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Impact of Merger and Acquisition Announcements on Stock Returns and Intraday Volatility: Evidence from Indian Banking Sector

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Abstract

The primary objective of present study is to examine the impact of merger and acquisition announcements during 2000–2018 on stock returns and intraday volatility of banks listed on National Stock Exchange in India. The sample of 383 mergers and acquisitions events has been analyzed with the help of event study methodology. Findings suggest that consolidation in Indian banking sector leads to positive average abnormal returns and wealth creation for acquirer bank's shareholders. These findings are in agreement with Onikoyi et al. (2014), Kumar et al. (2011), and Anand and Singh (2008), and contrary to the evidence provided by Sim (2015), Asimakopoulos and Athanasoglou (2012), and Cybo-Ottone and Murgia, (2000). Further, results show that merger and acquisition in banking sector lead to curvy jumps in volatility around announcement date, which implies that disclosure of restructuring events in the banking sector affects return variability. These results confirm the observations by Pessanha et al. (2016), Kamau (2016), and Louhichi (2008).

Keywords: Acquisition, Merger, Stock Return, Average Abnormal Return, Volatility, Event Study Analysis

Introduction

Strategic alliances in banking sector have become popular from last two decades and corporate restructuring is common in global business world (Abbas et al., 2014). Consolidation trend in financial system emerges from American banks and European banks (Claessens and Horen, 2014). The period from 1980 to 2003 has witnessed the great decline of around 8000 from 16,000 in number of banks in the United States and increase from around 22 to 45% in total assets of 10 largest banks due to integration in banking sector (Altunbas and Marques, 2008). Different researchers documented different factors that drive merger and acquisition (M&A) in banking sector. The restructuring of banks began due to the eruption of financial crises in Asia in 1997 and, as a consequence, risk increased in financial markets and volatility of stock returns in banking sector amplified (Tan and Hooy, 2004). Because of this economic downfall, corporate borrowers face difficulties in repaying the loans (Olisaemeka, 2010). Besides, financial sector also faces challenges from globalization and liberalization, which result in the need to regulate banking sector and, as a result, M&As waves hit this sector (Cetorelli and Goldberg, 2011). Advancement in information technologies and financial deregulation are another reasons behind rapid hike in the number of mergers and acquisitions in financial sector (Altunbas and Marques, 2008).

Some researchers reported that integration in banking sector is eminent as it reduces competition by excluding weak banks and increased market share (Kumar et al., 2013; Hannan and Pilloff, 2009; Pandey, 2005). Some studies claimed that synergy benefits and improvement in merged bank's efficiency are the main attractions to adopt M&A strategies by banks (Anand and Singh, 2008). Campa and Hernaldo (2006), Houston (2001), Furlong (1994), and Hughes and Mester (1998) proclaimed that M&A deals in banking zone assist in reducing cost due

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to economies of scale and increase in bank's revenues, which ultimately lead to enhance the value of banks. Consolidation deals in banking sector are generally horizontal in nature as both parties involved in the deal possess the same business (Alexandra and Ion, 2016). Some other studies reported that increase in M&A events between banks is the result of regulatory restrictions by government (Rhoades, 1998). Dilshad (2013) stated that many consolidation events in the United Kingdom and the United States were result of regulatory framework. In developing countries, M&As in banking industry are the results of policies made by the government to bring stability in banking and financial sector (Hawkins and Mihaljek, 2001). Another reason behind these deals is tax benefits, i.e., reduction in tax due to setting off losses from profits (Auerbachand Reishus, 1987; Ghosh, 2004). But gradually, corporate firms found it beneficial to enter into strategic consolidation and realized that these deals help in achieving their goals (Zahid and Shah, 2014). So, these are some of the possible drivers of consolidation in banking sector due to which the Indian banking and financial service sector witnessed a huge number of restructuring activities in last two decades. Besides exploring the factors behind increasing M&A deals in banking sector, the other major focus of researchers is to figure out the benefits the banks obtain from these deals. Many studies are conducted by various researchers, by examining financial as well as stock performance, to evaluate the gains of banks from these deals but the results obtained are conflicting in nature (Aik et al., 2015). Sinha et al. (2010) concluded that M&A deals are beneficial for the parties involved, while Pautler (2001) reported that these deals are not proved useful for acquirer parties and there is a conflict in empirical studies regarding performance of banks. Hence, the current study is an attempt to explore the real benefits of integration deals in banking era, by examining announcement impact on bank stock prices and stock spread in India. The rest of the paper is organized in five sections. Section II reviews the literature regarding M&As in banking and financial sector. Section III discusses the data and methodology used to find results. Section IV states the analysis and estimated results of the study. Section V concludes the study and provides the implications of the study.

