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CONTENTS

- 1 Examining the Impact of Structural Breaks on Long Memory of Stock Returns: Evidence from Bombay Stock Exchange of India Long Memory
Anju Bala and Kapil Gupta
- 21 Audit Committee Characteristics and Investors' Stake in Nigerian Quoted Companies
Olaoye Oladipupo Festus, Akinleye Tayo Gideon, Olaoye Olatunji Clement and Adebayo Isaac Adesodun
- 49 Tax Fairness in a Developing Country: Perceptions of Malaysian Tax Agents
Azwanis Binti Azemi, Mohd Rizal Palil, Amizawati Mohd Amir and Suzana Muhammad Said
- 73 Impact of Merger and Acquisition Announcements on Stock Return, Volatility and Liquidity of Acquirers: Evidence from the Indian Banking Sector
Pinky Mal and Kapil Gupta
- 103 The Impact of Bank-Specific Attributes on Web-Based Disclosure Practices of Global Banks
Manpreet Kaur and Mandeep Kaur
- 135 Shareholding Patterns and Financial Performance: Evidence from the Banking Sector in Bangladesh
Mohammad Kamal Hossain
- 169 The Impact of Surplus Free Cash Flow and Stock Market Segmentations on Earnings Management in Jordan: Agency - and Institutional - Theory Perspectives
Ahmad A. Toumeh, Sofri Yahya and Azlan Amran
- 213 Quality of Governance and Tax Revenue Generation in West Africa: A Political Process Theory Perspective
Fatimoh Mohammed and Soliha Sanusi
- 233 Critical Success Factors of Accounting Information Systems (AIS): Empirical Evidence from Malaysian Organizations
Sharina Tajul Urus, Khuziah Hasim, Sharifah Nazatul Faiza Syed Mustapha Nazri and Tuan Zainun Tuan Mat
- 267 The Relationship Between Audit Committee Effectiveness and the Level of Corporate Risk Disclosure: The Relevance of Pre- and Post-Mccg 2012
Sarliza Saari, Mohd Taufik Mohd Suffian, Mohd Shatari Abd Ghafar and Muhammad Iqbal Mohamed Azhari

Impact of Merger and Acquisition Announcements on Stock Return, Volatility and Liquidity of Acquirers: Evidence from the Indian Banking Sector

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ABSTRACT

*This study attempts to examine the stock behaviour of acquirer banks during pre and post-merger and acquisition (M&A) announcement period in the Indian banking sector. Data of M&A events that took place in the Indian banking sector during 2000-2018 was collected from the *prowest_{dx}* database. The sample consisted of 31 merger and 351 acquisition announcements during 2000-2018 in the Indian Banking sector. Stock prices of sample banks were extracted from the NSE for an event window of -10 to +10 days and the event study methodology was used for analysis. The results suggest that shareholders of Indian acquirer banks generate small and insignificant abnormal returns from M&A deals. Return variability was also noticed from the curvy jumps in the average abnormal spread of returns during the announcement period. Whereas, the average abnormal change in liquidity witnessed a sharp hike on day 0 i.e. the date of deal announcement and it remained negative throughout the post-deal period.*

Keywords: *Mergers and Acquisitions, Stock Return, Stock Volatility, Stock Liquidity, Event Study Methodology.*

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INTRODUCTION

The strategy of growth and expansion through merger and acquisition (M&A) deals is rapidly used by firms (Ranju and Mallikarjunappa, 2019 and Sabri et al., 2019). The banking sector witnessed the merger and acquisition transactions in the United States and European economies in the eighteenth and nineteenth century respectively (Rahman et al., 2018). The Indian banking sector is not an exception to this. The banking industry emerged in India in the eighteenth century with the establishment of the General Bank of India in 1786 and the Bank of Hindustan in 1790 and the seed of M&A in the Indian banking sector were sown when three banks, which were established under the British East India Chartered were merged into one bank called the Imperial Bank of India in 1921. These three banks were the Bank of Madras, Bank of Bombay and the Bank of Bengal. Today, the Imperial Bank of India is known as State Bank of India (Goyal and Joshi, 2011).

The rapid increase in the number of integration deals led to the reduction in competition and resulted in decreasing the number of banks to 8000 from 16000 in the United States during the year 1980-2003 (Altunbas and Marques, 2008). These integration deals are responsible for the formation of big financial institutions and banks in the banking industry (Focarelli and Pozzolo, 2005). Different researchers have identified different factors responsible for restructuring of the banking industry. Initially, the motives behind M&A in the Indian banking industry was limited to strengthen and improve the banking system and initiatives were taken to merge the weak or loss-making banks into strong and profit-making ones. However, with the passage of time these motives shifted to synergy generation, growth and expansion etc. (Anand and Singh, 2008).

Some researchers reported that restructuring in the banking sector is the result of financial crises in the Asian economy in 1997, which boosted the volatility of returns and further led to increased risk in the financial market (Tan and Hooy, 2004). One group of researchers like, Uhlenbreck et al., 2017; Nicholson and Salaber, 2013; Slimane, 2012 have claimed that banks go for integration to eliminate weak banks and reduce competition in the market. Campa and Hernaldo, (2006) and Houston (2001) argued that economies of scale engaged in an integration deal in the banking sector are

the main driving force behind the increasing number of restructuring deals in the banking sector. Economies of scale result in reduction of costs, which further results in improving the value of banks.

