

# Monetary Policy Announcement And Stock Price Behaviour: An Event Study With Respect To India

Sruthi Vinod, Rosmin Scaria, Dr. Girish S

**Abstract:** Monetary policy in a developing country plays a significant role in achieving the objectives of macroeconomic policies. The Central Bank formulates and implements the monetary policy in a country which in turn facilitates the increase in growth rate, manages interest rates, and money supply in the economy. The primary objective of this paper is to test the semi-strong form of Efficient Market Hypothesis in the Indian Stock Market with respect to financial services industry by conducting an event study. The monetary policy announcements made from 11<sup>th</sup> March 2016 to 30<sup>th</sup> August 2019 are taken as the events. The event study methodology is conducted on 13 financial service companies listed in NSE Financial Services Index. The Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) are estimated using the daily closing price of the sample companies and Nifty. Two sample T-statistics are used to find the significance of the returns generated. The t-values of a majority of AARs and CAARs are significant suggesting that there is a scope for generating abnormal return by the investors on the event of the monetary policy announcement. It is found that the investors are able to earn abnormal profits which indicate that the Indian stock market is not efficient in the semi-strong form due to the slow absorption of information.

**Index Terms:** Monetary Policy, Efficient Market Hypothesis, Nifty, Reserve Bank of India, Average Abnormal Return, Cumulative Average Abnormal Return

## 1. INTRODUCTION

The economic development of a country is widely built upon how effectively its stock market is able to provide free flow of relevant information to all market participants. The information is also bound to be quick and should demonstrate the accurate reflection of all available information in the stock prices (Tinic et al., 1979). Due to the ever-increasing inclination of both domestic and foreign investors to be a participant in Indian stock market, there is a scope to improve its level of efficiency in pricing and thereby vitalize the economic growth of the country (Chakraborty, 2011). In order to examine the price efficiency of the stock market, the present study aims to examine whether the stock market of India is price efficient at semi-strong level with regard to the impact of monetary policy announcements on the behaviour of the related stocks enlisted in Nifty Financial Services. Monetary policy in a developing country plays a significant role in achieving the objectives of macroeconomic policies. The Central Bank formulates and implements the monetary policy in a country which in turn facilitates the increase in growth rate, manages interest rates, and money supply in the economy (Kishan & Opiela, 2012). Even though the ultimate objectives of Monetary Policy are expressed in terms of macroeconomic variables such as output, employment and inflation, the immediate impact of monetary policy announcements are delineated in the returns of the companies since the stock market activities largely tend to be influenced by the announcements. However, the economic conditions get affected by monetary policy only after a long lag (Friedman, 1961).

Therefore, the link between monetary policy and stock prices can be explained by means of transmission mechanism (Tobin, 1978). The new theories of monetary policy transmission mechanism focus on how many financial services depend on their deposit financing and how much borrowers are dependent on the financial institutions (Janjua et al., 2014). In order to measure the impact of monetary policy announcement on the stock prices of companies listed in Nifty Financial Services, an event study has been conducted. An event study tests the Efficient Market Hypothesis (EMH) wherein the efficiency of a significant catalyst occurrence or an event is examined as well as the response of market either before the event or very shortly after the event (Bomfim, 2000). There are basically three separate forms of Market efficiency: weak, semi-strong and strong form. There have been a number of empirical studies carried out to examine the weak form of pricing efficiency of the market whereas relatively, only a few studies have investigated the pricing efficiency of the Indian stock market in its semi-strong form.

## 2. LITERATURE REVIEW

The impact of the monetary policy on the economy has been a long-debated matter. There are a wide number of studies conducted in India to examine the applicability of semi-strong form of the efficient market hypothesis (EMH) in different areas like corporate events, macro-economic news and so on. We had come across a few studies which are made in the context of the Indian stock market to examine the potential link between the policy decisions and market volatility. Fama (1969), who conducted the pioneer event study in this field examined the reaction of stock prices when the date of stock splits was announced. Their study found that semi-strong efficient market hypothesis lays down that the stock prices would reflect all the relevant and available information completely which makes it impossible to earn profits. Therefore, the efficiency of stock prices would depend on the speed of adjustment to the information (Kutchu, 2012). Monetary policy is a major force through which short-term

- Sruthi Vinod, is currently pursuing masters degree program in commerce in Christ (deemed to be) University, India, PH-9539832479. E-mail: sruthi.vinod@mcom.christuniversity.in
- Rosmin Scaria is currently pursuing masters degree program in commerce in Christ (deemed to be) University, India, PH-9946374131. E-mail: rosmin,scaria@mcom.christuniversity.in
- Dr Girish S, Assistant Professor, Christ (deemed to be) University, India, PH-9845105030, E-mail: girish.s@christuniversity.in

