

# Impact of Fraud Announcement on the Stock Price: Analysis of Indian Banks



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*The purpose of the study is to investigate the reaction of stock prices of Indian banks with respect to announcement of frauds by using the Event Study. The fraud cases are selected which amounted to ₹ 1,000 crores or more during the study period (January 2014 to December 2018). The empirical result indicates that announcement of frauds affect the stock price of banks. The study found negative significant abnormal loss on the event day which further increased in post-event period. The study has the importance for analyzing the behaviour of stock prices with respect to frauds.*

**Keywords:** Stock Price, Event Study, Abnormal Returns, Frauds' Announcement, Indian Banking Sector

## 1. Introduction

The Indian banking sector has witnessed substantial growth and revolutionary modification since liberalisation of economy in 1991. Although, the banking sector is well regulated, yet it suffers from diverse obstacles such as financial distress and lack of ethical practices. According to the annual report of Reserve Bank of India (2019) and report of Economic Times (2019), frauds have increased substantially both in volume and value terms during the last ten years. The volume of frauds reported by banks was 4669 with a value ₹ 1998.94 crore during 2009-10, reached to 6801 with a value ₹ 71542.93 crore at the end of 2018-19. The number of cases of frauds increased by 45.66 per cent with the amount involved rising by more than 35 times from 2009-10 to 2018-19. The fraud in bank or any other corporate entity is entirely unpredictable phenomenon which results in enormous negative economic and social consequences.

The researches on fraud emphasised its harmful impact on shareholders. Song & Han (2017) examined the impact of corporate crime on the stock market in South Korea and found negative reactions to stock prices around the announcements. They found no significant difference in reactions between announcements of individual and organisational crimes followed the inferences of Kouwenberg & Phunnarungsi, (2013). In Germany, Ewelt-Knauer et al. (2015) indicated that shareholder wealth decreases more if at least one board member resigns due to the fraud case. Jayanti & Jayanti (2011) showed that filing for bankruptcy and shut down by major carriers resulted in negative abnormal returns around the announcement dates for respective firms and positive abnormal returns for rival firms. Davidson et al. (1994) reported negative abnormal stock returns around the announcements of financial reporting violations. These studies provide motive to conduct a research to analyze the reaction of stock price with respect to frauds' announcement in Indian context. The present study focuses on the research question:

**Do frauds' announcements have significant impact on the stock prices of the bank that have experienced fraud?**

The remainder of the paper is structured as follows. The second section reviews extant literature on frauds and announcement effect on stock price using event study. The third section presents the methodology followed by the fourth section which deals with empirical results. The fifth section concludes the research paper.

## 2. Review And Literature

Fraud announcement is an unscheduled event in the capital market that is likely to influence financial performance of the concerned firm. Most of the fraud literature provides the adverse effects of fraud on performance of firm and shareholders' wealth. This section deals with literature which demonstrates the relationship between fraud and its consequences.

In the recent studies, Eryigit (2019) examined the effect of announcements of financial irregularities on the performance of stock of company in short term. The results indicated that news of financial penalty has almost no significant influence on the performance of stock in BorsaIntanbul. They also revealed that penalties have been absorbed into stock price before the announcement.

Ghafoor, Zainudin, & Mahdzan (2019) conducted the study to examine the firms' level of asymmetry of information in Malaysia for the study period of 200-2016. The study applied OLS regression, event study and simultaneous equation techniques and found that information asymmetry increases as fraud discover. The study revealed no evidence of divergence in asymmetry of information across regulator wise and fraud wise sub samples. Sane (2019) study the impact of accounting fraud disclosure on behaviour of investors. They found that investors exposed to accounting fraud using account holding data of investors. The study also shows no difference in the trading behaviour of the control investors over the period of one month.