Studies by Deyoung et al., 2009; Sergio and Olalla, 2008; Shanmugam and Nair, 2004 have shown that technological change (like the use of computers, online banking, and mobile banking) and financial deregulation are the driving forces behind the increase in the number of restructuring deals in the banking sector. Globalization and liberalization are also held responsible for the integration of banks in the literature because the Indian banking sector was regularized following these (Sushil, 2017 and Cetorelli and Goldberg, 2011). Many studies observed that synergies engaged in such deals and tax benefits can be the possible reasons for the rapid increase in M&A deals (Auerbach and Reishus, 1987). Khan and Vieito (2012) reported wealth creation, increased market share and improvement in efficiency as factors leading to combination of two banks. Hence, there are many motives that could initiate an integration deal between two banks. The increasing number of consolidation deals in the Indian banking industry is able to attract attention of researchers towards the examination of pre-and-post effects of such deals on both targets as well as acquirer banks (Yang and Feng, 2018).

M&A is very popular among researchers to test the factors affecting these deals, success of M&A deals, impact on performance of combined firm, impact on the performance of rival companies in the same industry, impact of various factors like method of payment, deal type, economy under study, etc. on performance of acquirer as well as target banks. Most of the empirical studies investigating the success of M&A deals are conducted in developed countries and comparatively fewer studies are available in developing economies like India (Yang and Feng, 2018 and Rahman et al., 2018). Researchers have found different results after examining the performance during M&A events, which are not conclusive.

Results are different with regard to whether the companies involved in M&A deal generate positive (Mall and Gupta, 2019 and Kumar et al., 2011) or negative returns (Asimakopoulos and Athanasoglou, 2012). Results are unable to conclude whether these deals are beneficial for both bidder and target (Sinha et al., 2010) or if these deals are beneficial for acquirers and not targets (Chong et al., 2006), whether target companies

generate significant abnormal returns in these deals or there is no change in pre-event and post-event position (Kemal, 2011), whether acquirer loses in deals (Mensah, 2019 and Pautler, 2001) or both the parties lose in such deals (Kumar et al., 2011), whether or not, such types of deals are beneficial for the combined bank (Pilloff, 1996). Hence, the existing results found by various empirical studies are not conclusive and there is a research gap in the literature regarding performance of firms during M&A announcements. The present study is an attempt to fill this gap.

The rest of the paper is organized in five sections. The first section provides the introduction to Indian banking and the research problem. The second section explains the existing research in area of M&A to frame the research question. The third section deals with explanation of sample selection to conduct this study and methodology used to reach the empirical results. The fourth section explains the analysis of results. Implications and conclusions of the study are discussed in fifth section.

REVIEW OF LITERATURE

Alexandra and Ion (2016) stated that integration deals in the financial and banking sector are generally horizontal in nature where both acquirer and target are engaged in the same business. Extensive literature is available in the banking industry, examining the impact of M&A announcements on financial as well as stock price movements during the event period but the findings of these studies are not consistent (Yang et al., 2018).

The empirical results examining the stock performance of banks involved in an integration deal are conflicting in nature (Aik et al., 2015). Various conceptual and empirical studies are available, which have examined the impact of M&A deals on operating as well as stock performance of acquirer firms, operating and stock performance of target banks and operating and stock performance of the combined entity after M&A (Ranju and Mallikarjunappa, 2019). Dorodnykh (2014) and Shamsuddin and Kim (2003) states that M&A deals in the financial sector help in the overall development of an economy as well as financial markets. Many researchers like Mall and Gupta (2019) and Onikoyi et al., (2014) found positive returns for the acquirer after an integration deal, while Du and Sim (2016) found

negative returns post integration deals. Rahman et al., (2018) found mixed results after examining M&A deals in the banking sector of Pakistan and concluded that some consolidation announcements lead to positive abnormal returns and cumulative abnormal returns but some such announcements lead to negative abnormal returns from an integration of two banks.

The literature can be reviewed in three parts for understanding the impact of M&A announcements on the performance of banks in a better way. These are explained below.

The Impact of Consolidation Announcements on Stock Return of the Banking Industry

A plethora of empirical as well as conceptual literature is devoted to investigating the impact of integration deals on the stock return of acquiring banks. Developed countries were targeted more for this investigation and developing countries like India got less attention and that too especially the banking industry (Kumar 2009). Moreover, despite such a large number of studies related to whether M&A deals help in improving stock returns or stock returns decrease during such deals are not conclusive. Various researchers found mixed results after investigating stock behavior during M&A announcements (Yang et al., 2018). Some researchers like Khanal et al., (2014); Rani et al., (2013); Cai et al., (2011); Anand and Singh (2008); Campa and Hernaldo (2006); Fuller et al., (2002); Pettway and Yamada (1986) have observed that M&A deals are associated with positive average abnormal returns for the acquirer banks. On the contrary, studies like Fatemi et al., (2017); Sharma and Warne (2012); Tampakoudis et al., (2011); Sinha et al., (2010); Mishra and Goel (2005); Asquith, 1983 etc. reported negative abnormal returns for shareholders of acquirer firms. Aik et al., (2015) and Roll (1986) observed that wealth migrated from acquirer bank's shareholders to target bank's shareholders in an integration deal.