macro fine-tuning is made possible wherein it influences the stock market in three ways. Firstly, it directly affects trading in securities by affecting liquidity available for speculative activities. Secondly, it influences the expectations in the market through policy signalling. Thirdly, it affects the present value of the future flow of earnings and the earnings flow itself and hence there is an influence on equity prices (Sasidharan, 2009). According to Tobin (1978), the links between Monetary Policy and stock prices can be explained through the transmission mechanism. Monetary Policy changes are transmitted through the stock market via changes in the cost of capital to the companies. He argues that financial markets believe that news of inflation will generate a monetary tightening, which in turn will reduce the present value of the future earnings and current stock returns. Agarwal (2007) examined 6 announcements affecting CRR between April 2006 and July 2007. He classified them as 'good news' and 'bad news. A hike in CRR is considered as bad news and the good news is when RBI leaves CRR unchanged. The study takes an event window of 31 days which included 15 days before the event and 15 days after it. He explains that Cumulative Average Abnormal Returns (CAAR), does not normalize after the event which depicts that the market is slow in incorporating the content of monetary policy announcements. The nonparametric tests rejected any consistent behaviour across the periods of policy and type of policy. (Nyamute et al., 2016) conducted a study to establish the effect of monetary policy on the financial performance of commercial banks listed in the Nairobi Securities Exchange in Kenya. The findings from the study confirmed that monetary policy tools such as CBR, CRR and OMO had varying degrees of relationship with the financial performance of the commercial banks listed on the NSE. Emezie (2017) investigated the effect of bank lending on the performance of the Nigerian economy. It established that lending rates and performance of the economy have a positive relationship. If lending rates are reduced by banks then it will facilitate the growth of the economy. If the reserve requirements are brought down the banks will have more cash to lend and this will lead to economic development (Girish S, 2018). These findings delineate that various monetary policy measures have affected the performance of banking sector directly and indirectly since commercial banks are vital for mobilization of financial resources as it facilitates economic growth and is driven by the principles which govern the operations of commercial banks such as profitability, liquidity and solvency (Olokoyo, July 2011). Similarly, a study conducted in Pakistan which examined the impact of monetary policy on the supply of loans established that there was a negative relationship between monetary policy and the bank loan supply (Janjua et al., 2014). A significant positive correlation was found between the performance of banks in Nigeria and the announcement of the monetary policy. (Olokoyo, July 2011), (Victor C. et al., 2017) whereas it was established that the Dhaka Stock exchange and the monetary policy instruments were independent of each other (Rifat, 2015). May (1971) and Kennelly & Brown (1972) investigated the behaviour of security prices to earnings information and it was found that the investors cannot earn abnormal profits on publicly available information. Rao (1994) examined the stock price response to corporate financial policy announcement. He supported EMH by stating that stock prices immediately

absorb the new information and therefore, no abnormal return would be available to the investors. Another study examined the interest rate sensitivity of 35 NBFCs stock returns from 1996 to 2014. The relationship was evaluated using panel regression and GARCH (1,1) model. There was a negative impact of interest rate changes on the stock returns of NBFCs. It was found that the large firms had more interest rate sensitivity than other NBFCs under study. The unanticipated interest rate changes had more impact on the stock returns of NBFCs. (Ghosh et al., 2018). However, a study recently conducted by (Nguyen et al., 2017) examined the impact of monetary policy on commercial banks' profitability in India and the study recommended that banks should put more emphasis on the internal factors of financial performance which would include capital adequacy, asset quality, management efficiency, earnings ability and liquidity management. The review of existing literature indicates that considerable research has been undertaken to check the semi-strong form of the financial markets, but mostly through company based micro indicators like earnings, price-earnings ratio, dividend, bonus shares etc. Very few studies have been conducted to measure the impact of macro indicators on the stock market using event study, especially in India. Therefore this paper focuses on how financial markets react to the monetary policy announcements. The primary objective of this paper is to test the semi-strong form of Efficient Market Hypothesis in the Indian Stock Market with respect to financial services industry.

### 3. METHODOLOGY

#### 3.1 Sample Selection and Data Sources

The sample for the study comprises of 13 companies from the financial service sector. The 13 companies which constitute the sample for the study are the companies which are listed in the Nifty Financial Service Index as on 1 July 2019. Prior to the establishment of Monetary Policy Committee (MPC) in 2016, the Governor of Reserve Bank of India used to take decisions pertaining to monetary policy. The rationale behind the study being conducted from 11<sup>th</sup> March 2016 to 30<sup>th</sup> August 2019 is to examine the impact of monetary policy announcements ever since the establishment of Monetary Policy Committee. The remaining companies are not included in the study due to the non-availability of data for these companies for the selected time period. The Nifty index is considered as the representative of the market for the study and used for calculations of abnormal return as it comprises of large and well diversified stocks from 13 different sectors of Indian economy as on 31<sup>st</sup> October 2019. The closing prices of the companies and the Nifty index (market) during the said period have been collected from the NSE website ([www.nse-india.com](http://www.nse-india.com)) and the details of the event day are collected from the website of RBI ([www.rbi.org.in](http://www.rbi.org.in)).

