities. 2017; 2(1):9-12.
8. Tiwari H, Singh S. Impact of Demonetization on Sectoral Indices of NSE Institute of Economics & Finance, Bundelkhand University, Jhansi
9. Singh V. An Analysis of the Demonetization Effect on Sectorial Indices in India, International Journal of Engineering Technology, Management and Applied Sciences, 2017.
10. Chellasamy P, Anu M. Impact of Demonetisation on Indian Stock Market: With Special Reference to Sectoral Indices in National Stock Exchange of India, IOSR Journal of Economics and Finance (IOSR-JEFPP, 2017, 51-54. www.iosrjournals.org DOI: 10.9790/5933-0803015154 www.iosrjournals.org
11. Joel Rebello, Gayatri Nayak. Demonetisation and its side-effects, The Economic Times, Retrieved from http://economictimes.indiatimes.com/articleshow/55678393.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst [2], 2016.