Various factors are responsible for the difference in results found in various studies. Umaru (2013) reported wealth destruction for shareholders in the post-announcement period as no dividend income is available due to an increase in non-performing assets and erosion of profits. Kim and Finkelstein (2009) found that cumulative average abnormal returns for acquirer banks are negative in the post-merger period because of increased

management costs. Kumar et al., (2011) observed that forced bank mergers are neither beneficial for acquirer nor for target, whereas, voluntary mergers are more beneficial for acquirers than targets. Choi and Murtagh (2004) and Maksimovic and Phillips (2001) reported no post-merger increase in productivity of acquirer banks. Similarly, Kemal (2011) reported that there is no improvement in bank performance in post-event scenario.

Pessanha et al., (2016) found that the 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. Some other studies relate benefit from M&A deals with factors like type of deal, size of deal, economy under study, time period selected for study, method of payment used in deal etc. Filbien and Kooli (2011) and Akdogu (2009) observed that consolidation in the banking industry is generally horizontal in nature, which eliminates competition and the acquirer has the opportunity to capture market share. Rani et al., (2014) and Barai and Mohanty (2010) observed that cash mergers are more successful than stock mergers while findings by Fischer (2017) and Black et al., (2015) are inconsistent to these. Previous studies documented that firm size and returns are negatively related (Bessembinder and Zhang, 2013 and Eckbo, 2009). On the contrary, findings by Andriosopoulos et al., 2016, show that cross border deals are able to generate higher abnormal returns than domestic deals (Mateev, 2017 and Danbolt and Maciver, 2012). Another strand of studies proclaimed positive abnormal returns from an acquisition deal as compared to a merger deal (Walker, 2000).

Hence, from these observations, the research gap of whether M&A deals are beneficial for acquirer banks or not emerges. Thus, this study was an attempt to evaluate the stock performance of Indian acquirer banks during M&A announcements.

The Impact of Consolidation Announcements on Intraday Stock Volatility of the Banking Industry

Frequency of upward and downward variations in stock prices of a security during a certain period is known as stock volatility (Bannette, 2016). Malhotra et al., (2013) stated that announcements of integration deals are connected with systematic risks and fluctuations in returns of a security.

The efficient market hypothesis denotes that any new information in the stock market can be reflected by the prices, thus, examination of volatility is necessary to understand the time new information takes to get absorbed in the market (Louhichi, 2008).

Pessanha et al., (2016), after examining stock volatility during M&A, in the banking sector suggests that volatility increases following the announcement and so is the systematic risk of the shareholder. Kumar et al., (2013) observed that an increase in volatility can be expected on the date of announcement but in the post-announcement period, volatility declines as information is fully absorbed in the market by that time. Furthermore, the study suggests that an increase in volatility means value destruction for the acquirer's shareholders and decrease in volatility implies value creation for the acquirer's shareholder in the banking industry. A study by Jensen and Ruback (1983) observed that integration deals lead to value creation for acquirers but studies by Rau and Vermaelen (1998); Loughran and Vjih, (1997) and Agrawal et al., (1992) found that acquirers' stock underperforms after M&A announcement.

Some studies that examined the impact of M&A announcements on stock spread and found statistically significant increase in stock spread are Bos et al., (2018); Pessanha et al., (2016); Zhu et al., (2014); Asimakopoulos and Athanasoglou, (2009) found that after the announcement of M&A, the narrower spread leads to value creation. The literature examining the impact on stock return of banks after M&A deals is available but, relatively less importance has been given to the investigation of the impact on stock spread of banks during these deals (Mantravadi and Reddy, 2008; Mishra and Chandra, 2010; Kaur, 2012).

Despite of such a large number of empirical studies, results are still not conclusive, which justify the quest to take a deep dig into this topic and plug the research gap of the impact of M&A announcements on intraday stock volatility.

The Impact of Consolidation Announcements on Stock Liquidity of the Banking Industry

Historical literature provides sufficient evidence regarding the impact of integration deals on stock return and stock volatility in the Indian banking sector but comparatively fewer studies are available that attempt to examine the impact of M&A deals on stock liquidity of acquirer banks in India. The examination of liquidity change is necessary to understand the actual wealth gain generated by shareholders from M&A deals as wealth of shareholders cannot be determined by considering only two stock characteristics i.e. stock return and stock volatility (Kumar et al., 2013). Change in liquidity can be explained as the magnitude to which shares can be bought and sold in the share market. Liquidity is characterized by high level of trading activity (Kumar et al., 2013). The neoclassical theory claims that macro level liquidity and industry disturbance are the two factors behind the happening of merger waves in different economies. Two companies enter into an integration deal when macro-level liquidity is present. M&A deals are based on liquidity position as these deals are possible only when cost of transaction is reduced (Harford, 2005). Pastor and Stambaugh (2003) and Baker and Stein (2004) stated that stock returns are related to temporal variations in liquidity and fluctuations in liquidity can predict stock returns. Some of the studies that attempt to investigate the change in liquidity during consolidation deals are Mall and Gupta (2019); Lee and Chung (2013); Tetlock (2010) and Lipson and Mortal (2007) etc.

