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Impact of Demonetization on Stocks of Selected Sectors – An Event Study

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Abstract:

Demonetization is an act of seizing a currency unit of its status as legal tender. Demonetization is necessary whenever there is a need to change national currency. The government claimed that the action would "curtail the shadow economy and crack down on the use of illicit and counterfeit cash to fund illegal activity and terrorism". Demonetization in India and President Election in US affected stock market, where market indices dropped to six months low in the week following the announcement of demonetization. BSE crashed around 1689 points and NIFTY over 541 points. Hence there is a need to understand how much the demonetization has affected the stock prices and to analyse the stock price movement pre and post demonetization.

The Objectives of the study were (a) to measure the returns of the selected stocks, pre and post demonetisation, using Holding Period Return and BHAR,(b)to find the expected returns of the selected stocks pre and post demonetisation, using CAPM Model and (c) to study the impact of Demonetization on stock prices of selected sectors. This study focuses on impact of demonetization on stock prices of 5 selected sectors, Automobiles, Banking, Consumer Durables, Telecommunication and Real Estate. 5 companies in each sector were considered for this study. The closing prices of stocks for last 6 months were used to find the returns, starting from 7th September 2016 to 8th march 2017 which consists of data of 2 months before demonetization and 4 months after demonetization. Realised return, CAPM Return and BHAR analysis has been carried out in the study. Using ANOVA on the BHAR in the three windows, it was concluded that demonetisation had no impact on stock returns during the study period

Key Words: Demonetisation, stock market, Event study, BHAR, Impact analysis.

Introduction

Demonetization is an act of seizing a currency unit of its status as legal tender. Demonetization is necessary whenever there is a need to change national currency. The highest demonetization note printed by the Reserve Bank of India, Rs 10,000 note was demonetized in January 1946 and again in January 1978. On 8 November 2016, the Government of India announced the demonetisation of all ₹500 and ₹1,000 banknotes. Around 97% of demonetized amount has been deposited into banks i.e. Rs14.97 trillion ($220 billion) out of Rs15.4 trillion as on Dec 30, 2016. The government claimed that the action would "curtail the shadow economy and crack down on the use of illicit and counterfeit cash to fund illegal activity and terrorism". The sudden nature of the announcement and the prolonged cash shortages in the weeks that followed created significant disruption throughout the economy, threatening economic output. A resultant impact on stock market was also well expected.

Demonetization leads to a situation where the country would suddenly feel short of the money that it needed to enable the transactions. This leads to decrease in prices of goods and services. Until money comes into circulation the purchasing power of people would negatively impact the prices in various industries, it could be real estate, Automobiles, steel, cement, etc. which in turn affect the prices of stocks negatively. The sectors affected by demonetization are Banking, Automobiles, Cement, Consumer goods, Telecom, Real estate, Paint, Pharmaceutical, FMCG, Building Material, NBFC and

Agriculture.
Demonetization in India and President Election in US affected stock market, where market indices dropped to six months low in the week following the announcement of demonetization. BSE crashed around 1689 points and NIFTY over 541 points. Hence there is a need to understand how much the demonetization has affected the stock prices and to analyse the stock price movement pre and post demonetization.

Objectives of the study

- To measure the returns of the selected stocks, pre and post demonetisation, using Holding Period Return and BHAR.
- To find the expected returns of the selected stocks pre and post demonetisation, using CAPM Model.
- To study the impact of Demonetization on stock prices of selected sectors

Scope of the study

This study focuses on impact of demonetization on stock prices of selected sectors. 5 sectors and top 5 companies in each sector are considered for this study for which the data is collected from Bombay Stock Exchange (BSE). The closing prices of stocks for last 6 months (2 months before demonetization and 4 months after demonetization) were used to find the returns.

Research Design

This study is **Descriptive** in nature. Judgement sampling is used in data collection, to select relevant industries.

Sources of data

Secondary data of stock prices from BSE is taken. To examine the impact of demonetisation news Sources like articles, journals, newspapers etc. are referred.