Hu (2014) investigated whether affiliation of auditors with Olympus contributes to the different perception quality of audit on the announcements affecting the reputation of auditors of Olympus. They conducted the Multivariate linear regression and event study on 918 sample firms of the Tokyo stock exchange. The study found that Japanese investors do not affect with respect to negative information arising from Olympus' auditors for firms associated and not associated with those auditors.

In India, Singh et al. (2016) analyzed underlying causes contributing the frauds committed in banking sector of India. The study considered dual approach i.e. collection of data from secondary sources and primary sources by conducting the interview of officials, bankers of banks, policy makers, crime & compliance officers and auditors. The study revealed the main reasons of fraud which include faulty incentive mechanism for employee: lack of adequate supervision of top management, corporate borrowers and third party agencies; collusion between staff and weak regulatory system.

Tay, Puah, Brahmana, & Abdul (2016) emphasised on the effect of white collar crime announcement in the stock price. The results of the study show that Average Abnormal Return was negative and not significant which reflect that information about white collar crime had been leak to public before the actual date of announcements. It was surprised to know that AAR was positive 2 days before the date of event and turned out to negative before one date. The similar results were also found by Firoz et al. (1991), Voon et al. (2008).

Empirical evidences also demonstrate use of event study to gauge the reaction of the stock price behaviour with respect to positive or negative the announcement. Yin et al. (2018) analysed the role of time varying betas, event induced variance and conditional heteroskedasticity in the estimation of abnormal return around important news announcements. On the basis of 1238 positive and 485 negative profit warnings by listed companies in Hong Kong Stock Exchange, they found presence of price reversal patterns following both positive and negative warnings. The study follows the arguments of Lui et al. 2009; Bremer & Sweeney 1991; and Atkins & Dyl 1990. In Saudi Arabia, Syed & Bajwa (2018) studied the response of stock market against the announcements of quarterly earnings based on 1601 events of 115 firms. They found that Saudi stock market does not bear semi-strong form of Efficient Market Hypothesis. Another study on reaction on earning announcements conducted by Angelovska (2017) document that Macedonian investors did not react to the positive news of the companies where as Anwar et al. (2017); Aharony & Dotan (1994); Denis et al. (1994); Michaely et al. (1995) witnessed the positive significant abnormal returns around the announcements. Johnson (1999) who showed the abnormal returns during recession were positively higher than boom period. The research conducted by Salminen (2008), documented the interest of investors will be more in assessing information of earning announcements. Renata et al. (2017) based on market model of event study found the positive statistically insignificant AAR exist within the event. Maitra & Dey (2012) incorporated the CAPM model and Market model separately to measure the market response of dividend announcement in Indian stock market. Bhattacharjee & De (2018) observed that the market reaction to firm specific corporate news varies according to the type of new across different industry groups. They revealed that finding of the study in Indian context cannot be generalized with the studies in developed markets like US and UK (Antweiler & Frank 2006; Sprenger & Welp 2011; Neuhierl et al. 2013; Ryan & Taffler 2004).

The extent literature also has recognised the importance of event study to measure the effect of announcement of Merger and Acquisition on Shareholders' wealth. Cho & Ahn (2017) investigated the role of stock payment that results in ownership sharing foreign targets. They found that stock payment in cross-border M & A has a detrimental effect on shareholder value because of the negative signalling effect and stock payment can be beneficial when a foreign target located in a weaker institutional environment and when the cultural distance is large. Another studies conducted by Zaremba & Plotnicki (2016); Dutta & Jog (2009) found strong evidence that announcement of a takeover creates value for both bidder and acquirers in the short run while Chakraborty (2010) derived no value addition for the shareholders. Rani et al. (2015) documented that cross-border acquisitions of high tech sector target firms in developed markets generate better wealth, supported the findings of Eun et al 1996; Conn et al. 2005; Pyykko 2009; Gubbi et al. 2010 and Kohli & Mann 2012. Patel (2018) compared before and after merger position of long term profitability with respect to selected Indian public sector. The study found mix (positive and negative) impact on profitability parameters.

