IMPACT OF DEMONETIZATION ON INDIAN STOCK MARKET: AN EVENT STUDY APPROACH

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Abstract

The purpose of the present study is to show the impact of Demonetization on Indian Stock Market; primary focus is on FMCG sector, Banking sector and automobile sector which to a great extent get affected by such decisions. More often stock market is susceptible to psychological biases of investors. To identify the immediate effect of such action and decision by the government, a study is conducted taking the period of 30 days to prior to the news and 30 days after post announcement of demonetization taking NIFTY as the indicator.
Key words: Event Studies, Demonetization, Stock Market, Psychological Biases, NIFTY, Indicator

Stock market in India is an emerging one and one of the major indicators of the growth of the economy. Informational efficiency of the capital market is tested when the stock prices are able to absorb and reflect all the available information.

The impact of new information gets instantaneously captured in the share prices in an efficient market and earning abnormal return based on prior knowledge or better understanding of information or any event happening in the recent past is not possible. This is the rule of "EFFICIENT MARKET HYPOTHESIS" initially propounded by Nobel Laureate Eugene Fama. According to this markets are very efficient and transparent in nature. The stock market reaction to the events fully absorbs the information and approaches equilibrium showing efficiency of the stock market.

There are various forms of EMH weak form, semi-strong form and strong form.
Efficient Market is the one in which market price of a security can be considered as an unbiased estimate of its intrinsic value based on fundamentals of the company. It does not mean that the market price may be exactly the same as intrinsic value at every point of time. What it emphasizes is that errors in the market prices are unbiased. Any new information gets incorporated into the market and gets reflected into share price instantly and constantly. The stock prices hover around the fair values randomly. Generating consistent abnormal return and outperforming the market may not be possible because of possession of any specific skill but due to chance.

Current prices of the stock in the securities market fully reflect all available information is the assumption of Random Walk Hypothesis which is the weak form of EMH. As per the random walk, past prices cannot influence the successive prices as they have no relation with each other. Prices of the stock may not exactly the same but hovering around to its true value. The difference if any is just due to chance. There is absence of correlation between the current prices and successive prices of the stock. It says that future movement of the stock prices and past prices accompanied by volume are not related. Thus according to weak form of EMH, technical analysis which is one of the approaches to investment decision, may not help investors to generate excess returns.

The second form of EMH is the semi-strong form. This is based on the premise that any new public information or event gets absorbed in the current stock prices, thus reflecting the available market and non-market public information market rapidly. This states that excess returns cannot be achieved on a continued basis. Current stock prices instantly and fully reflect all publicly available information.

The third form of EMH called the strong form is based on the premise that not only publicly available information but also private information as well gets absorbed in the stock prices. Thus possession of some inside information may not help generate excess returns on a continued basis.

I. INTRODUCTION

Demonetization as defined is an economic policy where a unit of currency ceases to be recognized or used as a form of legal tender. The Government asserted that the action would tighten up the shadow economy and crack down on the use of illicit and counterfeit cash to fund illegal activity and terrorism and curb black money.The very first demonetization in India was announced way back in 1946 when Rs 10000 note was taken off as legal tender. Second demonetization action was taken up in 1978 when the then Prime Minister Morarji Desai announced the withdrawal of Rs. 1000, Rs. 5000, and Rs. 10,000 notes from circulation. On 8th November 2016, the Indian Government's announced the demonetization of all Rs 500 and Rs 1000 notes. This particular demonetization is a historic one and is going to be an economic reform for the generations to come. It had huge impact on each and every citizen, Corporate and even financial institutions, especially Banks. Nearly 86% of the currency in circulation was withdrawn without replacing even 50% of its actual value. It was technically considered as a liquidity shock, as suddenly banning high denomination notes from being a legal tender was difficult to absorb by the citizens.
Even though Demonetization is not a great shock like 2007 bank crisis but is definitely a liquidity shock that disturbed the economic activities.As on December 30, 2016, 97% of the demonetized

amount has been deposited into banks i.e Rs 14.97 trillion, thus proving the government's assertion of curtailing the shadow economy to some extent.

