

Long-Term Abnormal Returns during Pre and Post Merger: Evidence from India

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Abstract:

Purpose: The present study measures the impact of merger on Indian acquiring entities' long term stock price performance. The study covers 109 acquiring entities of merger deals undertaken during the period of 2000 to 2012, comprising of a study period of 1997 to 2015.

Methodology: The same is measured through monthly CAR (Cumulative Abnormal Return) and BHAR (Buy and Hold Abnormal Return) of selected acquiring entities during the period of 12, 24 and 36 months post the merger and comparing it with 12, 24 and 36 months pre merger respectively. The Abnormal Return (AR) is computed as the excess of acquiring entity stock's monthly log return over the market's (SENSEX) monthly log return. A paired t-test has being applied to compare the pre and post CAR and BHAR after eliminating outliers using box-plot technique and assuring normality of variables.

Findings: The results show a significant reduction in post merger monthly CARs and BHARs as compared to pre merger.

Practical Implications: CAR being based on arithmetic mean is useful to investors who hold stocks for relatively short period of time around the merger month. BHAR being based on geometric mean is useful to investors who hold stocks for the entire holding period before and after the merger month.

Originality: Abnormal returns pre and post merger scenario in the long run are less explored in the Indian context which this study aims at. The study also compares the results of abnormal returns around long term time frame in India with that of the global context as well.

Keywords: *Mergers, Abnormal returns, Long-term, India*



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1. Introduction

Corporate restructuring stands for partially dismantling or otherwise reorganizing a company to make it more efficient or otherwise more profitable (Arora, Shetty and Kale, 2011). Restructuring can be internal or external for an organisation. Mergers are a form of external restructuring. A merger means any transaction that forms one economic unit from two or more previous ones (Weston, Chung and Hoag, 2011). Under mergers, two or more entities agree to merge their businesses. Post the merger one entity dissolves (usually known as the target entity) and the surviving entity (usually known as the acquiring entity) acquires all the assets and liabilities of the target entity. Thus the target entity ceases to exist post the merger. The laws in India use the term amalgamations for mergers. The Income Tax Act, 1961 [Section 2(1A)] defines amalgamations as: “Amalgamation as the merger of one or more companies with another or the merger of two or more companies to form a new company, in such a way that all assets and liabilities of the amalgamating companies become assets and liabilities of the amalgamated company and shareholders not less than nine-tenths in value of the shares in the amalgamating company or companies become shareholders of the amalgamated company”

In India, mergers and acquisitions in general gained popularity after the adoption of New Industrial Policy in 1992. The new policy was in favor of liberalisation, privatization and globalization which paved for the growth of Indian Inc. Prior to 1992, there was minimal activity of mergers in India. Formation of the Life Insurance Corporation and nationalization of the life insurance business in 1956 lead to the takeover of 243 insurance companies (Kar & Soni, 2008). A similar development was seen in the general insurance business. The national textiles corporation (NTC) took over a large number of sick textiles units (Kar, 2004). Post 1992 the Indian economy opened up which lead to increase in number of merger and acquisitions as well. For multinationals outside India it was an easier route to enter into the country and for Indian firms it was one of the key strategies to survive and expand (Basant, 2000).

Agarwal and Bhattacharjea (2006) observed three periods of merger activity in India. Low mergers and acquisitions activity took place during 1973 to 1988 due to industrial deregulation measures in 1985. Moderate mergers and acquisitions activity was observed during 1989 to 1995 due to New Industrial Policy in 1992. This was followed by high merger and acquisition activity during 1996 to 2002, partly due to the relaxation of MRTP (Monopoly and Restrictive Trade Practices) act in the same period. Kar and Soni (2008) similarly identified two periods of M&A activity in India. One was from 1991-92 to 1995-96 during which 68 mergers took place and second from 1996-97 to 2000-01 during which 1318 mergers took place. In terms of deals in various sectors, it was manufacturing and services sector that witnessed maximum number of deals (Beena, 2008). From 1999-2007 was the period where outbound



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deals were more as compared to inbound deals as the market was in booming stage and top companies in India were experiencing increase in value of shares and financial strength to go for foreign acquisitions. 2016 was an encouraging year for the merger and acquisitions sector in India, due to stability of government policy and the capital market. This stability resulted in a record volume – USD 56.2 billion –the highest since 2010 (Pandya, 2018).