Literature Review

A strand of literature has documented the stock market reaction to the M&A announcements in developed countries, with reference to banking sector; but, there is lack of evidence regarding impact of mergers and acquisitions in developing country's banking sector (Kumar, 2009). A plethora of empirical studies are devoted to examine the impact of M&A on banks in pre- and post-event era. This contention regarding bank's benefits associated with M&A deals is still unsettled. Some studies argues that M&A in banking sector are beneficial (Onikoyi et al., 2014; Zahid and Shah, 2014; Anand and Singh, 2008; Campa and Hernaldo, 2006; Scholtens and Wit, 2004; Resti and Siciliano, 1999); but on the contrary, some other proclaim that these deals fetch negative returns for the shareholders of acquiring firms (Sharma and Warne, 2012; Goyal and Joshi, 2012; Kumar et al., 2011; Kemal, 2011; Sinha et al., 2010; Ferretti, 2000). Campa and Hernaldo (2006) observed that M&A events are beneficial for target shareholders and generate zero returns to acquirer's shareholders. Roll (1986) suggests that M&A events lead to the migration of wealth from the acquirer bank's shareholders to the shareholders of target bank. These results are reconfirmed by Aik et al. (2015). The literature can be subdivided in two parts for better understanding of M&A events on stock return and stock volatility of Indian banks:

Consolidation in Banking Sector and Stock Return

Adegboyega and Dele (2014) reported that shareholder's wealth diminishes in the post-merger scenario because of increased non-performing assets of merged banks, which leads to erosion of profits and less or no dividend to shareholders. Imala (2005) reported low or nil returns to shareholders of acquirer banks. Similarly, Finkelstein (2009) found that these deals result in negative cumulative average returns (CAR) for acquirer banks due to increase in management cost (Greve, 1999) and huge premium that managers have to pay to generate operating efficiency (Chronopoulos and Girardone, 2013). Harada and Takatoshi (2011) and Somoye (2008) are of the view that M&A between banks seemed to be beneficial in initial stages but these benefits do not sustain in the long term. Kumar et al. (2011) reported no benefit to either acquirer or target bank in forced merger events and voluntary bank mergers proved more beneficial for acquirer banks than target banks. While, no improvement in performance of banks in post-announcement period is noted by Kemal (2011), no increase in the productivity is reported in post-merger period by Maksimovic and Phillips (2001) and Choi and Murtagh (2004).

Pessanha et al. (2016) found that announcement of M&A event and profitability are inversely related. Similarly, Chong et al. (2006) reported value destruction for shareholders in case of forced bank mergers. On the contrary, Choi et al. (2010) claims positive cumulative average returns from M&A events for acquiring banks. These findings are in agreement with findings by Gathecha (2014), who conducted a study on oil industry M&A and found positive abnormal returns for the shareholders. Pilloff (1996) claimed that consolidated banks are able to generate value than two individual pre-merger banks. Chong (2005) reported that acquirer banks generate value at the expense of target banks in Malaysia. Camargos and Barbosa (2009) documented that going for M&A as a strategic tool is not a reliable decision because of complexities involved and unpredictable results from these events.

Zhang et al. (2016) observed that difference between the outcomes of various empirical studies is due to geographical specialization of acquiring banks. Berger et al. (1999) found that increased transaction cost in developed countries and involvement of high-risk premium in developing countries are the reasons behind negative CAR from integration deals. Moreover, different event window and different time period (whether short or long term) selected in different studies also lead to difference in the results found in the various empirical studies (Kumar et al., 2011). Hence, there is a need to examine the stock return in context with M&A deals in banking sector, to found how market performs during these announcements.