Event study is also used by Wronska et al. (2018) to measure market reaction to share repurchase announcement and the factor which determine which determine the pattern of the market reaction in Poland; Chakrabarti (2017) to investigate the effect on stock returns after stock split in Indian context; Achleitner et al. (2018) to find out effect of foundation ownership on shareholder value; Yildiz et al. (2017) to measure the market reaction to stock grouping announcements; Tan et al. (2017) to explore the influence on corporate governance news on stock performance; Basgoze et al. (2016) to examine the effects of brand value announcements on stock returns of Turkish firms and Tuli & Shukla (2015) to analyze the effect of Qualified Institutional Placement Announcements on Indian Capital Market in India.

From the review of previous studies, it can be observed that studies have been conducted to analyze the impact of fraud on the financial performance of firms. The literature is also present to document the reaction of stock price with respect to various announcements. The present study fills the gap in the literature as it emphasised on stock price reactions for frauds' announcements in context of Indian Banks.

### 3. Research Methodology

**Sample Selection and Sources of Data:** In the present study, fraud announcements are considered as event. The study seeks to analyze the impact of bank fraud announcements on the share price of concerned banks. For this purpose we considered the fraud cases in banks which amounted to ₹ 1000 crores or more. The study covers the period from January 2014 to December 2018. Table-1 provides description of samples considered for the study:

**Table 1** Description of Sample Bank Frauds

Fraud Company (Formation year)	Promoters/ Director	Nature of Activity	Bank Suffered Most	Fraud Amount (Crores)	CBI Circular issued/ FIR Registered	Code
Totem Infrastructure Ltd (1997), Hyderabad based	Totalpudi Salalith/ Totalpudi Kavitha	Road/ Water Infrastructure Projects	SBI	₹ 1394.43	22-03-18	Case-I
Rotomac Global Private Limited (1992), Kanpur based	Vikram Kothari/ Sadhana Kothari and Rahul Kothari	Trade and Manufacturing Pens	Indian Overseas Bank	₹ 3695.39	18-02-18	Case-II
Firestar Diamond (1999); Gitanjali Group (1966), Mumbai based	Nirav Modi/Nishal/ Ami/ Mehul Choksi	Diamond Merchant	PNB	₹ 11394	13-02-18	Case-III
Kingfisher Airlines Limited (2003), Mumbai based	Vijay Malya	Domestic and International air travel	SBI	₹ 9091.4	27-02-16	Case-IV

Source: Authors' own compilation

In order to analyze the effect of announcements of bank frauds on share price of the banks, the study identify those bank which suffer most in every case. Table-2 shows the list of banks suffered most in every sample cases with respected amount:

**Table 2** Top 5 bank suffered in each Sample Case

Case-I	Case-II	Case-III	Case-IV
State Bank of India	Indian Overseas Bank (₹ 771.07 Crores)	PNB	State Bank of India
Union Bank of India	Bank of India		IDBI Bank
Bank of Baroda	Union Bank of India ((₹ 458.95 Crores)		Punjab National Bank
IDBI	Bank of Baroda (₹ 456.63 Crores)		Bank of India
Punjab National Bank	Allahabad Bank (₹ 330.68 Crores)		Bank of Baroda

Source: Authors' own compilation

The historical data of stock price of the identified banks are collected from the website of National Stock Exchange (NSE) on daily basis and the S&P CNX Nifty 50 is considered as market proxy.

**Event Study:** Event Study is used to analyze the effect of banks' fraud announcements on share price movements of victim banks. Following the Ball & Kothari (1991), 21 days event window is used to compute the abnormal return which consists of event date, 10 days before the event and 10 days after the event. The study takes 250 days before event window to compute the expected return. The event is the day on which FIR registered by CBI and issued the circular for fraud detection. It is important to mention here that event date of Case-III and Case-II were not trading day due to holiday, that's why next trading day is used as event date.