The studies examining the impact of mergers on performance of companies involved in it are divided into two types. One set of studies have focused on measuring impact of merger on financial performance of companies involved in India (Pawaskar, 2001; Beena, 2006; Mantravadi and Reddy, 2007; Rani et al., 2015) and around India (Ravenscraft and Scherer, 1989; Healy et al., 1992; Ramaswamy and Waegelein, 2003; Dutordoir et al., 2014; Berriategortua et al., 2018).

The second sets of studies have measured the impact of mergers on stock price performance in India (Gubbi et al., 2010; Mann and Kohli, 2011; Rani et al., 2012, Jain and Sunderman, 2014) and around India (Bhabra and Huang, 2013; Ma et al., 2009; Alexandridis et al., 2010). However, within the same, a very small portion of studies have focused on measuring the long term impact of mergers on stock price performance (Loughran and Vjih, 1997; Agrawal and Jaffe, 2000). Also, among them, very limited studies are undertaken in India measuring long term stock price performance post merger (Chakrabarty, 2007; Kumar and Kuncolienkar, 2020). The present study tries to bridge this gap in terms of understanding the long term impact of mergers on stock price performance of Indian acquiring entities.

2. Literature Review

The literature that has studied abnormal return around merger are broadly divided into two types of research. One type of studies are that measures short term impact on share prices of acquiring and target entities around the announcement date of mergers. Among the same some studies have focused on a data of single nation (Wu, 2009; Ruiz and Menendez, 2010; Bhabra and Huang, 2013) and others have conducted studies covering mergers from more than one nation (Ma et al., 2009; Alexandridis et al., 2010; Aintablian et al., 2017) . Other types of studies measure long term impact on stock returns before and after the merger year (Malatesta, 1983; Asquith, 1983; Agrawal et al., 1992; Zaremba and Płotnicki, 2016).

The studies that have analysed long term impact of mergers have been more in other countries as compared to India. Malatesta (1983) studied abnormal returns of stocks of 256 acquiring firms and 85 acquired firms in United States during 1969 to 1974 analysing large sized mergers and found acquiring firms had negative abnormal returns 60 months prior to and 12 months post the announcement of merger. Asquith (1983) examined 211 target firms and 196 bidding firms on NYSE (New York Stock

Exchange) during 1962 to 1976 to analyse the impact of merger bid on stock returns. It was found that the abnormal returns were negative during the period post the merging of entities. However, Schipper and Thomson (1983) found a positive long term impact of mergers on abnormal returns of 55 mergers in the United States of America post 72 months after the announcement of mergers.

Agrawal et al. (1992) reexamined the issue of negative abnormal returns post merger through a extensive sample of mergers between NYSE acquirers and NTSE/ AMEX targets and found that the size of the firm or the beta estimation are not the reasons for negative abnormal returns post merger. The study found that acquiring firms suffered a loss of 10% during five years after the merger. Gregory (1997) found significantly negative abnormal returns up to two years post acquisition in case of large domestic takeovers in listed companies in the United Kingdom. Loughran and Vjih (1997) found that target shareholders who hold on the stocks of acquiring entity in stock mergers do not earn any significantly positive excess returns among 947 acquisitions during 1970 to 1989. Rau and Varmaelin (1998) studied long term performance post three years of completion of deal of a comprehensive data set of mergers and tender offers in the United States. They concluded that the long term performance of acquiring firms is underperformed, while tender offers earn an insignificant but better performance. Agrawal and Jaffe (2000) observed many studies that used different methodologies and sample periods in both the United States and the United Kingdom found negative abnormal returns for mergers. They also found that method of payment and performance extrapolation influence abnormal returns.

Some studies had tried to differentiate the long term impact of mergers among different types of acquirers. Sudarsanam and Mahate (2003) in their study of 519 UK acquirers found that value acquirers perform better than glamour acquirer in the three years period post acquisition and that cash acquirers earn higher returns as compared to stock acquirers. Andre et al. (2004) added findings in the same lines that among 267 Canadian mergers and acquisitions that took place during 1980 to 2000, glamour and equity financed deals under perform as well as cross border deals do not perform in long term. Similarly, Conn et al. (2005) studied 5000 UK acquirers and found glamour acquirers to be under performing in public acquisitions and not in private acquisitions. Also, cross border acquisitions generate lower long term returns than domestic acquisitions.