Mensah (2019) and Lee and Chung (2013) observed that market liquidity is related to security returns. The higher the liquidity of security the higher will be its price and lower will be the expected returns and the lower the liquidity of security means the lower will be the price and returns expected from that security will be high. Empirical studies by Lei and Li (2013); Lipson and Mortal (2007) and Jennings (1994) reported that consolidation deals in the banking sector leads to improvement in liquidity. Santos and Scheinkman (2001) and Mcandrews and Stefanadis (2002) reported that synergies and economies of scale involved in M&A deals improve market efficiency and liquidity. Mensah (2019) observed significantly positive cumulative abnormal returns for the securities that are less liquid. Similarly, Ascioğlu et al., (2002) reported that both the trading volume and stock returns remain high in the pre-merger period than in the

post-merger period. Aggregate liquidity improves in a merger deal between two big banks (Carletti et al., 2007).

On the Contrary, Chordia et al., (2001) stated that changes in liquidity and trading activity are negatively related and unpredictable. Results found by them also suggest that changes in liquidity and trading activity are static on Fridays. On the other hand, Thomas (2002) found no change in the liquidity position of acquirer banks during the pre-event window and the post-event window. Kumar et al., (2013) found that any new information in market affects the liquidity of related stocks. Rodrigues et al., (2012) stated that the difference in the findings by different researchers may be due to the leakage of insider information by brokers.

Thus, due to inconclusive and unclear results found by different researchers, there is a need to investigate the true outcomes of integration deals with respect to the impact on stock return, stock volatility and change in stock liquidity. Hence, this study is an attempt to plug this research gap in the literature.

DATA SELECTION AND RESEARCH METHODOLOGY

To fill the research gap of the impact of merger and acquisition declarations on stock behavior of acquirer banks in India, three characteristics of stock (return, volatility, and liquidity) were observed during these announcements. The sample period was from the year 2000 to the year 2018. Data of consolidation deals that took place in the banking sector of India between the sample period was extracted from the *prowess_{dx}* database. On the basis of the literature review an event window of 21 days i.e. -10 to +10 was taken to extract the stock prices to examine stock characteristics. The sample of the study included only those banks, which were listed on the National Stock Exchange of India (NSE). Due to the non-availability of required data, the final sample size for this study was narrowed down to 382 deals in the banking sector of India. Data of Nifty 50 for the corresponding period is considered as the benchmark index for this study.

A plethora of literature is available using the event study methodology to capture the impact of M&A deals on stock performance, assuming that in an efficient market the effect of any new information in the market can

be seen in the share prices (Ranju and Mallikarjunappa, 2019 and Adnan and Hussain, 2016). Under market model methods, market reaction to such announcements is measured by observing changes in the share prices of acquirer banks during such integrations and thus, stock price data is required in this model (Dilshad, 2013).

Calculation of Average Abnormal Return (AAR)

The impact of M&A announcements on stock return can be known from the abnormal returns generated by acquirer banks during such announcements. Abnormal return is the difference between the actual return during M&A event and expected or standard return in the absence of M&A event. Nifty returns are taken as benchmark returns here and these were deducted from actual returns to determine the abnormal returns for Indian acquirer banks during 2000-2018. Closing prices of stocks of acquirer banks were extracted from the NSE of India and the following formula was used to obtain actual stock returns:

$$SR_{jt} = (P_{jt} - P_{jt-1}) / P_{jt-1} \dots\dots \text{(Equation 1)} \quad NR_t = (NP_t - NP_{t-1}) / NP_{t-1} \dots\dots \text{(Equation 2)}$$

Where:

SR_{jt} = Stock return of bank j at time t	Where: NR_t = Nifty return at time t
P_{jt} = Price of bank j on day t	NP_t = Price for Nifty
P_{jt-1} = Price of bank j on day t-1	NP_{t-1} = Price for Nifty at time t-1

$$AAR_{jt} = ASR_{jt} - (\beta * ANR_{jt}) - \alpha \dots\dots\dots \text{(Equation 3)}$$

Where:

AAR_{jt} = Abnormal stock return for bank j at time t, ASR_{jt} = stocks realized return for bank j and time t, β = Slope coefficient, ANR_{jt} = Average returns of Nifty at time t, in absence of a merger event and α = Intercept

At the next step the cumulative average abnormal returns were calculated after adding the average abnormal returns of the event window taken for the study i.e. from day -10 to +10 (Sharma, 2010). At the final step, t-test was applied to examine the significance of the average abnormal returns and cumulative average abnormal returns calculated for the event window of twenty -one days.