**Table 3** Classification of Period for Event Study

Case	Estimation Period	Pre-Event Period	Event Day	Post Event Period
I	06-03-2017 to 07-03-18 (250 days)	08-03-18 to 21-03-18 (10 days)	22-03-2018	23-03-18 to 09-04-18 (10 days)
II	01-02-2017 to 01-02-18 (250 days)	02-02-18 to 16-02-18 (10 days)	19-02-2018	20-02-18 to 06-03-18 (10 days)
III	27-01-2017 to 29-01-18 (250 days)	30-01-18 to 12-02-18 (10 days)	14-02-2018	15-02-18 to 28-02-18 (10 days)
IV	11-02-2015 to 12-02-16 (250 days)	15-02-16 to 26-02-16 (10 days)	29-02-2016	01-03-16 to 15-03-16 (10 days)

Source: Authors' own compilation

According to Syed & Bajwa (2018); Sharma and Verma (2016), abnormal returns are computed as:

$$AR_{it} = R_{it} - E(R_{it})$$

where:

$AR_{it}$  = Abnormal return of the security i in the period t.

$R_{it}$  = Actual return for the security i in the period t.

$E(R_{it})$  = Expected return for the security i in the period t.

Expected return for the company  $i$  in the period  $t$  is computed as-

$$E(R_{it}) = \alpha_i + \beta_i R_{mt}$$

$\alpha_i$  = Intercept term

$\beta_i$  = Regression constant

$R_{mt}$  = Return of the market in the period  $t$

The significant value of t-test at 5% level of significance shows Abnormal Returns are statistically significant from zero and fraud announcement events effect the stock price of concerned banks. (Chakrabarti2017; Adnan et al. 2016; Yin et al. 2018)

In order to ascertain the magnitude of abnormal returns over the entire event window, Abnormal Returns are cumulated to compute Cumulative Abnormal Return (CAR).

Average Abnormal Return (AAR) is the average of cross sectional abnormal returns for each day in the event window which is computed as:

$$AAR_t = \frac{1}{n} \sum_{i=1}^n AR_{it}$$

Cumulative Average Abnormal Returns (CAARs) are computed by summation of Average Abnormal Returns (AAR).

Harris & Gurel (1986) suggested the Mean Volume Ratio (MVR) to test whether there is any abnormal trading volume around the announcement day. Mean Volume Ratio is computed as:

$$MVR_t = \frac{1}{N} \sum VR_{it}$$

And

$$VR_{it} = V_{it} / V_i / M_{it} / M_i$$

At normal level, Volume Ratio (VR) is equal to 1 indicates that the firm stock does not witness abnormal trading volume effect.

Where,

$VR_{it}$  is the standardized measure of the volume traded of stock  $i$  according to market variation.

$V_{it}$  is the traded volume of the stock  $i$  for the day  $t$

$V_i$  is the average of traded volume of stock over 40 days prior to event window (-50, -11)

$M_{it}$  is the traded volume of the market index for the day  $t$

$M_i$  is the average of traded volume of market index traded over 40 days prior to event window (-50, -11)

Following the study of Yildiz et al, (2017) and Harris & Gurel (1986), we consider 40 days (8 weeks) prior to event window for the computation of Volume Ratio because short estimation period prevent overlapping effect of announcements.