Studies measuring long term stock performance of mergers are conducted in other countries as well apart from predominantly in US and UK. Zaremba and Płotnicki (2016) analysed 109 deals in Central and Eastern European countries done in 2001-2014 and concluded that in the long run mergers and acquisitions do not destroy the value of acquiring firms. Zhou et al. (2015) compared the state owned enterprises and privately owned enterprises in China as acquirers in their study of 825 merger deals



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from 1994 to 2008. They found that abnormal returns of state owned enterprises were higher than that of privately owned enterprises in the post five year period of merger.

There have been studies that analyses long term stock performance of merger deals from more than one country. Brau et al. (2012) studied 3547 initial public offers from SDC (Security Data Company) New Issue Database and Mergers and Acquisitions database during the period of 1985 to 2003. They concluded that the newly listed firms that undertake acquisitions within one year after listing, underperform during 1 through 5 years period post acquisition as compared to non-acquiring IPOs. Wang et al. (2014) investigated the long-run post-merger performance of Asian acquiring banks using 293 deals in the 1997-2007 periods and found that in general the long term stock performance was negative and could not create synergy. Dranev et al. (2019) discovered significant positive average abnormal return after acquisition of fintech companies (identified from Zephyr database) in the short-term and negative average abnormal return in the long-term using event study methodology.

There have been studies which have analysed the determinants of long term abnormal performance around merger. Markelevich (2004) in USA found that synergy motivated merger perform better than agency motivated merger in their study of long term performance of mergers post three years through CARs. Similarly, Megginson et al. (2004) used corporate focus study and concluded that focus decreasing mergers perform significantly negative in long term post merger and focus increasing mergers have marginally increased long term wealth of shareholders. Kohers and Kohers (2001) in their long run abnormal returns of takeovers of technology firms underperform post takeover as compared to industry matched benchmarks by using size and book to market control variables in long run. They opined that the market tends to show signs of excess enthusiasm over the expected benefits from certain high-tech acquisitions. Olson and Paganno (2005) found that firm's sustainable growth rate prior to acquisition and bank's dividend payout ratio post merger are important determinants of cross sectional variation in merged entity's stock performance in their study of analysed mergers of publicly traded bank holding companies.

Studies within India have been more in measuring of short term impact of merger and acquisition on stock performance around announcement of mergers. Anand and Singh (2008) analysed CARs of five bank mergers over a short run period around announcement and found that CARs have significantly improved post the merger announcement. Rani et al. (2012) found positive abnormal returns after merger announcements as well as in long term ROE (return on equity) of five years where they studied M&As during the period of 2003 to 2008. Also, Reddy et al. (2013) analysed selected Indian M & A cases and observed superior abnormal returns post merger announcement and balance sheet improvement in long run. However, Mall and Gupta (2019) found that shareholders of acquirer firms generate average abnormal returns



from merger events during and after announcement and returns become negative in long run in context to India.

In yet another Indian study, Gubbi et al. (2010) studied 425 cross border mergers by Indian Firms and analysed 11 day post abnormal returns. They found that cross border mergers done by India companies does not necessarily lead to increase in abnormal returns shareholder of these firms in the post announcement period. Similarly, other studies have used cross border deals as a sample for analysing impact of the same on abnormal returns. Mann and Kohli (2011) compared the wealth gained by target firm shareholders among domestic and cross border acquisitions in India and found that nationality of the acquirer has no impact on target firm's shareholder's gains. Mann and Kohli (2012) revealed that acquirers in FMCG sector have gained more returns as compared to pharma sector in India and foreign brand buyouts have gained less value for shareholders than domestic brand buyouts. Rani et al. (2011) found positive cumulative abnormal returns of Indian pharma company's acquisition activities aimed at foreign based targets. Popli et al. (2017) proposed that business group-affiliated firms leverage their affiliation advantages to attain superior long-term acquisition performance, relative to standalone firms, especially in emerging economies such as India. Jain et al. (2018) analysed 139 cross border acquisitions done by Indian companies and concluded that cross border acquisitions have statistically significant and positive valuation effects for the Indian bidders in the short-run. On the other hand, Reddy et al. (2019) found M&A announcements do not create value for the firms in Chinese and Indian economies.