Calculation of Average Abnormal Spread (AAS)

The impact of restructuring deals on the intraday stock volatility was also examined. To calculate the stock spread, stock high and stock low prices for the day from NSE were extracted and actual stock spread obtained during the integration deal. Benchmark spread was calculated from Nifty high prices and Nifty low prices. Subsequently, the abnormal spread was calculated by subtracting Nifty spread from the stock spread.

$$SS_{jt} = SHP_{jt} / SLP_{jt} \dots\dots\dots \text{(Equation 4)} \quad NS_{jt} = NHP_t / NLP_t \dots\dots\dots \text{(Equation 5)}$$

Where:

SS_{jt} = stock spread for bank j at time t,
 SHP_{jt} = stocks high price for bank j and time t,
 SLP_{jt} = stocks low price for bank j at time t,

Where:

NS_{jt} = Nifty spread at time t,
 NHP_t = Nifty high price at time t,
 NLP_t = Nifty low price at time t,

$$AAS_{jt} = ASS_{jt} - (\beta * ANS_{jt}) - (\alpha) \dots\dots\dots \text{(Equation 6)}$$

Where:

AAS_{jt} = Abnormal stock spread for bank j at time t, ASS_{jt} = Stocks realized spread for bank j and time t, β = Slope, ANS_{jt} = Nifty / expected spread at time t, in absence of a merger event and α = Intercept

Cumulative average abnormal spread was also calculated from the abnormal spread values calculated for the event window of twenty-one days. The T test was applied to know whether or not the values of the abnormal spread during the event window were significant.

Calculation of Average Abnormal Change in Liquidity (AAL)

To determine the changes in liquidity during M&A announcements, data of traded volume from the NSE was collected. Similarly, Nifty traded volume for the corresponding period was collected to be used as benchmark data. The following steps were followed to reach the abnormal change in liquidity due to integration announcements in the market.

$SL_{jt} = (ST_{jt} / ST_{jt-1}) \dots\dots$ (Equation 7)

Where:

SL_{jt} = Change in stock liquidity of bank j at time t

ST_{jt} = Stock traded volume of bank j on day t

ST_{jt-1} = Stock traded volume of bank j on day t-1

$NL_{jt} = (NT_t / NT_{t-1}) \dots\dots$ (Equation 8)

Where:

NL_{jt} = Change in Nifty liquidity of bank j at time t

NT_t = Nifty traded volume on day t

NT_{t-1} = Nifty traded volume on day t-1

$AAL_{jt} = ASL_{jt} - (\beta * ANL_{jt}) - (\alpha) \dots\dots\dots$ (Equation 9)

Where:

AAL_{jt} = Abnormal change in stock liquidity of bank j at time t, ASL_{jt} = Stock liquidity of bank j at time t, β = Slope, ANL_{jt} = Nifty stock liquidity of bank j at time t and α = Intercept

Cumulative average abnormal change in liquidity and T values were also calculated by adding the values of abnormal change in stock liquidity during the event period of twenty-one days.

RESULTS AND DISCUSSION

To have a clear perspective of the impact of M&A announcements on stock return, stock volatility and stock liquidity of the Indian banking sector, the results are divided into three parts, which are explained below:

Impact of M&A Announcements on Stock Return

The impact of M&A deals on stock returns of acquirer banks was measured by calculating average abnormal returns and cumulative average abnormal returns obtained from the sample. Impact on stock returns during integration deals was calculated in a similar way by numerous studies like Rani et al., (2013) and Kumar et al., (2011).

Table 1 shows the AAR and CAAR for acquirers in the Indian banking sector. This table shows AAR and CAAR in cases of acquisition deals and merger deals in the Indian banking sector separately. As shown in the Table 1, AAR are mostly positive in the pre-announcement period and becomes negative for the consecutive two days after the official announcement of the M&A event. AAR becomes negative on day +5 and remains negative till day +10. This may be due to the possible information leakage in the market and that information is fully absorbed in the market on day of the announcement and after that average abnormal return starts declining and becomes negative.