#### 3.2 Variable selection and description

The event study methodology is used in this study. The variables for the study are Average Abnormal returns (AAR) and Cumulative Average Abnormal Returns (CAAR) of the 13 companies during the period of the study around the monetary policy announcements.

### 3.3 Data methodology

The study uses event study methodology for the computation of Average returns (ARs), Average Abnormal Returns (AARs), Cumulative Average Abnormal Returns (CAARs) around the monetary policy announcement dates. An event window of 31 days is used i.e., 15 days before the event day and 15 days after the event day. The event day is the date on which the monetary policy announcement is made by the Monetary Policy Committee. The daily closing prices of the companies and the nifty index are used for calculating the daily abnormal returns. The prices are taken on a daily basis to analyse the immediate impact of monetary policy announcements on the stock prices of the selected companies. The daily returns of the companies are calculated using the following formula for the event day: The logarithmic returns are used as the results are more accurate, (Strong, June 1992) (Fama, 1969)

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

where,  $P_t$  and  $P_{t-1}$  are the daily closing prices for company at time  $t$  and  $t-1$  respectively. The actual returns for the market are computed by using the following:

$$R_m = \text{Log}(P_m - P_{m-1})$$

where,  $P_m$  and  $P_{m-1}$  are the daily closing index values at time  $m$  and  $m-1$  respectively.

Sharpe model (1964) has been used to estimate the expected returns on a stock. The formula is applied to compute the expected returns:

$$R_{it} = \alpha_i + \beta_i R_m$$

where,  $R_{it}$  is the return on security  $i$  at the time  $t$ .  $R_m$  indicates the return on the market index at time  $t$ .  $\alpha_i$  signifies the intercept for the share of a company  $i$ .  $\beta_i$  is the estimate for beta for the share of a company. After the computation of expected returns, we compute the abnormal return which is defined as the difference between actual return and expected return. The Market Model (MM) method is used to find the abnormal returns. The MM method is a popularly used method for event studies since it would generate accurate results as compared to other models of abnormal return computation. (Fama, 1969) (Davies, 1978) (T Dyckman et al., 1984)

**The abnormal return for company  $i$  on day  $t$  is computed using the formula:**

$$AR_{it} = R_i - (\alpha_i + \beta_i R_m)$$

Average Abnormal Return (AAR) is computed by The next step is to average all the abnormal returns over the number of companies For this purpose the ARs of each company are averaged for each day surrounding the event day which is -15 days to +15 days. The computation of Cumulative Average Abnormal Returns (CAAR) is pertinent as they are majorly used to augment the explanatory power of the results. CAAR is computed by finding the average of cumulative abnormal return.

### 3.4 Events and T- test

The RBI uses the monetary policy to stabilise growth, maintain stability and to control inflation with the help of instruments like repo rate, reverse repo rate, CRR, SLR etc. When RBI increases the repo rate, the flow of credit in the economy

decreases. Such a monetary policy announcement is considered as a “bad news” in this study. When the repo rate is unchanged or decreased in the monetary policy announcement, the event is considered as a “good news” in the study as it will increase the flow of credit in the economy. Monetary Policy Committee announces monetary policy on a bi-monthly basis. Hence in a year, there would be 6 announcements. For the study 18 events, + 3 events (in the year 2019) have been identified out of which 19 are good news and 2 are bad news. The AARs and CAARs are analysed based on their  $t$  values during the event window, before the event day and after the event day. The level of significance is taken at 5% with 28 degrees of freedom. The critical value of  $t$  is 2.17883 and is two-tailed.

### 3.5 Hypothesis

$H_0$ -There is no average abnormal return and Cumulative average abnormal return generated by the monetary policy announcement during the pre-event period and post-event period.

$H_1$ - There is an average abnormal return and Cumulative average abnormal return generated by the monetary policy announcement during the pre-event period and post-event period.

## 4. RESULTS AND DISCUSSION

In order to investigate the reaction of stock prices to the monetary policy announcement, the event study methodology has been applied in this study. For this purpose, we assess the abnormal returns during the period to ascertain the impact of monetary policy on the stock price. This was done using daily share prices. The dates of announcement of monetary policy have been taken as the event day.

Table 1: AAR for the year 2016-17

Particulars	05-Apr-16	07-Jun-16	09-Aug-16	04-Oct-16	07-Dec-16	06-Feb-17
AAR	-0.026	0.008509	0.007519	0.006757	-0.0019	-0.0361
AARs Positive during the Event Window	17	13	18	20	15	14
AARs Negative during the Event Window	14	18	13	11	16	17
AARs Positive before the Event Window	8	5	9	10	9	6
AARs Negative before the Event Window	6	10	6	5	6	9
AARs Positive after the Event Window	9	7	8	9	6	8
AARs Negative after the Event Window	6	8	7	6	9	7