A small portion of studies in India have focused on analysing long term impact of mergers on abnormal returns. Chakrabarty (2007) analysed long term post acquisition performance of stock prices for 24 mergers from 2000 to mid 2007. They found that abnormal returns post three years of merger are less than the same period prior to the merger. However, the sample size of the study was limited to 24 acquiring entities. Kumar and Kuncolienkar (2020) analysed 21 merger and acquisition announcements in the Indian banking sector investigating the impact of the same on shareholder's wealth creation post three years of merger. They found that the announcement of M&A deals did not create significant and improved BHAR for shareholders of the acquirer banks.

The results of the literature suggests that there lies a gap in India in terms of analysing the impact of mergers on long term stock price performance of firms involved in mergers as majority of studies have measured short run performance around the merger announcement. The present study measures the abnormal returns on acquiring entities of a merger during 12 months, 24 months and 36 months post the day of merger and compares the same with the same time period prior to the merger with an objective to examine if the merger has lead to better returns on stocks after the merger period as



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compared to period before the merger. The study uses paired sample t-test to achieve this objective after taking care of assumptions of normality and careful separation of outliers using the box-plot mechanism. The study uses CAR (Cumulative Abnormal Return) and BHAR (Buy and Hold Abnormal Return) calculated for a period of 12, 24 and 36 months post and pre the merger date. The abnormal returns are calculated as excess of monthly log returns of acquiring entity over monthly log returns of market index. The study shall add to the existing literature in term of understanding long term stock price returns post the event of a merger in a country like India where limited work is carried out in the measuring the same.

3. Data and Methodology

In the present study, the impact of merger is analysed on acquiring entities for long term period that is 12 months, 24 months and 36 months post the merger as compared to the same period prior the merger. The rationale is that merger being a strategic decision, how does it impact the shareholders in the long term period post merger as well as is it better or worse than the pre merger period. The study will help to analyse if mergers add value to shareholders of acquiring entities in mergers.

3.1 Sample, Data and its sources

The sample in the present study consists of 109 acquiring entities that undertook mergers during the period of 2000 to 2012. The period covered for the study is 1997 to 2015. The sample acquiring entities have been filtered by considering points like: only the top four sectors according to number of merger deals done during the sampling period have been considered namely Food and Beverages, Textiles, Chemicals and Non-financial Services; only publicly listed acquiring entities are considered; merger deals within the same group of companies are excluded; merger deals coinciding with other merger deals done by the same acquiring entity during 2 years pre/post the date of merger have been excluded; the deals where monthly share price details are unavailable for the period of the study have been excluded. The details of mergers have been taken from CMIE (Centre for Monitoring Indian Economy) database (CMIE, 2013). The monthly prices are collected from Bombay Stock Exchange (BSE) website ranging from 36 months pre and 36 months post the merger date (Historical Prices: BSE, 2018).

3.2 Research Methodology

In the present study, monthly AR_i (Abnormal Return) are calculated for each of the acquiring entities of the sample merger deals. Next, the return metrics of CAR_i (Cumulative Abnormal Return) and $BHAR_i$ (Buy and Hold Abnormal Return) are calculated respectively for a period of 12 months, 24 months and 36 months post and pre the date of merger. A paired t-test is then applied to test if there is a significant



difference between CAR and BHAR for 12 months pre and 12 months post the merger, for 24 months pre and 24 months post the merger and 36 months pre and 36 months post the merger. The period of 12, 24 and 36 months are analysed to understand the movement of abnormal returns after the completion of merger over a long period of time. The first year after merger might be a reformative year for the acquiring entity, the second year can be the settling year, at least in third year the abnormal returns should have a positive trend. Beyond three years, it is difficult to believe if mergers would still impact the long term returns. Studies measuring long term impact of mergers on stock price performance have used three to five years period (Agrawal et al., 1992; Loughran and Vjih, 1997; Chakrabarty, 2007; Brau et al., 2012).