#### 4. Analysis and Interpretation

Table-4 presents the Abnormal Returns and test statistics of stock price of the concerned banks during the event window of -10 and +10 days. The abnormal return is the difference between Actual Return and Expected Return (computed with Ordinary Least Square). The result shows that the reaction of the stock price of banks was negative to the announcements of fraud except the Case-IV. The highest negative reaction was observed in the stock price of Punjab National Bank i.e. -8.72% (Case-III) on the event day which decreased to -12.98% on the next day of fraud announcement. The share price of PNB was declined by more than 12% on 9<sup>th</sup> day of post event period and abnormal loss was 11.30% on that day. The reason was the announcement made by the bank related to quantum of fraud. The bank reported to exchange that the quantum of unauthorised transactions using SWIFT could increase by ₹ 1322 Crore. In the Case-I and II, reaction of stock price of banks was also negative i.e. -1.91% and -1.52% and continue negative on the next day of the event. In Case-IV, surprisingly the positive abnormal return was found on event date. From in-depth analysis, we found, the bank declared the fraudulent company as wilful defaulter on Feb 16, 2016 and registered the complaint on Feb 27, 2016. It was not the trading day so the study consider the next immediate trading day as event. The effect of the fraud was already replicated by the stock price of SBI before the event date. It is also found that in Case-IV, the abnormal loss was 4.25% on 9<sup>th</sup> day of pre-event period, because of the chairman of bank (Arundhati Bhattacharya) reiterated that the struggle of financial sector with increasing NPA will continue. After her statement, NSE PSU Bank index was down by more than 6% on that day. The test statistics (p-value) shows that Abnormal Returns are significantly diverges from zero and depicts the effect of fraud announcements on the stock price of banks.

**Table 4** Abnormal Returns and Test Statistics in Event Window

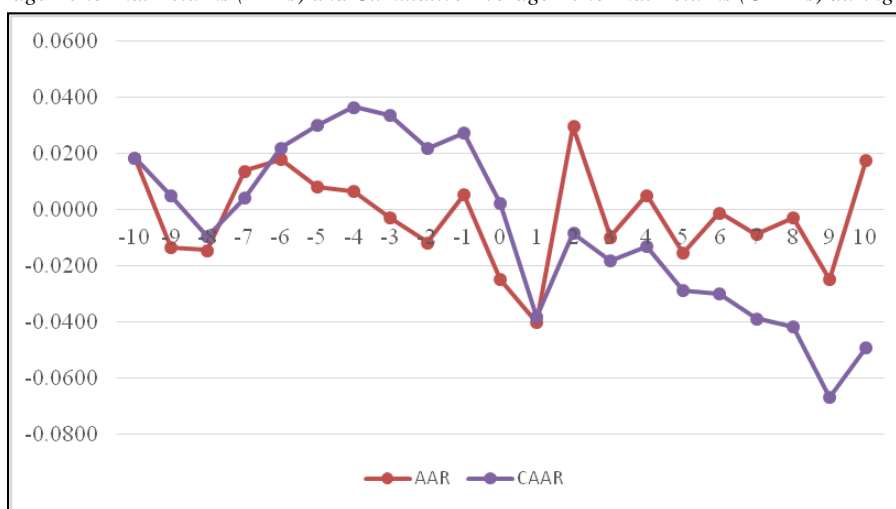
Event Window	Case-I		Case-II		Case-III		Case-IV	
	AR	p-value	AR	p-value	AR	p-value	AR	p-value
-10	0.0271	0.0000**	-0.0124	0.1129	0.0130	0.7056	0.0462	0.0001**
-9	-0.0104	0.1113	0.0006	0.9353	-0.0021	0.9520	-0.0425	0.0002**
-8	-0.0326	0.0000**	-0.0122	0.1202	-0.0209	0.5454	0.0076	0.5018
-7	0.0082	0.2117	0.0286	0.0003**	0.0301	0.3832	-0.0117	0.2998
-6	0.0118	0.0720	-0.0053	0.4973	0.0350	0.3112	0.0297	0.0088**
-5	-0.0020	0.7564	0.0110	0.1609	0.0246	0.4753	-0.0013	0.9097
-4	0.0222	0.0008**	0.0347	0.0000**	-0.0153	0.6569	-0.0154	0.1736
-3	0.0000	0.9986	-0.0099	0.2063	-0.0091	0.7910	0.0071	0.5305
-2	0.0005	0.9365	-0.0431	0.0000**	0.0158	0.6474	-0.0203	0.0720
-1	-0.0105	0.1108	0.0028	0.7248	0.0106	0.7577	0.0187	0.0979
0	<b>-0.0169</b>	<b>0.0103*</b>	<b>-0.0191</b>	<b>0.0152*</b>	<b>-0.0872</b>	<b>0.0119*</b>	<b>0.0230</b>	<b>0.0418*</b>
1	-0.0084	0.2008	-0.0038	0.6255	-0.1298	0.0002**	-0.0192	0.0897*
2	0.0285	0.0000**	-0.0028	0.7243	0.0033	0.9227	0.0895	0.0000**
3	0.0224	0.0007**	0.0008	0.9165	-0.0539	0.1189	-0.0087	0.4384
4	-0.0020	0.7551	-0.0162	0.0385*	0.0069	0.8403	0.0319	0.0050**
5	-0.0307	0.0000**	-0.0039	0.6138	-0.0036	0.9163	-0.0239	0.0343*
6	0.0119	0.0703*	0.0074	0.3415	-0.0161	0.6407	-0.0080	0.4762
7	0.0065	0.3170	0.0011	0.8849	-0.0373	0.2796	-0.0060	0.5936
8	0.0145	0.0275*	0.0133	0.0892	-0.0351	0.3085	-0.0046	0.6802
9	0.0053	0.4165	0.0031	0.6905	-0.1130	0.0012**	0.0048	0.6679
10	-0.0040	0.5389	-0.0059	0.4469	0.0469	0.1742	0.0333	0.0033**