Consolidation in Banking Sector and Intraday Stock Volatility

Bannette (2016) defined stock volatility as the rate of variability in stock prices of a security, either downward or upward, during a given period of time. Volatility examination is required to obtain the speed new information takes to fully absorb in market (Louhichi, 2008). Kumar et al. (2013) noted that if volatility reduces, it means value creation for the shareholders of acquiring banks, but, on the other hand, if volatility increases, it means destruction of value for the shareholders of acquiring banks. The shareholders expect an increase in volatility on the announcement of consolidation event but, in the post-event period, volatility comes down as market is efficient and fully absorbed the information. Pessanha et al. (2016) reported that announcement of M&A event in banking era causes increase in stock volatility, which leads to increase in the assumed risk of shareholders. A considerable attention is given to stock volatility from stock return by researchers in emerging markets and number of studies have examined the relationship between M&A events and stock spread (Like Langetieg et al., 1980; French and Roll, 1986; Barclay, 1990; Levy and Yoder, 1993; Smith et al., 1997; Bharath and Wu, 2005; Geppert & Kamerschen, 2008) but there is no consensus in the findings. There is a dearth of literature examining relationship between M&A deals and stock spread in banking industry (Zhu et al., 2014; Stunda, 2014). The reason behind this disagreement is the different regulatory frameworks in emerging and developed countries, data taken by different researchers to conduct the study (whether daily or weekly), type of deal, economy selected for study, etc. (Kumar et al., 2013).

Though plenty of literature is available that has examined bank's financial performance and stock performance, there is a research gap and the evidences are little scarce with respect to Indian Banking industry (Kaur, 2012; Mishra and Chandra, 2010; Jawa, 2009; Mantravadi and Reddy, 2008; Kar, 2006). A conflict in result drawn by various empirical studies makes it more difficult to draw a common conclusion regarding impacts of integration deals on volatility. Hence, the present study shall be an attempt to plug this literature gap and will help to understand banking stocks' performance during M&A events.

Research Objective and Sample Selection

To fill the above research gap and contribute to the existing literature, the motive of this study is to examine the impact of bank M&A announcements on stock prices and examine these events' impact on stock volatility. Data of all mergers and acquisitions that took place between 2000 and 2018 were taken from prowess$_{dx}$ database. Then, after filtering the data, only those banks were shortlisted, which are listed on National Stock Exchange (NSE) of India. The daily data of stock prices was collected for 21 days, i.e., the day of announcement of M&A event is taken as day 0, further 10 days stock prices data before the

day of announcement of M&A event, and 10 days stock price data after the announcement date of M&A event. The following steps were followed for filtering the data:

- Extracted data relating to all mergers and acquisitions that occur during 2000–2018 in banking sector were identified.
- Acquirer banks were included in sample, which were listed in NSE of India. Therefore, acquirer banks which were not listed on NSE at the time of announcement were excluded from the sample for the study.
- Finally, due to the nonavailability of required data and some other data limitations, the final sample size narrowed down to 383 M&A events. Secondary data extracted from $prowess_{dx}$ database have been used to finalize the sample for this study.

Methodology

A plethora of literature examining wealth effects of consolidation events in banking sector has used event study methodology to obtain results (Adnan and Hussain, 2016). The reason behind adopting event study methodology is, widely, believe that the disclosure of any type of new information can reflect in the stock prices in perfectly efficient market (Fama, 1976; Louhichi, 2008). Hence, this study takes integration event like M&A as an independent variable and examines its impact on two dependent variables, i.e., stock return and stock volatility.

Calculation of Stock Returns

To calculate the stock returns in pre- and in post-M&A eras, an event window of 21 days is decided. Where the day of announcement of event is taken as day 0 and data of closing, high and low prices is extracted from NSE of India for ten days before the event date and ten days after the event date. Final sample of 383 bank M&A events took place between years 2000 and 2018 in this study. For this purpose, closing prices of all the 383 banks were extracted from NSE in order to calculate stock returns. The following formula was used to obtain stock returns:

$$\mathbf{SR_{jt} = (P_{jt} - P_{jt-1})/ P_{jt-1}} \qquad \textbf{(Equation 1)}$$

Where:

SR_{jt} = Stock return of bank j at time t

P_{jt}= Closing Price of bank j on day t

P_{jt-1} = Closing Price of bank j on day t-1

Standard Returns

Nifty prices were derived to calculate nifty returns, so that abnormal returns can be calculated for the shareholders of acquiring banks, from an event of consolidation. Here, Nifty returns are considered as benchmark portfolio returns (i.e. the returns a bank would have been generated in absence of integration process) to be compared with the returns obtained by shareholders to calculate the abnormal returns. For this reason, nifty data of closing prices were extracted for the period of the study, i.e., from year 2000 to 2018. From these extracted prices, nifty return were calculated and compared with actual stock return, to get the abnormal return.