Sudden nature of the announcement of Demonetization and banks' inablity to handle cash shortages in the following weeks resulted in disruption in the economy. It also had significant impact on GDP of the economy. There was a significant impact on our capital markets as well. BSE crashed 1689 points and NIFTY over 541 points. Thus the need arose to understand the effect of such a decision and analyse the impact of the same post the announcement.

II. LITERATURE REVIEW

Corporate announcements such as bonus issue, rights issue, stock split, mergers, buy back of stocks and their impact on stock prices were of primary interest of researchers around the world. Events such as political election results, major taxation policy changes such as GST, announcement of demonetization have an impact on stock market too.

The standard methodology used to evaluate the reaction of share prices to these public announcements is conducting an *event study*, which was conducted as early as by Dolley (1933). The *event* is what the investigators would like to study, and it conveys information that potentially influences the stock prices.

The weak form of EMH presumes that stock price is uncorrelated with historical prices. It assumes that there is no trend visible in stock price movements and they are independent. Thus, subsequent price shift should be random (Alexander (1961); Fama, (1965); Jensen and Benington, (1970) and Fama, (1970); Charest (1978); DeBondt and Thaler (1985); Seppi (1992); Chopra et al. (1992); Elton et al. (1993); Malkiel (1995)).

The event study methodology is one of the most used tool in economics, accounting and financial research. The first event study documented in the financial literature was by James Dolley (1933), cited in MacKinley (1997) in his article Event Studies in Economics and Finance. John Dolley tried to explore how share prices react to various announcements and found that there was an impact to the extent of 60 percent.

Later many researchers have employed this methodology for example John H. Myers and Archie Bakay (1948), John Ashley (1962); MacKinlay (1997); Kothari and Warner (2006). But, what event study methodology are we following today was outlined by Ball & Brown (1968) and Fama et al. (1969).

According to Robin and Jessica (2014) an event is an informational announcement of any kind which occurrence is assumed to be unexpected by the market. In financial literature majority of the empirical studies tried to investigate the impact of an event on the stock returns (abnormal returns), however, several other studies tried to explore trading volume and even volatility of the returns when certain event occurs.

According to EMH the market is said to be efficient, if the stock prices react quickly and efficiently to the new information or event without any bias. Therefore, the abnormal returns signal the market reaction to the unforeseen event. Stock market attitude during general elections was examined by researchers, for example Nordhaus, (1975); MacRae, (1977); Cowart (1977); Hibbs (1978), Allvine, O'Neill (1980); ; Ploeg (1984); Stovall (1992); Gartner (1994); Gartner et al. (1995); Bialkowski et al. (2008); Zach (2003); Nicholas Chen (2004); Pantzalis et al. (2000); Beaulieu et al. (2005); Liu (2007); Khalid, Ahmed et al. (2010).

However, Nordhaus (1975) created the first political business cycle. In this pioneering study he

deliberated the various issues like the political decisions pertaining to the current or future welfare.

There was a study by Rajanish Kumar (2017) on the effect of demonetization in terms of EPS. EPS of the companies before and after demonetization and also an estimate for the immediate next quarter . His conclusion was that there was no negative impact of demonetization in the long run.

Manas Chakravarty (2017) in his study is of the opinion that the impact of demonetization on stock market is temporary as lower interest is likely to offset adverse effects.

In a research paper titled "Impact of Demonetization on stocks of selected sectors" by Mr Sunil and Ms Smitha (IJRFM May 2017), the authors were of the opinion that the impact of demonetization on stock market is temporary as a result of their empirical analysis on selected sectors.

It was quite a landmark step taken by the Government of India , though demonetization happened in India on prior 2 occasions, once in 1946 and then in 1978, and recently in 2016 , the goal being to combat tax evasion by "black money" circulating in the parallel economy of the nation. As on October 2016, the total currency in circulation in India was $280 billion. In terms of value, RBI stated the total currency in circulation was $260 billion in value as on March'2016, nearly 86% of currency in circulation was of Rs.500 and Rs.1000 notes.