Table 1 depicts the Average Abnormal Return (AAR) of the event window for the financial year 2016-17. All the events for 2016-17 are good news. It is evident from the table that the AARs of almost all of the event windows are closer to 0. During the first pre-event period, the lowest value of AAR is -619.925 on 4<sup>th</sup> April 2016 and the highest value of AAR is 244.9247 on 30<sup>th</sup> March 2016. In the first post-event period, the lowest AAR value is -156.665 on 20<sup>th</sup> April 2016 and the highest AAR value is 225.7408 on 13<sup>th</sup> April 2016. During the second pre-event period, the lowest value of AAR is -506.122 on 17<sup>th</sup> May 2016 and the highest value of AAR is 250.042 on 18<sup>th</sup> May 2016. In the second post-event period, the lowest AAR value is -275.143 on 13<sup>th</sup> June 2016 and the highest AAR

value is 172.7721 on 27<sup>th</sup> June 2016. During the third pre-event period, the lowest value of AAR is -63.7596 on 2<sup>nd</sup> August 2016 and the highest value of AAR is 141.0479 on 25<sup>th</sup> July 2016. In the third post-event period, the lowest AAR value is -258.114 on 30<sup>th</sup> August 2016 and the highest AAR value is 127.3775 on 25<sup>th</sup> August 2016. During the fourth pre-event period, the lowest value of AAR is -139.003 on 12<sup>th</sup> September 2016 and the highest value of AAR is 340.687 on 26<sup>th</sup> September 2016. In the fourth post-event period, the lowest AAR value is -226.261 on 10<sup>th</sup> October 2016 and the highest AAR value is 300.3106 on 13<sup>th</sup> October 2016. During the fifth pre-event period, the lowest value of AAR is -212.104 on 21<sup>st</sup> November 2016 and the highest value of AAR is 214.9583 on 22<sup>nd</sup> November 2016. In the fifth post-event period, the lowest AAR value is -234.626 on 13<sup>th</sup> December 2016 and the highest AAR value is 142.0343 on 28<sup>th</sup> December 2016. During the sixth pre-event period, the lowest value of AAR is -123.926 on 24<sup>th</sup> January 2017 and the highest value of AAR is 155.5073 on 17<sup>th</sup> January 2017. In the sixth post-event period, the lowest AAR value is -21.213 on 13<sup>th</sup> February 2017 and the highest AAR value is 109.9459 on 28<sup>th</sup> February 2017.

Table 2: AAR for the year 2017-18

Particulars	06-Apr-17	07-Jun-17	02-Aug-17	04-Oct-17	06-Dec-17	07-Feb-18
AAR	0.00115	0.00825	0.001429	-0.0061	-0.00234	0.00244
AARs Positive during the Event Window	18	16	20	16	16	16
AARs Negative during the Event Window	13	15	11	15	15	15
AARs Positive before the Event Window	9	7	10	8	8	7
AARs Negative before the Event Window	6	8	5	7	7	8
AARs Positive after the Event Window	8	8	9	8	8	8
AARs Negative after the Event Window	7	7	6	7	7	7

Table 2 depicts the Average Abnormal Return (AAR) of the event window for the financial year 2017-18. All the events for 2017-18 are good news. During the first pre-event period, the lowest value of AAR is -160.917 on 23<sup>rd</sup> March 2017 and the highest value of AAR is 106.5673 on 5<sup>th</sup> April 2017. In the first post-event period, the lowest AAR value is -291.321 on 27<sup>th</sup> April 2017 and the highest AAR value is 138.6456 on 10<sup>th</sup> April 2017. During the second pre-event period, the lowest value of AAR is -122.583 on 25<sup>th</sup> May 2017 and the highest value of AAR is 67.5932 on 30<sup>th</sup> May 2017. In the second post-event period, the lowest AAR value is -126.463 on 23<sup>rd</sup> June 2017 and the highest AAR value is 256.681 on 28<sup>th</sup> June 2017. During the third pre-event period, the lowest value of AAR is -473.653 on 24<sup>th</sup> July 2017 and the highest value of AAR is 97.86101 on 31<sup>st</sup> July 2017. In the third post-event period, the lowest AAR value is -232.707 on 22<sup>nd</sup> August 2017 and the highest AAR value is 139.9588 on 7<sup>th</sup> August 2017. During the fourth pre-event period, the lowest value of AAR is -215.866 on 12<sup>th</sup> September 2017 and the highest value of AAR is 144.3826 on 28<sup>th</sup> September 2017. In the fourth post-event period, the lowest AAR value is -178.808 on 13<sup>th</sup> October 2017 and the highest AAR value is 113.3094 on 5<sup>th</sup> October 2017. During the fifth pre-event period, the lowest value of AAR is -176.939 on 4<sup>th</sup> December 2017 and the highest value of AAR is 167.3076 on 28<sup>th</sup> November 2017. In the fifth post-event

period, the lowest AAR value is -558.337 on 27<sup>th</sup> December 2017 and the highest AAR value is 130.0084 on 18<sup>th</sup> December 2017. During the sixth pre-event period, the lowest value of AAR is -455.482 on 29<sup>th</sup> January 2018 and the highest value of AAR is 180.7804 on 6<sup>th</sup> February 2018. In the sixth post-event period, the lowest AAR value is -150.836 on 28<sup>th</sup> February 2018 and the highest AAR value is 149.4444 on 26<sup>th</sup> February 2018.