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

EW	Merger and Acquisition Return				Acquisition Return				Merger Return			
	AAR	T Values	CAAR	T Values	AAR	T Values	CAAR	T Values	AAR	T Values	CAAR	T Values
-10	-0.0008	-0.5805	-0.0008	-0.5805	-0.0008	-0.5719	-0.0008	-0.5719	-0.0015	-0.3324	-0.0015	-0.3324
-9	0.0019	1.4034	0.0011	0.8228	0.0017	1.1852	0.0009	0.6133	-0.0007	-0.1640	-0.0022	-0.4964
-8	-0.0003	-0.1856	0.0009	0.6373	-0.0006	-0.3865	0.0003	0.2268	0.0036	0.7839	0.0013	0.2875
-7	0.0002	0.1155	0.0010	0.7528	0.0004	0.2553	0.0007	0.4821	0.0019	0.4117	0.0032	0.6992
-6	0.0011	0.8013	0.0021	1.5541	0.0020	1.3298	0.0027	1.8119*	-0.0084	-1.8545*	-0.0052	-1.1553
-5	0.0022	1.6161	0.0044	3.1702***	0.0022	1.5126	0.0049	3.3244***	0.0023	0.5094	-0.0029	-0.6459
-4	-8.2375	-0.0598	0.0043	3.1104***	0.0002	0.1167	0.0051	3.4411***	-0.0035	-0.7665	-0.0064	-1.4124
-3	0.0003	0.2061	0.0046	3.3166***	-0.0005	-0.3234	0.0046	3.1177***	0.011	2.3585**	0.0043	0.9461
-2	0.0012	0.9044	0.0058	4.2210***	0.0011	0.7424	0.0057	3.8601***	0.0017	0.3730	0.0060	1.3190
-1	0.0021	1.5432	0.0079	5.7641***	0.0022	1.5060	0.0079	5.3661***	0.0016	0.3429	0.0075	1.6619*
0	0.0012	0.8867	0.0092	6.6508***	0.0006	0.4093	0.0085	5.7754***	0.0081	1.7921*	0.0157	3.4540***
+1	-0.0019	-1.3455	0.0073	5.3053***	-0.0015	-1.0275	0.0070	4.7479***	-0.0033	-0.7351	0.0123	2.7189***
+2	-0.0002	-0.1160	0.0072	5.1894***	0.0008	0.5388	0.0078	5.2866***	-0.0080	-1.7713*	0.0043	0.9476
+3	0.0003	0.2382	0.0075	5.4276***	0.0002	0.1535	0.0080	5.4402***	0.0003	0.0623	0.0046	1.0099
+4	0.0003	0.2531	0.0078	5.6808***	0.0009	0.5814	0.0089	6.0216***	-0.0035	-0.7706	0.0011	0.2393
+5	-0.0025	-1.8412*	0.0053	3.8396***	-0.0029	-1.9872**	0.0060	4.0344***	0.0022	0.4810	0.0033	0.7203
+6	-0.0022	-1.5716	0.0031	2.2680**	-0.0024	-1.6187	0.0036	2.4157**	3.8939	0.0086	0.0033	0.7289
+7	-0.0012	-0.8795	0.0019	1.3885	-0.0013	-0.8494	0.0023	1.5663	-0.0019	-0.4209	0.0014	0.3080
+8	-0.0011	-0.7651	0.0009	0.6234	-0.0011	-0.7408	0.0012	0.8255	0.0003	0.0719	0.0017	0.3799
+9	-0.0004	-0.2757	0.0004	0.3477	-0.0007	-0.4609	0.0005	0.3646	-0.0009	-0.2034	0.0008	0.1765
+10	-0.0005	-0.3477	1.6263	1.1803	-0.0005	-0.3646	-2.3852**	-1.6160	-0.0008	-0.1765	8.6736	1.9142**

Source: Author's calculations based on secondary data (***) Significant at 1%, ** Significant at 5%, *Significant at 10%

On the other hand, the cumulative average abnormal returns remain positive throughout the event window. Table 1 also shows that combined returns and acquisition returns generated by acquirer banks are statistically significant on day +5 of the event window. Whereas, in the case of merger announcements, acquirer banks experience significant returns on days -6, -3, 0 and +2 of the event window. Overall, it can be said that stock acquirer banks generate small and insignificant average abnormal returns following a M&A deal in India. These findings are similar with the findings by Ranju and Mallikarjunappa (2019); Fatemi et al., (2017); Goyal and Joshi, (2012) and Kemal, (2011) but contrary to the findings of Khanal et al., (2014); Kumar et al., (2011) and Anand and Singh, (2008).

Impact of M&A on Stock Volatility

Table 2 shows the calculated values of average abnormal spread (AAS) and cumulative average abnormal spread (CAAS) from day -10 to +10. Continuous fluctuations were observed in the pattern of AAS during the event window, which implies that market reacts to new information of integration deals in the banking sector. As AAS starts declining on day +2, which is two days after the announcement of the M&A deal, it can be said that integration of two banks affects return variability inversely in India. On the other hand, CAAS remain positive and increased during the study period. These findings are consistent with the findings by Pessenha et al., (2016) and Louhichi (2008).

Stock spread is statistically significant on day 0 and +6 of the event window. Similar results have been found for acquisition deals in the Indian banking sector. In case of merger announcements, the spread of return is statistically significant on day 0 and +9 of the event window.