3.3 Abnormal Returns

Abnormal return can be calculated as either as excess of stock return over returns calculated through a model like CAPM (Capital Asset Pricing Model) or as excess of stock return over return of a benchmark index (Fama, 1998). While the first method is more suitable for studies measuring short term impact of an event on stock return, the second is more suitable for analysing long term impact of an event on stock return (Barber and Lyon, 1997). The present study thus calculates Abnormal Return ($AR_{i,t}$) as excess stock return over the return of market index for each month ranging from 36 months pre to 36 months post the merger month. The method used is adopted from Brown and Warner (1980) and Chakrabarty (2007). The study uses SENSEX as the market index. For the reason of time additive quality of log returns, the study measures log returns.

$$AR_{i,t} = R_{it} - R_m$$

Where,

$AR_{i,t}$ = Abnormal return of the acquiring entity 'i' for the month of 't'

R_{it} = Log of return of stock of acquiring entity 'i' for the month of 't'

R_m = Log of return of SENSEX for the month of 't'

3.4 Cumulative Abnormal Returns

Cumulative Abnormal Returns (CAR) are calculated as the sum of abnormal returns for a given period of time. In the present study, a 12 month CAR, 24 month CAR and 36 month CAR is calculated post the month of merger as well as pre the month of merger for each acquiring entity. In other words, a 12 month CAR in post merger period is the sum of abnormal returns ranging from month 1 to month 12 after the merger month.



$$CAR_{i,t; t+k} = \sum_k AR_{i, t+k}$$

Where,

$CAR_{i,t; t+k}$ = Cumulative Abnormal Return for stock of acquiring entity 'i' for the given period 't+k' (t= the month of merger, which is 0; k = 12 months, 24 months, 36 months)

An average CAR is then computed by taking the average of CAR of all acquiring entities.

$$\text{Average CAR} = [\sum_k AR_{i, t+k}] / N$$

Where,

'N' is the total number of acquiring entities in the sample.

3.5 Buy and Hold Abnormal Returns

CAR gives an idea of average return earned by a shareholder in the given time period. It is useful to shareholders who have invested in the acquiring entity's stock for a relatively short period of time around the merger month. However, it is not much useful to the shareholders who have held the stock throughout the period of 3 years pre and 3 years post the merger. For such shareholders BHAR (Buy and Hold Abnormal Returns) are more useful. CAR works on the principle of arithmetic mean where as BHAR works on the principle of geometric mean. It is calculated as product of holding period abnormal returns $(1 + AR_i)$. In the present study, a 12 month BHAR, 24 Month BHAR and 36 Month BHAR is calculated post the month of merger as well as pre the month of merger for each acquiring entity. In other words, a 12 month BHAR in post merger period is the Product of holding period abnormal returns of month 1 to month 12 after the merger month.

$$BHAR_{i,t; t+k} = \prod_k (1 + AR_{i, t+k})$$

$BHAR_{i,t; t+k}$ = Buy and Hold Abnormal Return for stock of acquiring entity 'i' for the given period 't+k' (t= the month of merger, which is 0; k=12 months, 24 months, 36 months)

An average BHAR is then computed by taking the average of BHAR of all acquiring entities.

$$\text{Average BHAR} = [\prod_k (1 + AR_{i, t+k})] / N$$

Where,

'N' is the total number of acquiring entities in the sample.



3.6 Paired t-test

A paired t-test is performed to analyse if there is a significant difference between pre 12 month CAR and post 12 month CAR; pre 24 month CAR and post 24 month CAR and pre 36 month CAR and Post 36 month CAR of acquiring entity. Similarly, a paired-t test is applied to analyse if there is a significant difference between pre BHAR and post BHAR during the said time periods of 12, 24 and 36 months. The paired t-test is applied after testing for the assumption of normality of data. For avoiding effects of outliers on the results, outliers under each pair of test are identified using the graphical technique of box-plots (Black, 2000) and are separated.

4. Estimation Results

The results of the above explained methodology are displayed in the present study in three parts. The first part of the estimated results include the figures displaying the average CAR and average BHAR values for the all the three sets of event windows of $[(-12 \text{ to } -1), (0 \text{ to } +12)]$; $[(-24 \text{ to } -1), (0 \text{ to } +24)]$ and $[(-36 \text{ to } -1), (0 \text{ to } +36)]$. The second part of estimated results includes hypothesis to be tested and tables displaying results of normality test and paired-test for all sets of pre and post event windows for CAR and BHAR. The third part of data analysis includes discussion on results obtained.