Table 3: AAR for the year 2018-19

Particulars	05-Apr-18	06-Jun-18	01-Aug-18	05-Oct-18	05-Dec-18	07-Feb-19
AAR	0.024975	0.009986	0.004264	-0.01238	-0.00817	-0.0141
AARs Positive during the Event Window	16	16	16	17	16	15
AARs Negative during the Event Window	15	15	15	14	15	16
AARs Positive before the Event Window	8	7	8	6	7	5
AARs Negative before the Event Window	7	8	7	9	8	10
AARs Positive after the Event Window	7	8	7	11	9	9
AARs Negative after the Event Window	8	7	8	4	6	6

Table 3 depicts the Average Abnormal Return (AAR) of the event window for the financial year 2018-19. The events on 6<sup>th</sup> June 2018 and 1<sup>st</sup> August 2018 are termed as bad news since when RBI increases the repo rate, the flow of credit in the economy decreases. During the first pre-event period, the lowest value of AAR is -345.87 on 16<sup>th</sup> March 2018 and the highest value of AAR is 287.2261 on 26<sup>th</sup> March 2018. In the first post-event period, the lowest AAR value is -430.856 on 20<sup>th</sup> April 2018 and the highest AAR value is 219.9553 on 6<sup>th</sup> April 2018. During the second pre-event period, the lowest value of AAR is -121.991 on 5<sup>th</sup> June 2018 and the highest value of AAR is 113.6178 on 22<sup>nd</sup> May 2018. In the second post-event period, the lowest AAR value is -273.661 on 26<sup>th</sup> June 2018 and the highest AAR value is 140.5678 on 11<sup>th</sup> June 2018. During the third pre-event period, the lowest value of AAR is -119.787 on 11<sup>th</sup> July 2018 and the highest value of AAR is 104.6395 on 26<sup>th</sup> July 2017. In the third post-event period, the lowest AAR value is -313.954 on 23<sup>rd</sup> August 2018 and the highest AAR value is on 21<sup>st</sup> August 2018. During the fourth pre-event period, the lowest value of AAR is -169.355 on 27<sup>th</sup> September 2018 and the highest value of AAR is 171.165 on 25<sup>th</sup> September 2018. In the fourth post-event period, the lowest AAR value is -197.794 on 6<sup>th</sup> December 2018 and the highest AAR value is 170.1036 on 25<sup>th</sup> October 2018. During the fifth pre-event period, the lowest value of AAR is -147.376 on 19<sup>th</sup> November 2018 and the highest value of AAR is 137.8434 on 21<sup>st</sup> November 2018. In the fifth post-event period, the lowest AAR value is -197.794 on 6<sup>th</sup> December 2018 and the highest AAR value is 118.778 on 24<sup>th</sup> December 2018. During the sixth pre-event period, the lowest value of AAR is -269.35 on 28<sup>th</sup> January 2019 and the highest value of AAR is 180.8548 on 23<sup>rd</sup> January 2019. In the sixth post-event period, the lowest AAR value is -100.569 on 25<sup>th</sup> February 2019 and the highest AAR value is 169.6661 on 28<sup>th</sup> February 2019.

Table 4: AAR for the year 2019

Particulars	04-Apr-19	06-Jun-19	07-Aug-19
AAR	0.00069	0.00233	0.00946
AARs Positive during the Event Window	16	22	16
AARs Negative during the Event Window	15	9	15
AARs Positive before the Event Window	11	11	9
AARs Negative before the Event Window	4	4	6
AARs Positive after the Event Window	4	10	6
AARs Negative after the Event Window	11	5	9

Table 4 depicts the Average Abnormal Return (AAR) of the event window for the financial year 2019. All the events for 2019 are good news. During the first pre-event period, the lowest value of AAR is -88.3241 on 20<sup>th</sup> March 2019 and the highest value of AAR is 64.57823 on 18<sup>th</sup> March 2019. In the first post-event period, the lowest AAR value is -134.335 on 26<sup>th</sup> April 2019 and the highest AAR value is 127.0519 on 10<sup>th</sup> April 2019. During the second pre-event period, the lowest value of AAR is -372.933 on 3<sup>rd</sup> June 2019 and the highest value of AAR is 106.6552 on 24<sup>th</sup> May 2019. In the second post-event period, the lowest AAR value is -73.5019 on 10<sup>th</sup> June 2019 and the highest AAR value is 103.1025 on 11<sup>th</sup> June 2019. During the third pre-event period, the lowest value of AAR is -102.73 on 24<sup>th</sup> July 2019 and the highest value of AAR is 320.1029 on 6<sup>th</sup> August 2019. In the third post-event period, the lowest AAR value is -303.213 on 8<sup>th</sup> August 2019 and the highest AAR value is -105.8506 on 14<sup>th</sup> August 2019. However, CAARs are better indicators to find the presence of abnormal returns. The reason being the standard deviation of CAARs is lower than that of AARs. All the events for 2016-17 are good news.