Banking Industry was disrupted during demonetization. All the bank work was largely focused on accepting deposits and exchanging the old currency. As a result, other major and core activities were affected that reduced the earnings and profitability of banks. There is a lot of deposits lying with banks after demonetization that they can invest for improving their profitability. Indian Railways prior to Demonetization, did not have facility for digital transactions, but post the event, there has been a lot of changes in payment systems and now digital payment options are available at most of the railway counters in the Country. The railways placed an order of more than 10,000 card reader machines in the Country. It also resulted as an obstacle for Human Trafficking .Demonetization was an effective step to combat exploitation of children as well as Corruption as it was a great obstacle for traffickers to make the payments for illegal dealings. The cash shortage led to chaos in the Country and it became difficult for people to wait in queues and exchange the notes by skipping their office duties.

 The back bone of Indian Economy, the agriculture sector, also faced cash crunch leading to inadequate cash for farmers to make their payments. Because of the low prices offered to farmers, they were not even able to recover the transportation costs of transferring their crops from fields to the market. This action of the Government led to a boost to e-commerce Companies. Due to boost to digital transactions and increase in online payment mechanisms by the Government, the e-commerce companies were performing quite well compared to the retail counterparts. The demand for point of sales (POS) and card swipe machines increased, which positively led to growth of digital transactions post demonetization.

 Since most of the industries were hit by a cash crisis, the Purchasing Manager's Index (PMI) was reduced sharply to 3 years low. There was a slowdown in both-Manufacturing and Services industries.

Increase In Municipal and local tax payments: Tax collection by local bodies was surged to 260%. The total indirect tax collection rose to 14.2% only in the month of December and further increased for the next 3-4 months.

The stock market indices fell by six month low in the week following the demonetization announcement. The BSE Sensex crashed by 1689 points, whereas NSE Nifty crashed by 565 points,

even below the 8100 intraday.

There arose a need and an opportunity to understand the effect of such an event on the stock prices and resulting returns.

III.   OBJECTIVE OF THE STUDY

a. To evaluate the volatility of stock market due to demonetization announcement with respect to its impact on different sectors.

b. To draw a conclusion on efficient market hypotheses with regard to Indian stock market.

HYPOTHESES

a) Null Hypothesis: Announcement of Demonetization does not significantly influence market price of share.

Alternative Hypothesis: Announcement of Demonetization significantly influences market price of share.

b) The Abnormal Returns around the event dates are close to zero.

METHODOLOGY

Event studies are one of the popular methodologies used to measure the impact of an event. It helps in analysing the impact of the event announcement of demonetization on stock market.

To measure the effect and its influence on stock prices, a period of 60 days is chosen, 30 days prior to the happening of the event and 30 days post the announcement of demonetization.

The sectors which were severely impacted were banking, FMCG and automobile though demonetisation did affect the entire capital market. These sectors were chosen for the current study. From banks stock prices of SBI, ICICI Bank and HDFC Bank were taken up, HUL and Dabur were chosen for FMCG sector and Mahindra & Mahindra and Maruti Udyog Ltd. were considered for auto sector.

Total period of study is 60 days and it is in line with many other event studies. All the companies in NSE index forms the population. Some companies from specific sectors were selected as mentioned above and formed our sample.

Data collected for the study are:

a. Share price of each company for 3 years

b. NSE index for 3 years.

c. Demonetization announcement and information 30 days prior to the occurrence and 30 days after the occurrence of the event.

To understand the influence of demonetization, the excess returns of the stock of companies were obtained for the specific chosen period before and after announcement. The average return of all the selected stocks was computed. Averaging helps in removing the specific impact of individual companies.

Abnormal returns are analysed over the time frame chosen from thirty days prior to the announcement of demonetization thirty days post announcement. Abnormal Return of security i during period t.

$AR_{it} = R_{it} - ER_{it}$ ....(1)

R_{it} is the actual return of security i during period t. The daily returns for each sample company

have been computed for the event window period and the equation for the same is

$R_{it} = (P_{it} - P_{it-1}) / P_{it-1}$ ……. (2)

Where, P_{it} and P_{it-1} are respective daily prices of company i at time t and t-1. Expected return (ER_{it}) is the return expected on security i during period t and is calculated using the characteristics regression line taking actual returns from the past (5 years) dependent variable and NIFTY return (5 years) as independent variable. The market model, which is used for evaluating the expected return, is mathematically expressed as:

$ER_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$ ……. (3)

Using Characteristic Regression Line, relationship between return on a security with market return is established. R_{mt} is the market's rate of return at time t (NIFTY). α_i is the average rate of return the stock would realize in a period with a zero market return. This is the estimate of the intercept of a straight line or alpha coefficient of ith security. β_i measures the stock sensitivity to the market return which is the slope of a straight line or Beta coefficient of ith security. e_i is known as residual which is the stock's return over and above what one would predict presumably due to the event in question.