Period of data

In order to analyse the impact of demonetization on stock market, 6 months' data has been collected starting from 7th September 2016 to 8th march 2017 which consists data of 2 months before demonetization and 4 months after demonetization. For this 5 sectors with 5 companies from each sector are considered such as Automobiles, Banking, Consumer durables, Real estate and Telecommunication.

Literature Review

Rajanish Kumar (2017) examined the effect of demonetization on stocks in terms of EPS. The author has compared the EPS of companies before and after demonetization and estimated the EPS for next quarter i.e. January to March to analyse the long term impact of demonetization and has given an opinion that there is no negative impact of demonetisation in the long term. **Kailash Bathija and Krishna Eluri (2017)** analysed the impact of demonetization on stock market. The main reason behind this move was to curb black money and stop terrorism funding. They have found out that the share prices fell around 6 % on 9th November as a combined effect of demonetization and US Presidency election. In November, foreign investors sold around $3 billion value stocks. According to the authors, "this impact is for short term, BSE Sensex would rise to 26560 by the end of the month of December". They have also predicted that it would reach 28500 by mid of 2017 and 29600 by the end of 2017 and NSE nifty would rise to 8775 points. **Narendra Nathan (2017)** explained that demonetization and US presidential election affected Indian stock market. The day after these changes the BSE opened with a loss of 1300 points and recovered slowly after a week. This move created opportunity to buy value stocks which give higher returns in future. It means that the impact is temporary or for short period and stock market would recover slowly. **Manas Chakravarty (2017)**

reports that investor feels that the impact of demonetisation on stock market is temporary as lower interest may offset adverse effects. Not only this move by central government has affected the market, along with this the US presidency election has also affected the market. The rise in the US bond yield has led to flow of money from market like India and other growing market.

Methods and tools for analysis

Holding Period Return (HPR)

HPR is the total return received from holding an asset or portfolio of assets over a period of time, generally expressed as a percentage.

Holding Period Return = (End of Period Value – Initial Value) / Initial Value * 100 _____**(1)**

Capital Asset Pricing Model (CAPM)

CAPM is a tool which is used to describe the relationship between systemic risk and expected return on assets. The formula to calculate returns based on CAPM is:

$$CAPM = r_f + \beta (r_m - r_f) \quad \text{\_\_\_\_\_ (2)}$$

Where in $Rf_=$ Risk free rate of return, β= Beta of the security, Rm =Expected market return. CAPM is used to find expected stock prices in the study.

Buy and Hold Abnormal Returns (BHAR)

Buy and hold abnormal return is a strategy where investors buy the stocks and hold them for long period irrespective of the price fluctuations in the market expecting higher returns in future. BHAR is used to find the abnormal return if any during and after demonetisation in 2016.

$$BHAR_{i(\tau_1,\tau_2)} = \prod_{t=\tau_1}^{\tau_2}(1+R_{i,t}) - \prod_{t=\tau_1}^{\tau_2}(1+E[R_{i\tau}|\Omega_{i\tau}]) \quad \text{\_\_\_\_\_ (3)}$$

Event study

Event study has been done to analyse the impact of demonetization on stock market which includes three windows: - Estimation window, Event window and post event window. Here estimation window is referred as situation before demonetization, event window is referred as demonetization month and post event window is referred to as post demonetization situations.

ANOVA with PostHoc analysis

ANOVA is used to analyse the impact of demonetization. ANOVA is used to test if there is significant difference among the mean returns in the 3 event windows. Post-hoc analysis is a process of analysing if any two population means are equal in the given data set.

Data Analysis

The returns of the selected stocks pre and post demonetization was calculated using Holding Period Return (HPR), Buy-and-Hold-Abnormal Return (BHAR) and the expected returns of the selected stocks was calculated using CAPM Model. The study period was divided into three windows: (1) Estimation window (from 8 September to 7 October, 2016), (2) Event window (from 10 October to 8 December, 2016) and (3) Post-event window (from 9 December to 8 March, 2017). MS Excel and SPSS 21 are used in the analysis.