Table 5: CAAR for the year 2016-17

Particulars	05-Apr-16	07-Jun-16	09-Aug-16	04-Oct-16	07-Dec-16	06-Feb-17
CAAR	-0.1172	-0.00214	0.032795	-0.02069	0.013809	0.002841
CAARs Positive during the Event Window	14	5	25	18	16	8
CAARs Negative during the Event Window	17	26	6	13	15	23
CAARs Positive before the Event Window	0	1	14	5	15	7
CAARs Negative before the Event Window	15	14	1	10	0	8
CAARs Positive after the Event Window	14	4	10	13	0	0
CAARs Negative after the Event Window	1	11	5	2	15	15

Table 5 depicts the Cumulative Average Abnormal Return (CAAR) of the event window for the financial year 2016-17. It is evident from the table that the CAARs of almost all of the event windows are closer to 0. During the first pre-event period, the lowest value of CAAR is -233.669 on 11<sup>th</sup> March 2016 and the highest value of CAAR is -16.44 on 17<sup>th</sup> March 2016. In the first post-event period, the lowest CAAR value is -65.8104 on 6<sup>th</sup> April 2016 and the highest CAAR value is

160.9941 on 7<sup>th</sup> April 2016. During the second pre-event period, the lowest value of CAAR is -506.122 on 17<sup>th</sup> May 2016 and the highest value of CAAR is 2.9121 on 18<sup>th</sup> May 2016. In the second post-event period, the lowest CAAR value is -56.4731 on 13<sup>th</sup> June 2016 and the highest CAAR value is 51.391 on 8<sup>th</sup> June 2016. During the third pre-event period, the lowest value of CAAR is -3.9346 on 19<sup>th</sup> July 2016 and the highest value of CAAR is 37.4022 on 21<sup>st</sup> July 2016. In the third post-event period, the lowest CAAR value is -8.70437 on 26<sup>th</sup> August 2016 and the highest CAAR value is 43.1679 on 10<sup>th</sup> August 2016. During the fourth pre-event period, the lowest value of CAAR is -237.038 on 15<sup>th</sup> September 2016 and the highest value of CAAR is 16.2786 on 26<sup>th</sup> September 2016. In the fourth post-event period, the lowest AAR value is -88.0615 on 10<sup>th</sup> October 2016 and the highest CAAR value is 81.23 on 17<sup>th</sup> October 2016. During the fifth pre-event period, the lowest value of CAAR is -16.9623 on 21<sup>st</sup> November 2016 and the highest value of CAAR is 48.0946 on 24<sup>th</sup> November 2016. In the fifth post-event period, the lowest CAAR value is -195.589 on 8<sup>th</sup> December 2016 and the highest CAAR value is -2.5938 on 9<sup>th</sup> December 2016. During the sixth pre-event period, the lowest value of CAAR is -40.065 on 24<sup>th</sup> January 2017 and the highest value of CAAR is 155.5073 on 17<sup>th</sup> January 2017. In the sixth post-event period, the lowest CAAR value is -103.316 on 10<sup>th</sup> February 2017 and the highest AAR value is -9.002 on 28<sup>th</sup> February 2017

Table 6: CAAR for the year 2017-18

Particulars	06-Apr-17	07-Jun-17	02-Aug-17	04-Oct-17	06-Dec-17	07-Feb-18
CAAR	0.013278	-0.00903	0.009191	0.010935	0.010626	-0.0026
CAARs Positive during the Event Window	20	14	30	17	9	11
CAARs Negative during the Event Window	11	17	1	14	22	20
CAARs Positive before the Event Window	7	0	15	10	6	0
CAARs Negative before the Event Window	8	5	0	5	9	15
CAARs Positive after the Event Window	12	14	14	6	2	11
CAARs Negative after the Event Window	3	1	1	9	13	4

Table 6 depicts the Cumulative Average Abnormal Return (CAAR) of the event window for the financial year 2017-18. All the events for 2017-18 are good news. During the first pre-event period, the lowest value of CAAR is -25.6546 on 23<sup>rd</sup> March 2017 and the highest value of CAAR is 91.0396 on 15<sup>th</sup> March 2017. In the first post-event period, the lowest CAAR value is -38.7294 on 27<sup>th</sup> April 2017 and the highest CAAR value is 88.93912 on 10<sup>th</sup> April 2017. During the second pre-event period, the lowest value of CAAR is -76.584 on 2<sup>nd</sup> June 2017 and the highest value of CAAR is -21.0783 on 19<sup>th</sup> May 2017. In the second post-event period, the lowest CAAR value is -3.64138 on 27<sup>th</sup> June 2017 and the highest CAAR value is 160.83994 on 19<sup>th</sup> June 2017. During the third pre-event period, the lowest value of CAAR is -3.83094 on 28<sup>th</sup> July 2017 and the highest value of CAAR is 257.7954 on 13<sup>th</sup> July 2017. In the third post-event period, the lowest CAAR value is -1.9573 on 22<sup>nd</sup> August 2017 and the highest CAAR value is 89.71661 on 7<sup>th</sup> August 2017. During the fourth pre-event period, the lowest value of AAR is -215.866 on 12<sup>th</sup> September 2017 and the highest value of CAAR is 33.5234 on 19<sup>th</sup>