The reason for not considering the bank nifty indices is that, bank nifty is very narrow-based index containing only 12 stocks, while Nifty is broad-based indices containing 50 stocks. Where bank nifty captures the market volatility in respective sector only, nifty captures market-wide sentiments. Moreover, major banks compiled in our study sample are part of nifty; that is why, nifty is considered as benchmark returns in this study.

Hence, nifty returns, for the period from 2000 to 2018, were calculated and the following formula was applied to derive nifty returns:

$$\mathbf{NR_t = (NP_t - NP_{t-1})/ NP_{t-1}} \qquad \textbf{(Equation 2)}$$

Where:

NR_t = Nifty closing price at time t

NP_t = Price for Nifty

NP_{t-1} = Nifty closing prices on day t-1

Calculation of Abnormal Returns

To make a comparison of returns obtained with the consolidation event, nifty returns were calculated and treated as benchmark returns without the consolidation event. Both, stock and nifty returns were compared to derive the abnormal returns, as the primary motive of current study is to know whether restructuring events bring benefits for acquiring bank's shareholders. After calculating stock returns and nifty returns, abnormal returns were calculated by subtracting nifty returns from stock returns. The following formula was used to derive abnormal returns:

$$AR_{jt} = SR_{jt} - NR_{jt} \quad \text{(Equation 3)}$$

Where:

R_{jt} = Abnormal stock return for bank j at time t

S_{jt} = Stocks realized return for bank j and time t,

NR_{jt} = Expected return at time t, in absence of a merger event.

Average abnormal returns (AAR) were calculated by calculating the mean of abnormal returns from -10 to +10 days separately. Further from average abnormal returns, cumulative average abnormal returns (CAAR) were obtained. As the next step, line graphs were plotted to exhibit the calculated AAR and CAAR.

Calculation of Spread

Similarly, to check the impact of merger and acquisition of two banks on the intraday volatility of returns, high and low prices of stock and high and low prices from nifty were derived and following formula was applied to calculate volatility:

$$SS_t = SHP_t / SLP_t \quad \text{(Equation 4)}$$

Where:

SS_t = Stock spread for bank j at time t,

SHP_t = Stocks high price for bank j and time t,

SLP_t = Stocks low price for bank j at time t,

Standard Spread

Nifty high and low prices were derived to calculate nifty spread, so that abnormal spread can be calculated for the shareholders of acquiring banks, from an event of consolidation. Nifty high and low prices from year 2000 to 2018 for all the banks included in the sample separately were extracted and standard spread was calculated by using the following formula:

$$NS_t = NHP_t / NLP_t \quad \text{(Equation 5)}$$

Where:

NS_t = Nifty spread at time t,

NHP_t = Nifty high price at time t,

NLP_t = Nifty low price at time t,

Calculation of Abnormal Spread

Abnormal spread is a comparison of spread of returns in banking sector during M&A event, with the spread of returns in the absence of M&A event in banking sector. To calculate the abnormal spread, nifty spread is deducted from the stock spread, i.e.:

$$AS_{jt} = SS_{jt} - NS_{jt} \quad \text{(Equation 6)}$$

Where:

AS_{jt} = Abnormal stock spread for bank j at time t

SS_{jt} = Stocks realized spread for bank j and time t,

NS_{jt} = Nifty/expected spread for bank j at time t, in absence of a merger event.

Results and Discussion

To briefly discuss the results, this section has been divided into two sub-sections:

- Impact of Merger Announcements on Stock Returns of Acquiring Banks.
- Impact of Merger Announcements on Stock Volatility of Acquiring Banks.

Impact of Merger Announcements on Stock Returns of Acquiring Banks

The impact of consolidation schemes in banking sector is shown by calculating average abnormal returns and cumulative average abnormal returns, respectively, and presented in tabular form (see Table 1). Normally, post-M&A effects were examined but some studies like Campa and Hernaldo (2006), Cornett (2006), etc., also examined these impacts in pre-M&A period also. The present study shows positive AAR in pre-M&A period and this may be possible because of information leakage in the market. These results are consistent with the results by Kumar et al., (2011); Anand and Singh, (2008); Gathecha (2014); Somoye (2008). AAR becomes negative on the day +1, i.e., one day after the actual announcement of the integration event; again, it becomes positive up to fourth day of announcement. It declines from fifth day and continues to be positive and increasing on tenth day. Overall, positive returns for the acquirer bank's shareholders are there in pre-M&A as well as post-M&A period. These findings are