1. Calculation of Stock returns

	Estimation window			Event window			Post-event window			
STOCK	**Mean returns**	**CAPM return**	**BHAR**	**Mean returns**	**CAPM return**	**BHAR**	**Mean returns**	**CAPM return**	**BHAR**	**Industry**
Bajaj auto	-0.34	-0.27	-3.30	-0.08	0.09	1.43	0.06	0.11	-2.69	Automobiles
Maruti Suzuki	0.19	-0.27	7.04	-0.18	-0.19	-3.31	0.19	0.15	3.94	Automobiles
Tata motors	-0.15	-0.32	0.16	-0.46	-0.30	-12.99	0.03	0.18	-8.36	Automobiles
HMT	-0.23	-0.17	-1.36	0.16	-0.22	8.25	-0.03	0.11	-16.09	Automobiles
BOSCH	-0.27	-0.21	-2.06	-0.22	-0.15	-4.51	0.08	0.16	-2.89	Automobiles
SBI	-0.17	-0.36	-0.23	0.04	-0.15	6.41	0.07	0.17	-6.66	Banking
Bank of Baroda	-0.29	-0.47	-2.82	-0.04	-0.14	2.78	0.03	0.20	-9.87	Banking
PNB	0.06	-0.52	3.91	-0.13	-0.28	-2.92	0.11	0.18	-3.80	Banking
HDFC	-0.01	0.02	3.02	-0.20	-0.20	-2.58	0.11	0.14	-0.15	Banking
ICICI	-0.48	-0.32	-5.93	1.45	-0.23	9.78	0.08	0.17	-5.76	Banking
Videocon	0.01	0.07	3.58	0.01	0.05	5.18	-0.02	0.07	-8.58	Consumer durables
BPL	2.91	-0.48	71.92	-0.36	-0.36	-13.86	-0.25	0.19	-22.44	Consumer durables
PG electroplast	-0.02	-0.39	1.93	-0.18	-0.25	-6.61	0.35	0.03	6.64	Consumer durables
MIRC electronics	0.52	-0.67	12.21	0.10	-0.43	7.21	-0.14	0.13	-16.55	Consumer durables
Sharp	0.62	-0.50	13.78	-0.28	-0.09	-6.27	0.73	0.25	27.35	Consumer durables
Bharthi Airtel	-0.04	-0.25	2.40	0.10	-0.06	9.88	1.15	0.10	-0.93	Telecommunication
Idea cellular	-0.26	-0.27	-1.88	-0.08	-0.08	0.74	0.61	0.07	30.23	Telecommunication
Tata com	0.83	-0.42	20.07	0.16	-0.13	4.42	0.25	0.18	8.44	Telecommunication
Reliance com	-0.25	-0.46	-2.66	-0.60	-0.21	-17.87	-0.05	0.14	-14.42	Telecommunication
MTNL	-0.65	-0.19	-9.14	-0.12	-0.25	-1.18	0.65	0.09	27.27	Telecommunication
DLF	0.05	-2.39	2.94	-0.69	-0.40	-21.46	0.41	0.21	16.19	Real Estate
Oberoi realty	0.56	-0.07	14.69	-0.14	-0.25	-0.66	0.20	0.12	2.98	Real Estate
Godrej properties	-0.04	-0.23	2.40	-0.35	-0.14	-8.64	0.30	0.15	11.66	Real Estate
Prestige estate	0.18	-0.55	5.45	-0.78	-0.12	7.89	0.19	0.11	1.89	Real Estate
Phoenix mills	-0.71	-0.33	-10.31	-0.06	-0.10	-1.93	0.12	0.09	-12.17	Real Estate

Table 1: Calculation of Mean return, CAPM and BHAR

In the Estimation window, BPL stock has the highest BHAR (positive) and a Phoenix mill has the lowest BHAR (negative) among the selected stocks. In the case of realized mean return, BPL has the highest mean return and Phoenix mill has the lowest realized mean return (negative) among the selected stocks. Videocon has the highest expected return as per the CAPM model (positive) whereas DLF has the lowest expected return as per the CAPM model (negative).