Source: Authors' own compilation;

Note: \*\* Significance at 1% level and \* Significance at 5% level.

Graph-1 shows Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs) during Event Window of -10 and +10. The study finds negative AAR (-2.5%) on the event date and highest negative impact (AAR) was observed on next day from the event (-4.03%). The result also shows how highest positive CAAR (3.66%) on four day before the event reached to 0 on event day and remain negative during all post event days due to severe combined negative effect of fraud announcements.

**Graph-1** Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs) during Event Window



Source: Authors' own compilation

Table-4 shows the descriptive statistics of Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs) of every cases in seven event windows (-10,+10; -5,+5; -3,+3; -1,+1; 0,+3; 0,+5 and 0,+10). In the Case-III and II, the average of ARs and CARs is negative in all event windows. In the Case-III, the worst AR is found on the immediate next day of the event (-12.98%) and CAR is found on the third day after the event (-18.59%). In Case-II, the negative AR (-1,91%) of the event date is worst AR in events 1,+1; 0,+3; 0,+5; 0,+10 and AR of two day before the event is the worst AR in events. -10,+10; -5,+5; -3,+3. It also shows that highest positive CAR on fourth day before the event (4.50%) reaches to highest negative CAR on fifth day after the event (-5.05%). In Case-I, highest negative AR (-3.26%) and CAR (-1.60%) belong to -10 and +10 window. In Case-IV, reaction of stock price (AR and CAR) is worst in pre-event period and best in post event period.

Table 4 Abnormal Returns and Cumulative Abnormal Returns during multi day Event Windows