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

EW	Merger and Acquisition Volatility						Acquisition Volatility						Merger Volatility					
	AAS	T Values	CAAS	T Values	AAS	T Values	CAAS	T Values	AAS	T Values	CAAS	T Values	AAS	T Values	CAAS	T Values		
-10	-0.0010	-0.3212	-0.0010	-0.3212	-0.0013	-0.4658	-0.0013	-0.4658	0.0090	1.2573	0.0090	1.2573	0.0090	1.2573	0.0090	1.2573		
-9	0.0012	0.4155	0.0003	0.0943	0.0013	0.4607	-1.4463	-0.0051	0.0026	0.3710	0.0116	1.6284	0.0026	0.3710	0.0116	1.6284		
-8	8.7722	0.0295	0.0004	0.1239	0.0004	0.1312	0.0004	0.1262	-0.0042	-0.5909	0.0074	1.0374	-0.0042	-0.5909	0.0074	1.0374		
-7	0.0030	1.0262	0.0034	1.1501	0.0032	1.1411	0.0036	1.2672	0.0006	0.8556	0.0080	1.1230	0.0006	0.8556	0.0080	1.1230		
-6	0.0025	0.8509	0.0059	2.0010**	0.0029	1.0327	0.0065	2.999**	0.0001	0.0198	0.0081	1.1428	0.0001	0.0198	0.0081	1.1428		
-5	0.0008	0.2532	0.0067	2.2542**	0.0002	0.0536	0.0067	2.3535**	-0.0023	-0.3299	0.0058	0.8128	-0.0023	-0.3299	0.0058	0.8128		
-4	-0.0003	-0.1052	0.0064	2.1490**	-0.0004	-0.1339	0.0063	2.2196**	-0.0037	-0.5259	0.0020	0.2869	-0.0037	-0.5259	0.0020	0.2869		
-3	-0.0029	-0.9794	0.0035	1.1696	-0.0022	-0.7894	0.0041	1.4302	-0.0020	-0.2767	7.2999	0.0103	-0.0020	-0.2767	7.2999	0.0103		
-2	-0.0007	-0.2327	0.0028	0.9369	-6.5321	-0.0229	0.0040	1.4072	-0.0027	-0.3746	-0.0026	-0.3644	-0.0027	-0.3746	-0.0026	-0.3644		
-1	0.0006	0.2033	0.0034	1.1402	0.0004	0.1506	0.0044	1.5578	0.0070	0.9881	0.0044	0.6237	0.0070	0.9881	0.0044	0.6237		
0	0.0078	2.6229***	0.0112	3.7631***	0.0074	2.5995***	0.0118	4.1573***	0.0173	2.4287**	0.0217	3.0524***	0.0173	2.4287**	0.0217	3.0524***		
+1	0.0027	0.8933	0.0138	4.6564***	0.0027	0.9587	0.0146	5.1160***	0.0089	1.2473	0.0306	4.2997***	0.0089	1.2473	0.0306	4.2997***		
+2	-0.0012	-0.4124	0.0126	4.2440***	-0.0016	-0.5449	0.0130	4.5711***	0.0001	0.0197	0.0308	4.3194***	0.0001	0.0197	0.0308	4.3194***		
+3	0.0031	1.0393	0.0157	5.2833***	0.0018	0.6446	0.0149	5.2157***	0.0072	1.0155	0.0380	5.3349***	0.0072	1.0155	0.0380	5.3349***		
+4	0.0007	0.2197	0.0163	5.5031***	0.0008	0.2821	0.0157	5.4978***	-0.0071	-0.9928	0.0309	4.3421***	-0.0071	-0.9928	0.0309	4.3421***		
+5	-0.0007	-0.2281	0.0157	5.2749***	-0.0010	-0.3363	0.0147	5.1615***	0.0013	0.1779	0.0322	4.5201***	0.0013	0.1779	0.0322	4.5201***		
+6	-0.0059	-1.9700**	0.0098	3.3049***	-0.0060	-2.1159**	0.0087	3.0456***	-0.0021	-0.2952	0.0301	4.2248***	-0.0021	-0.2952	0.0301	4.2248***		
+7	-0.0031	-1.0299	0.0068	2.2750**	-0.0029	-1.0342	0.0057	2.0115**	-0.0079	-1.1144	0.0221	3.1104***	-0.0079	-1.1144	0.0221	3.1104***		
+8	-0.0025	-0.8528	0.0042	1.4222	-0.0024	-0.8351	0.0033	1.1764	-0.0077	-1.0808	0.0145	2.0296**	-0.0077	-1.0808	0.0145	2.0296**		
+9	-0.0028	-0.9434	0.0014	0.4788	-0.0017	-0.6060	0.0016	0.5704	-0.0129	-1.8166*	0.0015	0.2130	-0.0129	-1.8166*	0.0015	0.2130		
+10	-0.0014	-0.4788	-1.9540	-6.5777***	-0.0016	-0.5704	2.8866	1.0138	-0.0015	-0.2130	-9.3259	-1.3097	-0.0015	-0.2130	-9.3259	-1.3097		

Source: Author's calculations based on secondary data (*** Significant at 1%, ** Significant at 5%, * Significant at 10%)

Impact of M&A on Stock Liquidity

Table 3 shows the values of average abnormal change in liquidity (AAL) and cumulative average abnormal change in liquidity (CAAL) calculated from the collected data for the event window. Variations were observed in the values of AAL during the twenty- one days. A sharp hike was present on day 0 i.e. on the day of announcement of the event. These findings are similar to the findings by Lee and Chung (2013); Lei and Li (2013) and Lipson and Mortal (2007). However, these findings are inconsistent with the findings by Kumar et al., (2013) and Ascioğlu et al., (2002).

T values of average abnormal change in liquidity was statistically significant at the 1% level in case of combined and acquisition deal analysis. Whereas, in case of merger deals liquidity was statistically significant at the 1% level on days -2 and 0 of the event window. The t values of AAL on the rest of the days in the event window were statistically insignificant. Whereas, CAAL were statistically significant from day 0 to day 4 of the event window.