In the Event Window, ICICI stock has the highest realized mean return (positive) and a Prestige estate has the lowest mean return (negative) among the selected stocks. In the case of BHAR, Bharthi Airtel has the highest return and DLF has the lowest BHAR among the selected stocks. Bajaj auto has the highest expected return as per the CAPM model (positive) whereas MIRC electronics has the lowest expected return as per the CAPM model (negative).

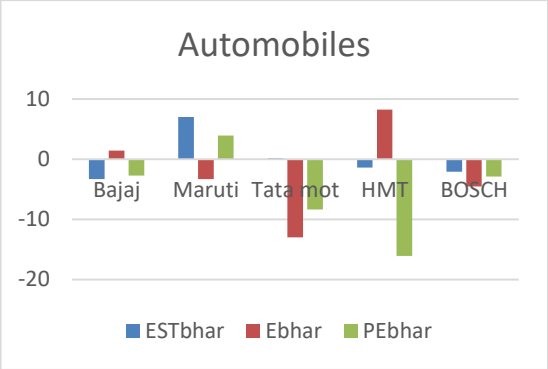
In the Post-event window, Sharp stock has the highest realized mean return (positive) and MIRC electronics has the lowest mean return (negative) among the selected stocks. In the case of BHAR, Idea cellular has the highest return and BPL has the lowest BHAR among the selected stocks. Sharp has the highest expected return as per the CAPM model (positive) whereas PG electroplast has the lowest expected return as per the CAPM model (negative).

2. Industry specific BHAR analysis

a. Automobile Industry

Automobiles	Estimation Window	Event Window	Post Event Window
Bajaj	-3.2982	1.4261	-2.6868
Maruti	7.0372	-3.3086	3.9399
Tata mot	0.1636	-12.9899	-8.3552
HMT	-1.3553	8.2453	-16.0925
BOSCH	-2.0551	-4.5074	-2.8913

Table 2: Automobile Industry – BHAR



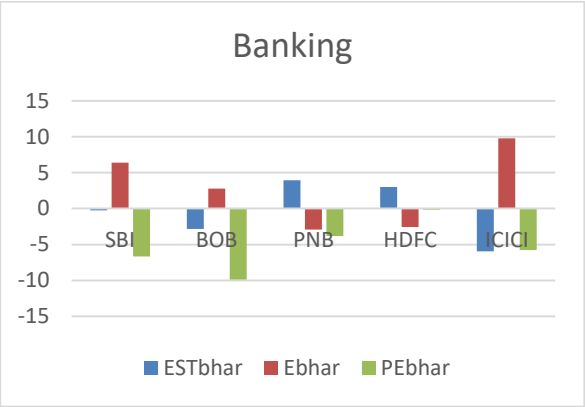
Graph 1: Automobile Industry – BHAR

In the estimation window, only 2 out of 5 selected companies in Automobile sector have shown Positive BHAR. In the event window, only 2 out of 5 selected companies have shown Positive BHAR. In the post event window, only 1 out of 5 selected companies in Automobile sector have shown Positive BHAR.

b. Banking Industry

Banking	Estimation Window	Event Window	Post Event Window
SBI	-0.2318	6.4077	-6.6625
BOB	-2.8206	2.7823	-9.8733
PNB	3.9146	-2.9173	-3.8005
HDFC	3.0162	-2.5762	-0.1457
ICICI	-5.9296	9.7809	-5.7617

Table 3: Banking Industry - BHAR



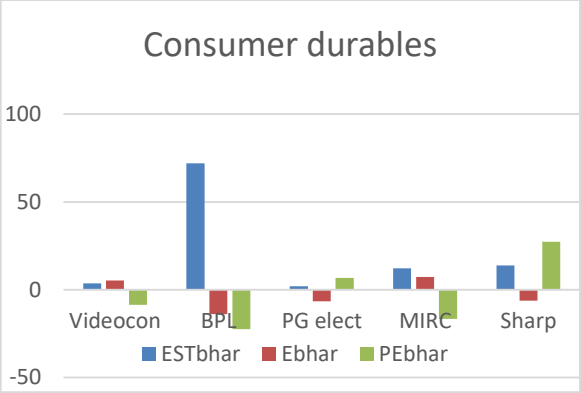
Graph 2: Banking Industry - BHAR

In the Estimation window only 2 out of 5 selected companies in banking sector have shown Positive BHAR.. In the Event Window, only 3 out of 5 selected companies in banking sector have shown Positive BHAR. No stock in banking sector has shown Positive BHAR in the post Event Window.