4.1 Figures of Average Cumulative Abnormal Returns and Average Buy and Hold Abnormal Returns:

After calculating monthly abnormal returns of each acquiring entity, the return metric of CAR and BHAR are estimated for each acquiring entity for the periods of 12 months, 24 months and 36 months ranging from pre merger phase to post merger phase for each acquiring entity for each month. The average monthly CAR and BHAR are calculated as average of CAR and BHAR respectively of all acquiring entities for each month. These are displayed through a graph to compare abnormal returns during before and after phase of merger (Figure 1, 2 and 3). The graphical representation of the same gives visual idea of the trend of monthly abnormal returns in the long term period before and after merger. It should be remembered that the cumulative returns and buy and hold returns in pre period and post period should not be seen as a continuation in the figures. The average CAR and BHAR values in the pre event period of 12 months and in the post event period of 12 months are combined in a single table and then the same has been represented into graphs. The fall that that is observed in the middle of the graph should not be viewed as a fall as post 12 months abnormal returns are cumulated from the first month to 12th month post the deal date. Similarly, the abnormal returns of pre 12 months are cumulated from the 12th month prior the deal date till 1 month prior to the deal. The same hold true for all time frames of all CAR and BHAR figures.



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Please refer to figures 1, 2 and 3 at the end of the paper

The figures of CAR indicate a positive trend of monthly average CARs prior to merger in all event windows; whereas the same abnormal returns when cumulated for post merger period are negative. This can possibly hint a negative impact of mergers on acquiring entity post the merger in the long term. Also, looking at the other way round, it can be observed that the phase prior to merger have achieved high abnormal returns on an average for all acquiring entities may be due to hyped sentiments or over expectations from the merger. This might have lead to strikingly lower abnormal returns when they are cumulated in the post merger phase. This can be attributed to performance extrapolation hypothesis where investors are too optimistic about the growth of the firm looking at its recent performance (Agrawal and Jaffe, 2000). Looking at the figures of BHAR that are calculated as holding period returns, are represented in times and that are calculated as geometric mean of abnormal returns; it can be observed that they are falling below 1 in the post merger period in all event windows. BHAR being more useful for investors who have held the acquiring entity stock throughout the period of event windows pre and post, can observe the trend of their wealth changing in post merger phase as compared to pre merger phase.

4.2 Results of paired t-test comparing pre and post merger CAR and BHAR

Figures give a visual idea of monthly CAR and BHAR of acquiring entities for a long period of time under each set of event window periods. Under this section a paired t-test is estimated to analyse if there is a significant difference in CAR and BHAR under each set of pre merger and post merger period. The hypothesis of the same are framed as under:

Hypothesis tested for CAR: The hypothesis are framed to check if there is significant difference between CAR in pre merger event window and CAR in post merger event window for each time frame.

1.) H_0 : *There is no significant difference in means of 12 months pre merger CAR and 12 months post merger CAR (Cumulative Abnormal Returns) of acquiring entities*

2.) H_0 : *There is no significant difference in means of 24 months pre merger CAR and 24 months post merger CAR (Cumulative Abnormal Returns) of acquiring entities*

3.) H_0 : *There is no significant difference in means of 36 months pre merger CAR and 36 months post merger CAR (Cumulative Abnormal Returns) of acquiring entities*

Hypothesis tested for BHAR: The hypothesis are framed to check if there is significant difference between BHAR in pre merger event window and BHAR in post merger event window for each time frame.



1.) H_0 : There is no significant difference in means of 12 months pre merger BHAR and 12 months post merger BHAR (Buy and Hold Abnormal Returns) of acquiring entities

2.) H_0 : There is no significant difference in means of 24 months pre merger BHAR and 24 months post merger BHAR (Buy and Hold Abnormal Returns) of acquiring entities

3.) H_0 : There is no significant difference in means of 36 months pre merger BHAR and 36 months post merger BHAR (Buy and Hold Abnormal Returns) of acquiring entities

For checking the above described hypothesis, it is imperative to check the assumptions of normality and absence of outliers among the variables studied. Test of Shapiro-Wilk is used for testing the normality of variables. The variables here are the CAR and BHAR calculated for each event window. Also, outliers have been identified using the visual inspection through the box-plot graphs of each variable (Black, 2009) and the same have been separated to avoid them causing undue effect on the results of the paired t-test. The results of normality test of Shapiro-Wilk are displayed after the separation of outlying pairs. The null hypothesis under the same is that the variable is normal. It has been observed that the significance value in each variable is above 0.05 and thus all variables are found to be normally distributed. The same is described in table 1 for CAR in all sets of event windows and in table 2 for BHAR in all sets of event windows.