Table 3: Showing Calculations of Average Abnormal Change in Liquidity and Cumulative Average Abnormal Change in Liquidity for the Event Window from 10 to +10 day

EW	Merger and Acquisition Liquidity			Acquisition Liquidity			Merger Liquidity			
	AAL	T Values	CAAL	AAL	T Values	CAAL	AAL	T Values	CAAL	T Values
-10	0.0769	0.2208	0.0769	0.2208	0.0429	0.1189	0.4825	1.5994	0.4825	1.5994
-9	-0.1279	-0.3671	-0.0510	-0.1463	-0.1417	-0.3932	-0.1330	-0.4408	0.3495	1.1585
-8	-0.0273	-0.0782	-0.0782	0.0008	0.0023	-0.0980	-0.2720	-1.1063	0.0158	0.0522
-7	-0.0028	-0.0080	-0.0810	-0.2325	-0.0259	-0.0718	-0.3438	0.9950	0.3159	1.0472
-6	-0.1735	-0.4978	-0.2545	-0.7304	-0.1834	-0.5090	-0.8528	-0.1736	0.2636	0.8736
-5	-0.1663	-0.4772	-0.4208	-1.2076	-0.1614	-0.4480	-1.3008	-0.5993	0.0828	0.2743
-4	0.2520	0.7233	-0.1688	-0.4843	0.2711	0.7522	-0.1977	-0.4822	-0.0627	-0.2079
-3	0.0093	0.0268	-0.1594	-0.4576	0.0031	0.0085	-0.1946	0.4537	0.0742	0.2458
-2	0.2672	0.7669	0.1078	0.3094	0.2439	0.6768	0.1368	1.7488*	0.6017	1.9947***
-1	0.0005	0.0015	0.1083	0.3109	-0.0148	-0.0411	0.0345	0.6934	0.8109	2.6881***
0	1.3468	3.8654***	1.4551	4.1763***	1.4021	3.8905***	1.4366	2.4772**	1.5582	5.1653***
+1	-0.1004	-0.2881	1.3547	3.8882***	-0.0895	-0.2484	1.3470	-0.5534	1.3913	4.6119***
+2	-0.2488	-0.7141	1.1059	3.1741***	-0.2623	-0.7278	1.0847	-0.3431	1.2878	4.2688***
+3	-0.1412	-0.4053	0.9647	2.7688***	-0.1413	-0.3920	0.9435	-0.4418	1.1545	3.8270***
+4	-0.2083	-0.5979	0.7564	2.1709**	-0.2069	-0.5741	0.7366	-0.6883	0.9468	3.1386***
+5	-0.2731	-0.7839	0.4832	1.3869	-0.2926	-0.8120	0.4439	-0.1323	0.9069	3.0063***
+6	-0.0851	-0.2441	0.3982	1.1428	-0.0911	-0.2527	0.3529	0.0314	0.9164	3.0377***
+7	-0.2074	-0.5953	0.1908	0.5475	-0.1985	-0.5508	0.1544	-0.9144	0.6406	2.1234**
+8	-0.1041	-0.2989	0.0866	0.2486	-0.0974	-0.2703	0.0570	-0.4873	0.4935	1.6360
+9	-0.0761	-0.2184	0.0106	0.0303	-0.0627	-0.1741	-0.0058	-0.1602	0.2642	0.8759
+10	-0.0106	-0.0303	-2.5535	-7.3289***	0.0058	0.0160	-1.4433	-0.8759	0	0

CONCLUSION AND IMPLICATIONS

This study examined the impact of M&A announcements on the three main characteristics of stocks i.e. stock return, stock volatility and stock liquidity in the Indian banking sector from 2000 to 2018. This study observed positive average abnormal returns for acquirer banks during the pre-event period in the analysis of combined M&A deals, acquisition deals and merger deals. It can be concluded that shareholders of acquirer banks can earn abnormal profits during the pre-announcement period only. Moreover, it was observed that these returns are also volatile during the event window as curvy fluctuations were present in the volatility spread of stock returns. As far as stock liquidity is concerned, in M&A deals in the banking sector, it can be concluded that liquidity improves in pre-announcement and post-announcement period but wider liquidity spread was observed on day 0 i.e. on the day of announcement. Apart from these empirical results, this study also lists various factors responsible for the increase in the number of M&A deals in Indian banking sector.

The findings given in this study may contribute to the existing literature investigating bank performance during restructuring events and the literature of behavioral finance. These findings may help investors in deciding on investment patterns to generate super normal profits during M&A deals. Various bank managers, deal consultants, market regulators, research scholars may find these results helpful. Global fund managers may find this study useful to formulate policies and strategies accordingly. Moreover, findings provided in this study may help plug the gap in the literature with respect to the impact of M&A on stock performance of acquirer banks in India. The economy under study, time frame selected for study, sample selected for study can be the possible factors behind the contradicting results found by various researchers and thus, these factors should be taken care of in future studies. However, these results are limited to the Indian banking industry and investigations can be extended to other economies and the other industries as well for future research.

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