c. Consumer Durables Industry

Consumer durables	Estimation Window	Event Window	Post Event Window
Videocon	3.5811	5.1827	-8.5836
BPL	71.9172	-13.8620	-22.4375
PG elect	1.9311	-6.6130	6.6407
MIRC	12.2141	7.2089	-16.5549
Sharp	13.7823	-6.2700	27.3517

Table 4: Consumer Durables Industry - BHAR



Graph 3: Consumer Durables Industry - BHAR

In the Estimation Window, all 5 Consumer durables companies have shown positive BHAR. In the event Window, 2 out of 5 Consumer durables companies have shown positive BHAR. In the Post Event Window, 2 out of 5 Consumer durables companies have shown positive BHAR.

d. Telecommunications Industry

Tele Communication	Estimation Window	Event Window	Post Event Window
B Airtel	2.3987	9.8780	-0.9344
Idea	-1.8842	0.7422	30.2278
Tata com	20.0709	4.4174	8.4401
Reli com	-2.6573	-17.8660	-14.4220
MTNL	-9.1397	-1.1796	27.2712

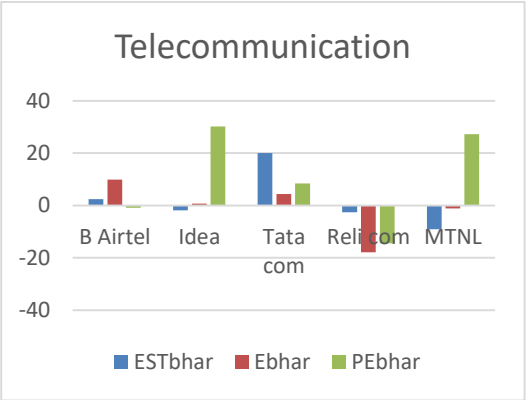


Table 5: Telecommunications Industry - BHAR **Graph 4: Telecommunications Industry - BHAR**

In the estimation window, only 2 out of 5 selected companies in Telecommunication sector have shown Positive BHAR. In the event window, only 3 out of 5 selected companies in Telecommunication sector have shown Positive BHAR. In the post event window also, only 3 out of 5 selected companies in Telecommunication sector have shown Positive BHAR.

e. Real Estate Industry

Real estate	Estimation Window	Event Window	Post Event Window
DLF	2.9413	-21.4619	16.1850
Oberoi	14.6903	-0.6551	2.9812
Godrej	2.4035	-8.6390	11.6550
Prestige	5.4469	7.8856	1.8907
Phoenix	-10.3114	-1.9272	-12.1668

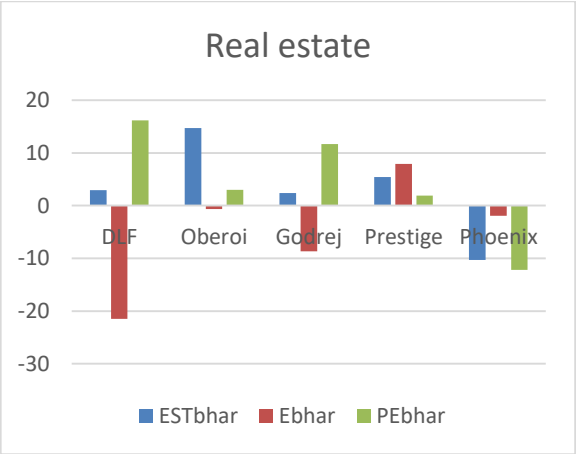


Table 6: Real Estate Industry - BHAR **Graph 5: Real Estate Industry – BHAR**

In the Estimation window, 4 out of 5 selected companies in Real estate sector have shown Positive BHAR. In the Event Window, 1 out of 5 selected companies in Real estate sector have shown Positive BHAR. In the Post Event Window, 4 out of 5 selected companies in Real estate sector have shown Positive BHAR. More stocks in Banking and Telecommunication have shown positive BHAR in the Event window.