Hence the above equation obtained from regression results shows the return from stock can be decomposed into market specific and firm specific factors.. The residual return e_{it} is assumed to have an expected value of zero. The alphas and betas obtained as regression constants for each of the companies' stock are used to calculate expected return for the period chosen for our study. The excess abnormal return is then calculated by calculating the difference between actual return and return as per characteristic regression line.. The abnormal returns are computed using the following model:

$AR_{it} = R_{it} - ER_{it}$ ……. (4)

R_{it} = Actual Returns of the ith security during time t. β and α of the companies having the announcement were calculated for each event window, by solving the regression equation,

$ER_{it} = \alpha_i + \beta_i R_{mt}$ ……. (5)

The average of the abnormal return of individual securities are calculated for each day before and after the event day and their Average Abnormal Return (AAR) are found by the following formula:

$$AAR_{it} = \frac{\sum_{t=1}^{N} AR_{it}}{N}$$ ……. (6)

Cumulative Average Abnormal Return (CAAR) is found out for the confirmation of Objective 'b' of our study. It is done by cumulating the individual AAR's over a period of study. If the value of CAAR obtained is close to zero, it means that the sudden announcement of declaration of note ban (Demonetization) has not significantly influenced the stock price.

Research Design – Descriptive Research and Causal Research

Sample Design – Purposive Sampling

Sample Size – 42 trading days

Data Collection – Secondary data from NSE Nifty for the 42 trading days chosen

For AAR calculation, daily returns for the past three years for the chosen companies' stocks.

Tests/Tools used for analysis :(Average Returns, Cumulative Average Abnormal Return) - Advanced Excel version 2016.

CAAR- Computation in Annexure

ANALYSIS

The mean of average abnormal return before the announcement of the demonetization is -3.49% which reduces to -9.37% after the announcement. The average abnormal returns shows a significant change and the change is not close to zero. The results of test summary using Excel is depicted in the table below:

Table 1

Particulars	Variable 1 (Pre test)	Variable 2 (Post test)
Average Returns	-3.49%	-9.37%
Observations (in days)	21	21
CAAR	-12.86684%	

As is clear from the above, the significant difference in the abnormal returns generated can be seen clearly in the pre and post announcement of results. (as per the sample taken for study)

The mean of average abnormal return of before the announcement of Demonetization is -3.49% which reduces further to - 9.37% after the announcement.

Cumulative Average Abnormal Return (CAAR) has been found to be negative -12.86684% which confirms that the event that is the announcement of demonetization had significance influence on the performance of stock in the Capital Market. The details of calculation of CAAR is shown in the Annexure.

Thus it is evident that Demonetization did have some impact on price of shares and returns generated. Thus as per the sample study, semi-strong of EMH does not hold good.

Also taking into consideration the sectors chosen for the study, a sector wise comparison was taken up. Please refer to graph below:
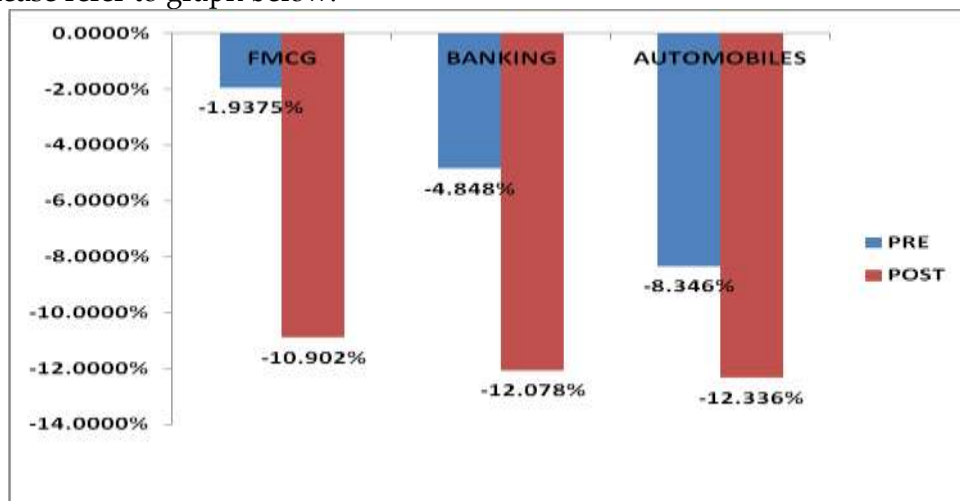
As is evident from the above, the FMCG sector is the most affected and then the banking sector followed by automobiles sector, in terms of the stock prices and returns thereof.