September 2017. In the fourth post-event period, the lowest AAR value is -19.8525 on 26<sup>th</sup> October 2017 and the highest CAAR value is 113.309 on 5<sup>th</sup> October 2017. During the fifth pre-event period, the lowest value of CAAR is -90.479 on 15<sup>th</sup> November 2017 and the highest value of CAAR is 103.7804 on 5<sup>th</sup> December 2017. In the fifth post-event period, the lowest CAAR value is -316.683 on 7<sup>th</sup> December 2017 and the highest CAAR value is 14.41049 on 22<sup>nd</sup> December 2017. During the sixth pre-event period, the lowest value of CAAR is -64.701 on 1<sup>st</sup> February 2018 and the highest value of CAAR is -10.07 on 6<sup>th</sup> February 2018. In the sixth post-event period, the lowest CAAR value is -90.9369 on 21<sup>st</sup> February 2018 and the highest CAAR value is 115.4404 on 9<sup>th</sup> February 2018.

Table 7: CAAR for the year 2018-19

Particulars	05-Apr-18	06-Jun-18	01-Aug-18	05-Oct-18	05-Dec-18	07-Feb-19
CAAR	-0.00195	0.023984	0.02633	-0.04397	-0.02951	-0.03
CAARs Positive during the Event Window	11	27	17	10	15	8
CAARs Negative during the Event Window	20	4	14	21	16	23
CAARs Positive before the Event Window	1	15	6	0	5	0
CAARs Negative before the Event Window	14	0	9	15	10	15
CAARs Positive after the Event Window	10	11	10	10	10	8
CAARs Negative after the Event Window	5	4	5	5	5	7

Table 7 depicts the Cumulative Average Abnormal Return (CAAR) of the event window for the financial year 2018-19. The events on 6<sup>th</sup> June 2018 and 1<sup>st</sup> August 2018 are termed as bad news since when RBI increases the repo rate, the flow of credit in the economy decreases. During the first pre-event period, the lowest value of CAAR is -134.233 on 13<sup>th</sup> March 2018 and the highest value of CAAR is 23.3273 on 15<sup>th</sup> March 2018. In the first post-event period, the lowest CAAR value is -22.7622 on 20<sup>th</sup> April 2018 and the highest CAAR value is 219.9553 on 6<sup>th</sup> April 2018. During the second pre-event period, the lowest value of CAAR is 6.59 on 16<sup>th</sup> June 2018 and the highest value of CAAR is 115.04488 on 2<sup>8th</sup> May 2018. In the second post-event period, the lowest CAAR value is -58.2628 on 27<sup>th</sup> June 2018 and the highest CAAR value is 107.1147 on 7<sup>th</sup> June 2018. During the third pre-event period, the lowest value of CAAR is -129.769 on 11<sup>th</sup> July 2018 and the highest value of CAAR is 39.4159 on 30<sup>th</sup> July 2018. In the third post-event period, the lowest CAAR value is -17.4438 on 24<sup>th</sup> August 2018 and the highest CAAR value is 51.24799 on 3<sup>rd</sup> August 2018. During the fourth pre-event period, the lowest value of CAAR is -109.899 on 3<sup>rd</sup> October 2018 and the highest value of CAAR is -12.8006 on 17<sup>th</sup> September 2018. In the fourth post-event period, the lowest CAAR value is -55.3327 on 8<sup>th</sup> October 2018 and the highest CAAR value is 134.4276 on 29<sup>th</sup> October 2018. During the fifth pre-event period, the lowest value of CAAR is -46.6549 on 28<sup>th</sup> November 2018 and the highest value of CAAR is 34.56623 on 15<sup>th</sup> November 2018. In the fifth post-event period, the lowest CAAR value is -214.277 on 6<sup>th</sup> December 2018 and the highest CAAR value is 65.75716 on 21<sup>st</sup> December 2018. During the sixth pre-event period, the lowest value of CAAR is -139.132 on 28<sup>th</sup> January 2019 and the highest value of CAAR is -47.7167 on 31<sup>st</sup> January 2019. In the sixth post-event period, the lowest CAAR value is -200.845 on 12<sup>th</sup> February

2019 and the highest CAAR value is 26.00525 on 28<sup>th</sup> February 2019.