Banking sector is the most benefited sector by this demonetization because the liquidity of banks has increased as people deposited money into bank and also huge amount of black/unaccounted money is also deposited into banks. Increase in deposits has led to increase of money with banks and the banks may lend money at lower interest rates which benefits people.

But in the same way, the banks customers may not get the same interest rates they were getting in past as demonetization has led to recapitalization of banking sector. It has provided some sort of relief for banks which are suffering from Non-Performing Asset.

As mentioned above, demonetization has not affected the stock market; it is same in case of stocks of **telecom sector**. Since telecom companies had come up with different packages, increased online transactions (E commerce) in cell phone market, there has not been significant effect of demonetization on this sector. Considering the impact, the sales of smart phone in November had come down by 30% but recovered quickly as companies found alternative ways to maintain sales.

Since the most of transaction in **automobile industry** take place through cheque or other online modes, the effect on this sector is also minimal. Of course, the sales of companies in this sector had come down; it may be because of the fear among the people that they may get caught.

The demand for **consumer goods** was low since people didn't have cash to pay, but these demands are those which can be postponed and fulfilled in future when they have cash.

The real effect is on **retail sector** where transactions happen in the form of cash and people faced difficulties to meet their daily needs. One of the major sectors affected by demonetization was real estate. Experts say, there has been 40% drop in sales in cities like Mumbai, Bengaluru, Chennai, Kolkata etc. as a result of which stock prices had also come down, but these fluctuations were temporary and it is more of behavioural investment because people were hesitating to invest in real estate.

3. To study the impact of Demonetization on stock prices of selected sectors using ANOVA with POST HOC ANALSIS

Hypothesis

H0: $\mu 1 = \mu 2 = \mu 3$

H1: Mean returns are not equal

a. ANOVA on Realised Mean Returns

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.363	2	.681	2.726	**.072**
Within Groups	17.999	72	.250		
Total	19.362	74			

POSTHOC Tests for multiple comparisons (Tukey test)

(I) FACTOR	(J) FACTOR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	.1984320000	.1414171293	**.345**	-.139996707	.536860707
	3.00	-.1293560000	.1414171293	**.633**	-.467784707	.209072707
2.00	1.00	-.1984320000	.1414171293	**.345**	-.536860707	.139996707
	3.00	-.3277880000	.1414171293	**.060**	-.666216707	.010640707
3.00	1.00	.1293560000	.1414171293	**.633**	-.209072707	.467784707
	2.00	.3277880000	.1414171293	**.060**	-.010640707	.666216707

Table 7: ANOVA and POST HOC ANALYSIS on Realised returns of stocks

Inference:

Given Sig.> 0.05, (Value = 0.072), accept Null hypothesis that mean returns of the stocks in the three windows are equal. From the multiple comparison table also, the mean returns are not significantly different.

b. ANOVA on CAPM Returns

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3.709	2	1.854	25.325	**.000**
Within Groups	5.272	72	.073		
Total	8.981	74			

POSTHOC Tests for multiple comparisons (Tukey test)

(I) FACTOR	(J) FACTOR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.2171040000*	.0765385905	.016	-.400270327	-.033937673
	3.00	-.5412040000*	.0765385905	.000	-.724370327	-.358037673
2.00	1.00	.2171040000*	.0765385905	.016	.033937673	.400270327
	3.00	-.3241000000*	.0765385905	.000	-.507266327	-.140933673
3.00	1.00	.5412040000*	.0765385905	.000	.358037673	.724370327
	2.00	.3241000000*	.0765385905	.000	.140933673	.507266327