IV. CONCLUSION

Hence it can be concluded that the decision of demonetization by the Government did have some impact on the capital markets through stock price movements.

Results of the study indicate that semi-strong form of efficiency does not hold good, thus the Indian stock market fail to indicate semi strong form of efficiency in this particular event.

The recent Economic Survey II revealed that Cash Holdings slip 20 % and tax payers grow 45% , 5.4 lakh more primarily because of Demonetization. The real GDP growth decelerated and lower than expected rate though nominal GDP accelerated. There are positives of Demonetization since nine months of the announcement. (ET 12th August 2017)

Due to the increase in demand for digitization , growth and expansion for fintech companies is on the rise. Service Providers and payment banks are also setting up new applications to attract more users. Black Market transactions also got reduced to a great extent post note ban.

All these indicators shall definitely have an impact on capital market in the long run as well.

As the stock market is an indicator of Economic Growth, to understand the effect of the Government's Note ban, a further survey and analysis over a longer period can be taken up.

Limitations:

Only three sectors were chosen for study. The companies were also limited to seven. Period chosen was 30 days prior and 30 days post the announcement.

Further Scope:

The stocks chosen for study can be broadened and time period too can be a longer one, to understand the long term influence of demonetization on the Indian capital market.

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Annexures:
Table 2 (CAAR Calculation)