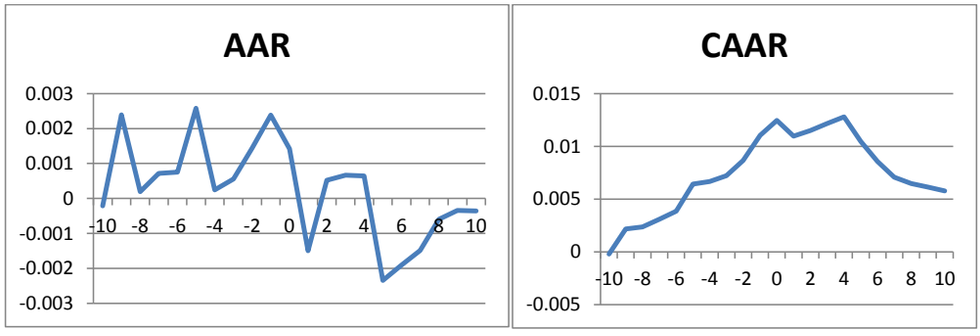
consistent with Chong (2005), Choi and Murtagh (2004), Kumar et al., (2011), and inconsistent with the findings by Ferretti (2000), Kemal (2011), Goyal and Joshi (2012), and Mall and Gupta (2019).

Table 1: Showing Calculations of Average Abnormal Return and Cumulative Average Abnormal Return for the Event Window

Day	*Average Abnormal Return*	*Cumulative Average Abnormal Return*
-10	-0.00021	-0.00021
-9	0.002389	0.002177
-8	0.000191	0.002368
-7	0.000719	0.003087
-6	0.000752	0.003839
-5	0.002584	0.006423
-4	0.000245	0.006668
-3	0.000558	0.007226
-2	0.001435	0.008661
-1	0.002386	0.011047
0	0.001421	0.012468
1	-0.00149	0.010973
2	0.000522	0.011495
3	0.000665	0.01216
4	0.000642	0.012802
5	-0.00234	0.010459
6	-0.00191	0.00855
7	-0.00149	0.00706
8	-0.00059	0.006468
9	-0.00034	0.006126
10	-0.00036	0.005766

Source: Author's calculations based on secondary data

Line graphs are also plotted to understand the results in better way. Pattern of average abnormal return during event window of 21 days is depicted in graph 1, while cumulative average abnormal returns from day -10 to +10 are plotted in graph 2. It can be noted that market reacts quickly to the earning announcements and it is clearly depicted by visualizing the stock behaviour in the graphs. These findings are consistent with findings by Greene and Watts, (1996), and are inconsistent with results by Neely (1987), Siems (1996), and Becher (2000).



Source: Author's Calculations based on secondary data

Fig. 1: Graphs 1 and 2 Showing Average Abnormal Return and Cumulative Average Abnormal Return During Event Window

Impact of Merger Announcements on Stock Volatility of Acquiring Banks

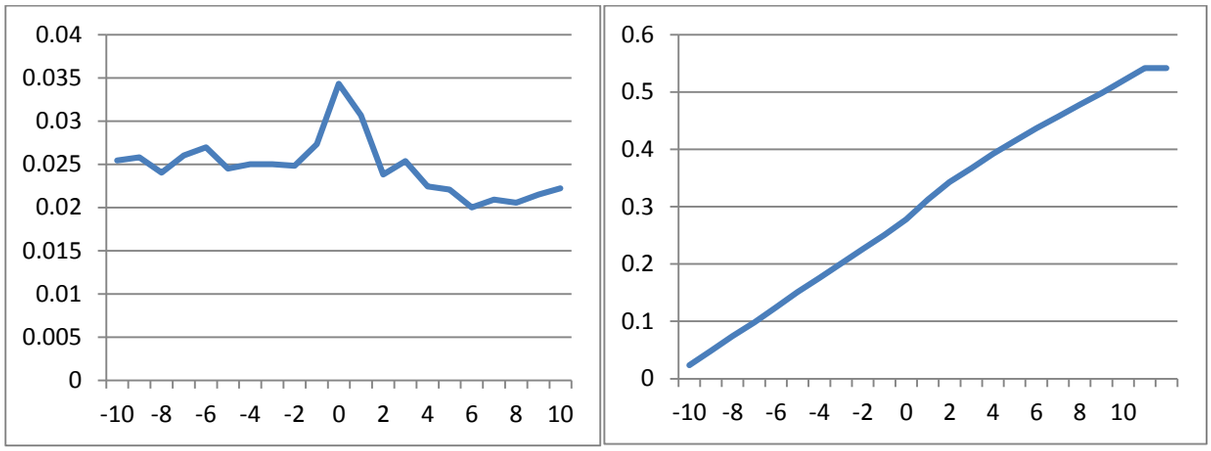
Average abnormal spread and cumulative average abnormal spread are calculated and presented in tabular form (see Table 2). Curvy jumps are observed in volatility pattern till the event date and it is downward sloping in post-event era. It implies that new information regarding M&A event in banking sector affects return variability negatively. It can also be concluded that M&A events in banking sector are responsible for jumps in volatility in pre- and post-event period in different ways. The results of present study are in consensus with findings by Pessanha et al. (2016); Kamau (2016), and Louhichi (2008).