Please refer to tables 1 and 2 at the end of the paper

After confirming the normality of variables and separation of outliers, a paired t-test is estimated to find out if there is a significant difference between pre merger and post merger abnormal returns in the long term. The table 3 and table 4 display the results of paired t-test performed on CAR and BHAR respectively for each set of pre and post event windows.

Please refer to tables 3 and 4 at the end of the paper

The results of paired t-test for CAR reveal that there is a significant difference in CAR between post merger period and pre merger period in the event window of 12 Month CAR [(-12 to -1), (0 to +12)], 24 Month CAR [(-24 to 11), (0 to +24)] and 36 Month CAR [(-36 to -1), (0 to +36)] as the significance value is less than 0.05. Thereby, we fail to accept the null hypothesis. Also, it can be seen that the cumulative returns are positive for all time frames prior to merger, but are negative for all time frames post the merger.

The results of paired t-test for BHAR reveal that there is significant difference in



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BHAR between 24 months pre and 24 months post merger $[(-24 \text{ to } -1), (0 \text{ to } +24)]$ and between 36 month pre and 36 months post merger $[(-36 \text{ to } -1), (0 \text{ to } +36)]$ as the significance value is less than 0.05. However, there is no significant difference found between 12 month BHAR pre and post the merger $[(-12 \text{ to } -1), (0 \text{ to } +12)]$ as the significance value is higher than 0.05. Thereby, we fail to accept the null hypothesis for the event window sets of 24 months and 36 months BHAR and accept the hypothesis for event window set of 12 months BHAR. It is also observed that the buy and hold abnormal returns have reduced in the post merger phase as compared to pre merger phase in all time frames and they significantly get reduced over longer time frames of 24 months and 36 months.

The results of paired t-test are indicating that the stocks which outperformed the market in the pre merger period have actually performed under the market in the post merger period. This can be inferred from the graphical representation of pre period and post merger monthly average CAR and BHAR and from the results of paired-test performed between CAR and BHAR under different time frame event windows. On an average, abnormal returns have declined significantly in the post merger period as compared to pre merger period in the long run. This might be reasoned as market-under reaction to a poor investment decision after the merger (Roll, 1986) or over-reaction to the typically strong performance of acquiring firm in advance of mergers (Mitchell and Stafford, 1997).

The results in the present study hint towards negative impact of merger on long term abnormal returns post merger. This makes us compare the results of the present study with studies in India and other countries. In the Indian context, there are limited studies that measure long term impact of mergers on abnormal returns. Chakrabarty (2007) analysed long term post acquisition performance of stock prices for 24 mergers and found that abnormal returns post three years of merger are less than the same period prior to the merger. The results of studies done around India also confirm the results of the present study reasonably. Malatesta, 1983; Asquit, 1983; Agrawal et al.,1992 in their studies in the US have found negative impact of mergers in the post merger period in the long term. Gregory, 1997; Loughran and Vjih, 1997; Sudarsanam and Mahate, 2003; Conn et al.,2005 in UK have also observed that long term abnormal returns are reduced post merger. Agrawal and Jaffe (2000) reexamined many studies that used different methodologies and sample periods in both the United States and United Kingdom found negative abnormal returns for mergers. They also found that method of payment and performance extrapolation influence abnormal returns. Sheel and Nagpal (2000) analysed hospitality sector mergers and again found significant negative equity valuation post merger of firms during 1980 to 2000. Dash (2004) and Moeller et al. (2005) in the United States also reported negative long term abnormal returns post merger.



Andre et al. (2004) in Canada, Zhou et al. (2015) in China and Brau et al. (2012) in different countries have also found evidence of reduced impact of mergers on acquiring entities in one way or the other. However, Schipper and Thomson (1983) found a positive long term impact of mergers on abnormal returns of mergers in the United States post 72 months of the announcement of mergers. Zaremba and Płotnicki (2016) in their study in Central and Eastern European countries concluded that in the long run mergers and acquisitions do not destroy the value of acquiring firms.

5. **Applicability and Generalizability**

The results of the present study are applicable in the Indian context within the sectors that the sample of the study comprises of. The present study would add to the literature of studies measuring long term stock price impact of mergers in India where there is limited work available. The results shall be helpful to investors to take appropriate investment decisions around the merger for acquiring entities. It would be helpful to corporates as well as investment bankers to be all the more due diligent.