Table 8: ANOVA and POST HOC ANALYSIS on CAPM returns of stocks

Inference:

Given Sig. < 0.05, reject Null hypothesis and accept alternate hypothesis that theoretical returns of the stocks in the three windows are not equal. From the multiple comparison tables also theoretical returns in the 3 windows were not equal.

c. ANOVA ON BHAR RETURNS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	592.472	2	296.236	1.728	**.185**
Within Groups	12341.903	72	171.415		
Total	12934.375	74			

POSTHOC Tests for multiple comparisons (Tukey Test)

(I) FACTOR	(J) FACTOR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	6.6656760000	3.7031373046	**.177**	-2.196390253	15.527742253
	3.00	4.8244480000	3.7031373046	**.398**	-4.037618253	13.686514253
2.00	1.00	-6.6656760000	3.7031373046	**.177**	-15.527742253	2.196390253
	3.00	-1.8412280000	3.7031373046	**.873**	-10.703294253	7.020838253
3.00	1.00	-4.8244480000	3.7031373046	**.398**	-13.686514253	4.037618253
	2.00	1.8412280000	3.7031373046	**.873**	-7.020838253	10.703294253

Table 9: ANOVA and POST HOC ANALYSIS on BHAR returns of stocks

Inference:

Given Sig. > 0.05, (Value = 0.185), accept Null hypothesis that BHAR of the stocks in the three windows are equal. From the multiple comparison table also, the BHAR are not significantly different. Therefore, we can conclude that **demonetization had no impact on stock returns**.

CONCLUSION

The impact on stock market is temporary i.e. the prices of stocks were fluctuating in the week of announcement of demonetization. But overall as found in the study and proved theoretically, the demonetization has not affected the stock market to an extent that investors expected.

Since demonetization has not affected the stocks of the selected sectors, investors need not worry about their investment and it was a better opportunity for investors and speculators to purchase stocks at lower prices when they were trading at lower prices in the week of announcement of demonetization.

Speculators who buy at lower prices with the expectations of selling them at higher prices in future had expected that this move would drastically affect the market and the impact would be long period

but this study proved that demonetization had no impact on stock market.

Considering the various sectors which are exposed to demonetization, there are measures which can make these sectors stable. In real estate sector rate cuts and concessions on housing loans are key factors to improve the sectors.

In ecommerce, online payment, card payment, mobile wallet payment on delivery of goods can be better options to retain customers and sales.

In tourism sector, providing cash at tourist destinations and availability of card payment system can be factors to be considered to attract tourists and to maintain present revenue for the government.

In automobile sectors, many companies are promoting cashless transactions for payment of money but these attempts depends on customers' adaptability to new changes.

Aviation companies can offer discounts to attract new and retain existing customers where Zero EMI cost, buy now pay later, exchange offers can be better options.

Coming to building materials, huge spending by government on infrastructure could be a solution till the money comes into circulations. But for agriculture, the alternatives like online banking and payments and other modes are not suitable, the only way to bring that into normal position is by bringing more money into circulation.
The current study is done to analyse whether the demonetization has affected the stock market or not. As proved by this study the demonetization had no impact on the stock prices. However the demand for goods and services of different sectors was low but it was temporary and recovered with more money in circulation. As expected by some investors, there should have been a greater impact on stock market where according to some investors the impact is for short term.

Scope for further study

The study can be extended to all sectors and up to a period of one year post demonetisation. Also macro-economic factors during the period, which could have an impact on the stock prices, could be considered.

References

Journal Paper

Kumar, Rajnish, Effect of Demonetization on Analysts' Estimates: A Natural Experiment (April 10, 2017). Available at SSRN: https://ssrn.com/abstract=2949789

Websites

www.bseindia.com

www.moneycontrol.com

http://in.reuters.com/article/india-stocks-poll-cash-ban-idINKBN13W0BC

http://economictimes.indiatimes.com/etreporter/author-narendra-nathan-479216212.cms

http://www.livemint.com/Money/hRb1noUQV17fmP0o1GNQEJ/How-much-has-demonetisation-affected-the-stock-market.html