Case-I								
AR					CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	0.0020	0.0169	0.0285	-0.0326	0.0177	0.0181	0.0453	-0.0160
-5,+5	0.0003	0.0179	0.0285	-0.0307	0.0162	0.0162	0.0399	-0.0110
-3,+3	0.0022	0.0170	0.0285	-0.0169	0.0152	0.0173	0.0399	-0.0110
-1,+1	-0.0119	0.0044	-0.0084	-0.0169	0.0002	0.0129	0.0142	-0.0110
0,+3	0.0064	0.0224	0.0285	-0.0169	0.0109	0.0227	0.0399	-0.0110
0,+5	-0.0012	0.0228	0.0285	-0.0307	0.0147	0.0210	0.0399	-0.0110
0,+10	0.0025	0.0173	0.0285	-0.0307	0.0236	0.0193	0.0453	-0.0110
Case-II								
AR					CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	-0.0015	0.0163	0.0347	-0.0431	-0.0165	0.0250	0.0450	-0.0503
-5,+5	-0.0045	0.0193	0.0347	-0.0431	-0.0121	0.0312	0.0450	-0.0503
-3,+3	-0.0107	0.0160	0.0028	-0.0431	-0.0131	0.0237	0.0351	-0.0309
-1,+1	-0.0067	0.0112	0.0028	-0.0191	-0.0193	0.0123	-0.0053	-0.0282
0,+3	-0.0062	0.0088	0.0008	-0.0191	-0.0284	0.0029	-0.0244	-0.0309
0,+5	-0.0075	0.0081	0.0008	-0.0191	-0.0350	0.0106	-0.0244	-0.0503
0,+10	-0.0024	0.0094	0.0133	-0.0191	-0.0345	0.0091	-0.0244	-0.0503
Case-III								
AR					CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	-0.0161	0.0468	0.0469	-0.1298	-0.0860	0.1482	0.0817	-0.3841
-5,+5	-0.0216	0.0486	0.0246	-0.1298	-0.0425	0.1188	0.0817	-0.1859
-3,+3	-0.0358	0.0561	0.0158	-0.1298	-0.0358	0.1126	0.0817	-0.1859
-1,+1	-0.0688	0.0720	0.0106	-0.1298	-0.0197	0.1092	0.0817	-0.1353
0,+3	-0.0669	0.0562	0.0033	-0.1298	-0.1147	0.0768	-0.0055	-0.1859
0,+5	-0.0440	0.0562	0.0069	-0.1298	-0.1367	0.0686	-0.0055	-0.1859
0,+10	-0.0381	0.0542	0.0469	-0.1298	-0.2043	0.1032	-0.0055	-0.3841
Case-IV								
AR					CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	0.0062	0.0292	0.0895	-0.0425	0.0576	0.0476	0.1346	-0.0005
-5,+5	0.0074	0.0332	0.0895	-0.0239	0.0546	0.0494	0.1346	-0.0005
-3,+3	0.0129	0.0379	0.0895	-0.0203	0.0450	0.0442	0.1115	-0.0005
-1,+1	0.0075	0.0232	0.0230	-0.0192	0.0271	0.0123	0.0412	0.0182
0,+3	0.0211	0.0490	0.0895	-0.0192	0.0694	0.0444	0.1115	0.0220
0,+5	0.0154	0.0428	0.0895	-0.0239	0.0871	0.0447	0.1346	0.0220
0,+10	0.0102	0.0327	0.0895	-0.0239	0.0946	0.0342	0.1346	0.0220

Source: Authors' own compilation

Table-5 depicts the Volume Ratio (VR) and Mean Volume Ratio (MVR) during the event window of -10, +10. At normal level, Volume Ratio (VR) is equal to 1 signifies that the firm stock does not witness abnormal trading volume effect. The result shows highest VR in Case-III (3.0965) among all fraud cases on event day. In Case-III, VR (9.9583) reach to highest level of abnormal trading on the next day of event and continue till the fifth day of post event period. On the 9<sup>th</sup> day of post event period, the abnormal volume of Case-III reached to 6.9421 which is in line with the result of abnormal loss. The Volume Ratios of Case- I, II and IV were found near to normal level in the event window signifies less impact on trading volume of stock. The MVR was also above than normal level on event day contains the major effect of abnormal volume of Case-III.