Date	HUL	DABUR	SBI	HDFC	ICICI	MAHINDRA AND MAHINDRA	MARUTI	AVERAGE ABNORMAL RETURN
10-10-2016	-0.07225%	-0.077%	-0.936%	-0.059%	-0.341%	-0.468%	-0.140%	-0.29901%
11-10-2016	0.15100%	0.145%	0.930%	0.404%	1.293%	0.553%	0.206%	0.52605%
12-10-2016	-0.08908%	-0.093%	-1.077%	-0.094%	-0.464%	-3.856%	-0.166%	-0.83432%
13-10-2016	-1.57621%	-0.898%	-2.764%	-1.523%	-3.148%	1.992%	0.132%	-1.11210%
14-10-2016	-2.63439%	-1.679%	-2.173%	-0.686%	-2.035%	-3.187%	-1.042%	-1.91946%
17-10-2016	0.78990%	-2.904%	-0.240%	-1.905%	6.919%	-0.234%	-1.697%	0.10406%
18-10-2016	0.60868%	0.997%	-0.034%	1.430%	3.653%	-1.098%	0.250%	0.82951%
19-10-2016	-1.18371%	0.734%	-1.433%	0.002%	-2.225%	0.566%	-0.516%	-0.57940%
20-10-2016	-0.77235%	1.268%	0.723%	-0.340%	4.202%	-3.336%	0.532%	0.32520%
21-10-2016	1.25402%	1.429%	-1.347%	1.212%	-0.200%	0.173%	0.006%	0.36106%
24-10-2016	-0.28146%	-0.338%	1.835%	-0.361%	3.156%	-0.077%	1.182%	0.73085%
25-10-2016	-1.95825%	0.293%	-1.507%	-1.108%	1.311%	0.460%	1.042%	-0.20964%
26-10-2016	1.15132%	3.954%	-2.286%	-1.018%	-4.370%	0.312%	1.318%	-0.13408%
27-10-2016	-0.35531%	-2.147%	-2.068%	1.014%	1.921%	2.941%	-0.262%	0.14910%
28-10-2016	-0.33767%	0.470%	1.643%	0.883%	-1.594%	0.549%	0.423%	0.29095%
31-10-2016	-0.02327%	-0.028%	-0.527%	0.042%	0.017%	0.797%	-0.064%	0.03059%
01-11-2016	0.70755%	-0.094%	0.156%	0.180%	-0.249%	0.695%	0.028%	0.20335%
02-11-2016	0.52041%	1.087%	-4.888%	-1.367%	-2.383%	-0.923%	-1.727%	-1.38288%
03-11-2016	-0.35292%	-0.342%	-3.744%	0.484%	-1.707%	-4.853%	-0.072%	-1.51250%
04-11-2016	1.13970%	1.934%	-0.509%	-0.567%	1.049%	0.261%	-1.584%	0.24629%
07-11-2016	-1.45236%	-0.671%	1.785%	0.072%	1.789%	-7.995%	-0.192%	-0.95202%
08-11-2016	1.14375%	0.492%	2.273%	1.131%	4.102%	2.743%	-0.363%	1.64595%
								-3.49243%
09-11-2016	-1.67715%	0.481%	4.690%	0.372%	1.420%	2.286%	-4.506%	0.43805%
10-11-2016	-1.25493%	-0.401%	7.209%	2.111%	3.580%	-1.947%	-1.343%	1.13634%
11-11-2016	-2.06865%	-5.752%	-3.419%	-0.158%	-5.468%	1.676%	-3.698%	-2.69822%
14-11-2016	-0.06186%	-0.066%	-0.850%	-0.038%	-0.265%	-3.639%	-0.124%	-0.72053%
15-11-2016	0.64701%	-3.280%	3.123%	-1.174%	-0.860%	3.420%	-5.343%	-0.49522%
16-11-2016	0.20495%	1.380%	-2.404%	-1.163%	-2.627%	-3.861%	2.630%	-0.83426%
17-11-2016	0.23072%	0.395%	-1.311%	-1.312%	-0.203%	-3.310%	-1.533%	-1.00618%
18-11-2016	-1.03532%	0.749%	-0.518%	-1.336%	-0.594%	1.387%	0.563%	-0.11222%
21-11-2016	-0.97562%	-1.205%	-9.868%	-1.664%	-3.589%	-3.698%	-3.857%	-3.55081%
22-11-2016	2.68202%	-0.135%	-1.123%	-0.160%	0.070%	1.347%	2.898%	0.79710%
23-11-2016	1.34002%	1.908%	-0.656%	-1.226%	0.318%	-0.765%	-1.270%	-0.05012%
24-11-2016	-0.98693%	-2.086%	-0.952%	-1.986%	-3.536%	-3.841%	-1.403%	-2.11298%
25-11-2016	0.98859%	-0.330%	-0.781%	2.097%	0.371%	-1.241%	0.845%	0.27858%
28-11-2016	0.62347%	1.016%	-2.218%	-0.081%	-0.826%	4.272%	0.562%	0.47822%
29-11-2016	-0.76138%	-0.133%	-1.894%	-0.695%	-0.827%	-1.615%	3.717%	-0.31554%
30-11-2016	1.25936%	1.913%	1.087%	1.657%	3.427%	-0.127%	3.316%	1.79015%
01-12-2016	0.48598%	0.895%	-1.376%	-0.105%	-2.221%	2.465%	-0.291%	-0.02114%
02-12-2016	-2.29199%	-1.083%	-3.687%	-1.273%	-2.084%	-4.426%	-4.040%	-2.69786%
05-12-2016	1.51947%	0.778%	-0.051%	0.496%	-0.011%	-2.608%	2.481%	0.37214%
06-12-2016	-0.96762%	-2.014%	1.241%	0.110%	0.873%	1.063%	-1.197%	-0.12746%
07-12-2016	-0.43696%	-0.486%	-3.036%	-1.321%	-1.878%	-0.687%	-0.640%	-1.21222%
08-12-2016	1.11196%	-0.205%	1.320%	1.598%	1.727%	1.204%	2.272%	1.28976%
09-12-2016	0.22154%	0.135%	2.084%	-0.054%	2.199%	-0.495%	-0.054%	0.57663%
								-9.37441%
								-12.86684%