Table 8: CAAR for the year 2019

Particulars	04-Apr-19	06-Jun-19	07-Aug-19
CAAR	0.03004	0.06397	0.026
CAARs Positive during the Event Window	25	21	5
CAARs Negative during the Event Window	6	10	26
CAARs Positive before the Event Window	15	15	4
CAARs Negative before the Event Window	0	0	11
CAARs Positive after the Event Window	9	5	0
CAARs Negative after the Event Window	6	10	15

Table 8 depicts the Cumulative Average Abnormal Return (AAR) of the event window for the financial year 2019. All the events for 2019 are good news. During the first pre-event period, the lowest value of CAAR is 18.59053 on 20<sup>th</sup> March 2019 and the highest value of CAAR is 89.02055 on 27<sup>th</sup> March 2019. In the first post-event period, the lowest CAAR value is -58.8564 on 30<sup>th</sup> April 2019 and the highest CAAR value is 126.4759 on 5<sup>th</sup> April 2019. During the second pre-event period, the lowest value of CAAR is 7.36873 on 4<sup>th</sup> June 2019 and the highest value of CAAR is 79.91779 on 15<sup>th</sup> May 2019. In the second post-event period, the lowest CAAR value is -5.35843 on 27<sup>th</sup> June 2019 and the highest CAAR value is 63.07017 on 7<sup>th</sup> June 2019. During the third pre-event period, the lowest value of CAAR is -58.9663 on 18<sup>th</sup> July 2019 and the highest value of CAAR is 46.34682 on 6<sup>th</sup> August 2019. In the third post-event period, the lowest CAAR value is -303.213 on 8<sup>th</sup> August 2019 and the highest CAAR value is -5.74486 on 16<sup>th</sup> August 2019.

## Significance

Table 9: Table showing the number of significant CAAR and AAR values for the year 2016-17

Particulars	05-Apr-16	07-Jun-16	09-Aug-16	04-Oct-16	07-Dec-16	08-Feb-17
AARs significant during the Event Window	31	30	31	31	31	31
AARs significant during the Event Window	8	5	9	10	9	6
AARs significant before the Event Window	9	7	8	9	6	8
CAARs significant before the Event Window	31	31	30	30	31	31
CAARs significant after the Event Window	0	1	14	5	15	7
CAARs significant after the Event Window	14	4	11	13	0	0

Table 10: Table showing the number of significant CAAR and AAR values for the year 2017-18

Particulars	06-Apr-17	07-Jun-17	02-Aug-17	04-Oct-17	06-Dec-17	07-Feb-18
AARs significant during the Event Window	30	31	29	29	30	31
AARs significant during the Event Window	9	7	10	9	8	7
AARs significant before the Event Window	8	8	9	8	8	7
CAARs significant before the Event Window	31	31	29	28	30	31
CAARs significant after the Event Window	0	0	10	11	7	0
CAARs significant after the Event Window	14	14	9	7	2	11

Table 11: Table showing the number of significant CAAR and AAR values for the year 2018-19

Particulars	05-Apr-18	05-Jun-18	01-Aug-18	05-Oct-18	05-Dec-18	07-Feb-19
AARs significant during the Event Window	31	31	31	31	31	30
AARs significant during the Event Window	8	7	8	6	7	5
AARs significant before the Event Window	7	8	7	11	9	9
CAARs significant before the Event Window	31	30	29	31	30	31
CAARs significant after the Event Window	1	15	7	0	5	0
CAARs significant after the Event Window	10	12	11	10	10	8

The above findings show that the null hypothesis is rejected as out of 651 days, AARs and CAARS are significant for 642 days and 636 days respectively. ( $H_0$ : There is no Average Abnormal Return and Cumulative Average Abnormal Return generated by the monetary policy announcement during the pre-event period and post-event period).

## 5. CONCLUSION

The study aims to find whether monetary policy announcement holds any informational content to the investors and to test the efficiency of semi-stock market hypothesis. In an efficient market, AAR should be 0 and CAAR should rise and later, decline suggesting that abnormal losses or returns are not possible after the announcements. There is a difference between the returns in the pre-event and post-event. The daily stock returns of 13 NBFC companies are analysed. The event study method is applied to examine the reaction of stock price to the monetary policy announcement. With the employment of t-statistics, the results show that AAR values are positive for the majority of the days during the event window which signifies monetary policy announcements has a positive impact on the stock market. However, CAAR values are positive for the majority of the days during the event window which signifies monetary policy announcements has a positive impact on the stock market. The t-results depict that CAAR values are significant for most of the days during the event window. The significant CAAR values indicate that the investors can gain abnormal return by employing a buy and hold strategy. Moreover, out of 651 days, AARs and CAARS are significant for 642 days and 636 days respectively. The t-values of a majority of AARs are higher than the critical value, 2.179. Hence, the null hypothesis is rejected ( $H_0$ : There is no Average Abnormal Return and Cumulative Average Abnormal Return generated by the monetary policy announcement during the pre-event period and post-event period). From the above findings, it can be concluded that the investors are able to earn abnormal profits which indicate that the Indian stock market is not efficient in the semi-strong form due to the slow absorption of information. The limitation of the study is that only 13 companies could be used due to non-availability of data in the sample period. The further researches in the similar line could include all the companies listed in NSE Financial Services Index and can extend the scope of the study by measuring the impact of the event on the stock prices.

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