Table 5 Volume Ratio and Mean Volume Ratio during Event Window

Event	VR	VR	VR	VR	MVR
-10	0.8815	0.6493	0.7170	1.1868	0.8587
-9	0.7583	0.8115	0.5203	1.7450	0.9588
-8	0.8423	0.5967	0.7865	1.4262	0.9129
-7	1.8402	0.4244	0.7061	1.0482	1.0047
-6	0.7345	0.3942	0.6529	1.1519	0.7334
-5	0.6595	0.6221	0.9461	0.7976	0.7563
-4	1.4445	0.7106	0.8152	1.3579	1.0821
-3	0.8532	0.8213	0.5640	1.0348	0.8183

-2	0.8406	0.9219	0.4975	0.7666	0.7567
-1	0.8654	0.4928	0.7632	0.9807	0.7755
<b>0</b>	<b>0.8876</b>	<b>0.9229</b>	<b>3.0965</b>	<b>1.4683</b>	<b>1.5938</b>
1	1.1084	0.9548	9.9583	0.7788	3.2001
2	0.9749	0.2885	6.9209	1.8562	2.5101
3	0.8582	0.1985	5.6253	1.2376	1.9799
4	1.4442	0.6342	6.3645	1.6349	2.5195
5	0.8423	0.4415	2.0032	1.0904	1.0944
6	0.7807	0.5384	0.8691	0.9012	0.7724
7	0.9108	0.2935	1.3318	0.7535	0.8224
8	0.8965	0.3126	1.6846	1.0309	0.9812
9	0.7780	0.3758	6.9421	0.7603	2.2141
10	0.8227	0.4849	4.7739	0.8344	1.7290

Source: Authors' own compilation

## 5. Conclusion

The frauds have been continuously increasing in banks which further lead to adverse consequences for the economy. The studies that emphasised on the information effect of frauds on stock price are rarely found in the context of Indian banking sector. In this study, we investigate the reaction of stock prices to the release of information regarding fraud in banks. The fraud cases are selected in on the basis of value involved which exceeds ₹ 1000 crores during the study period of January 2014 to December 2018. Then we identified the bank which suffered most due to fraudulent case. The study examines four sample fraud cases viz. Totem Infrastructure Ltd. (fraud amount ₹ 1394.43 crores, highly suffered bank SBI); Rotomac Global Private Limited (fraud amount ₹ 3695.39 crores, highly suffered bank Indian Overseas Bank); Firestar Diamond & Gitanjali Group (fraud amount ₹ 11394 crores, suffered bank PNB) and Kingfisher Airlines Limited (fraud amount ₹ 9091.4 crores, highly suffered bank SBI). We used event study to gauge the information effect of fraud announcements in Indian Banking Sector. Fraud in banks which is negative news, one might expect that it would lead to negative reaction on the stock price. We used event study with different event window to gauge the immediate and subsequent information effect of fraud announcements.

The findings of the study document that Abnormal Returns (AR) were negative and significant at 5% level of significance except Case-IV. This shows that abnormal loss to the announcement effect of fraud among Indian banks. The results also show the relationship between severity of fraud and information effect as the amount of fraud increases, the abnormal loss also rises. In Case-III, PNB was suffered by ₹ 11394 crores, the abnormal loss was 8.72% which was highest among all cases. In Case-II, Indian Overseas Bank was endure by ₹ 771.07 crore and abnormal loss was 1.91% followed by Case-I where fraud amounted to ₹ 357.64 crores for SBI and abnormal loss was 1.69% on event date. These results are supported by the Volume Ratio, where highest abnormal volume was found in the stock price of PNB (Case-I) followed by IOB (Case-II) and SBI (Case-I) on event date. Interestingly in Case-IV, positive abnormal return was found on event date because bank declared the fraudulent company as wilful defaulter before registering the complaint. The effect of the fraud was already replicated by the stock price of SBI.

The findings of the announcement effect of fraud in banks on stock price may lead to better implication for investors and researchers. The investors must have close eye on these announcements and develop their investment strategy accordingly. The presence of abnormal loss on the subsequent trading day of event (except Case-IV) shows that investors in India are concern about the announcement of frauds. It is helpful for the researchers to assess the behaviour of the investors with respect to financial and non-financial information.

The study is limited to bank fraud announcement effect on stock price of concerned bank in short duration event window. However, the research can be conducted for long duration event window. The future researches may also emphasised on announcement effect of corporate frauds in developed and emerging countries.

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