Table 2: Showing Calculations of Average Abnormal Spread and Cumulative Average Abnormal Spread for the Event Window

Days	*Average Abnormal Spread*	*Cumulative Average Abnormal Spread*
-10	0.025447	0.025447
-9	0.025797	0.051243
-8	0.024023	0.075266
-7	0.026028	0.101294
-6	0.026952	0.128246
-5	0.024484	0.15273
-4	0.02499	0.17772
-3	0.025005	0.202725
-2	0.024844	0.227569
-1	0.027317	0.254886
0	0.034331	0.289217
1	0.030648	0.319865
2	0.023811	0.343676
3	0.025374	0.36905
4	0.022444	0.39149
5	0.022074	0.413568
6	0.020004	0.433572
7	0.020906	0.454478
8	0.020539	0.475017
9	0.021496	0.496513
10	0.02221	0.518723

Source: Author's Calculations based on secondary data

Graph 3 shows average abnormal spread of returns during event window, while graph 4 shows the cumulative average abnormal spread of returns obtained around consolidation events. It depicts that upward and downward movements in volatility of stock are continued throughout the event window, which implies that there is possible information leakage in pre-M&A period, which leads to increase in trading and instability in stock spread till post-merger period. Graph 4 depicts the cumulative average abnormal returns for the event window of (-10, +10) days. The graph for CAAS depicts that there is consistent increase in the CAAS during pre- and post-event window. These results are in confirmation with the results found by French and Roll (1986), Jayaraman et al. (1991), Bharath and Wu (2005), Kamerschen (2008), Mall and Gupta (2019). To sum up, the constant increasing average abnormal spread in pre-M&A period, during the M&A announcement, and post-M&A period can be noted.



Source: Author's Calculations based on secondary data

Fig. 2: Graphs 3 and 4 Showing Average Abnormal Spread and Cumulative Average Abnormal Spread During Event Window from -10 to +10 days

Implications and Conclusion

This study shows the stock behaviour during the merger and acquisition announcements in banking sectors in India. Particularly, the impact of M&A on stock return and stock volatility were examined. Besides exploring the various factors driving M&A in banking sector in India, the study finds that shareholders of acquiring banks in India are able to generate abnormal returns. Although direct relation between M&A events and stock spread is also observed. Hence, it is found that stock returns in banking sector during M&A deals shows an upward and downward pattern in pre-event as well as post-event period. Gradually, these returns become negative, then again started rising. Thus, overall return pattern forms upward and downward swings. Whereas, spread of returns in banking sector on the day of M&A announcement increases and then declines in the post-announcement period. These results may be useful for various bank managers, stock holders, market regulators, M&A deals consultants, and researchers. Global fund managers can take help in future actions and formulate policies and strategies accordingly. Present study also contributed to the literature of behavioural finance, stock volatility, and stock return to have the understanding of M&A in relation with banking industry in India till date. Thus, to conclude, it can be stated that results of M&A events with respect to stock performance of banks varies in accordance with various factors like sample period, country selected for conducting study (developing or developed), data extracted (whether daily, weekly, monthly etc.), methodology used to obtain results, etc. (Kumar et al., 2011). The future research can be done by taking into consideration all these points and taking fairly long-term data for more authenticated results.

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