The results of the present study can be generalized as they are in consistence with results found across similar studies in different countries. It needs to be however mentioned that the calculations of abnormal returns and the outcomes are subjected to the method of calculation used and most of the long term anomaly changes with change in methodology adopted (Fama, 1998). Also, it is difficult to comment which is the best methodology for estimating abnormal returns as there is no evidence that more complicated methods convey any benefit; and can even make the researcher worse off (Brown and Warner, 1980).

6. **Conclusion**

The study uses the concept of abnormal returns, cumulative abnormal returns and buys and hold abnormal returns and compares the same in long term pre and post merger period using a paired t-test after careful separation of outliers and confirming normality of variables. The findings reveal higher performance of acquiring entities of mergers in India during the pre merger period as compared to during the post merger period in the long term. The study also compares the results with results of similar studies in countries other than India. The future scope of the study can be in the area of determinants of long term stock performance of the acquiring entities in India.

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Annexure

Figure 1. Pre 12 months and Post 12 months Average CAR and Average BHAR values of Acquiring Entities:

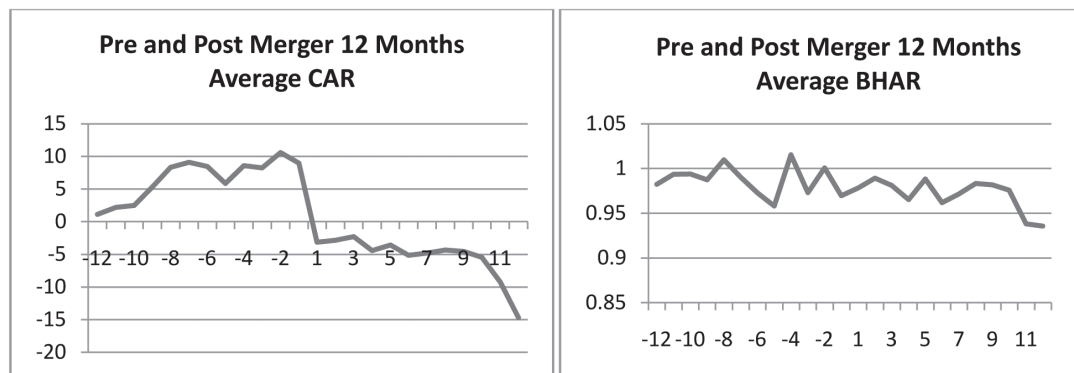


Figure 2. Pre 24 months and Post 24 months Average CAR and Average BHAR values of Acquiring Entities:

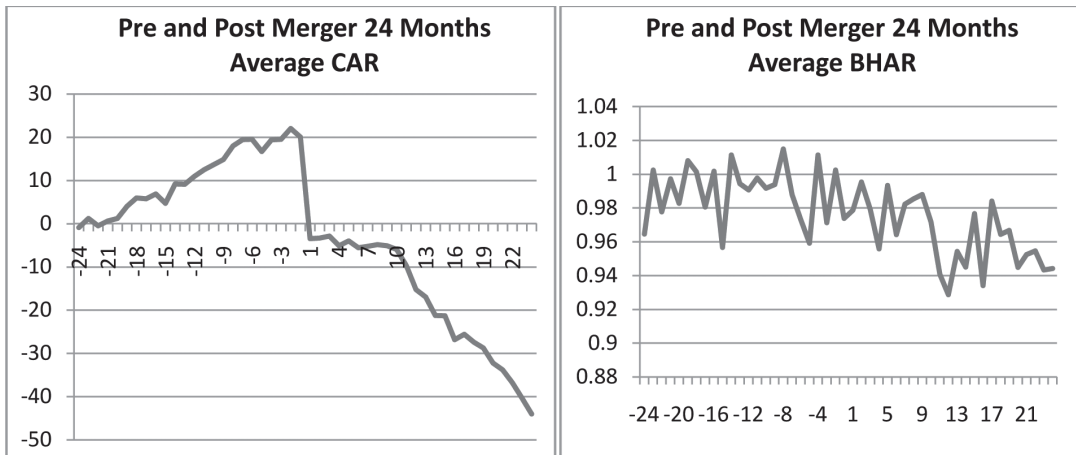
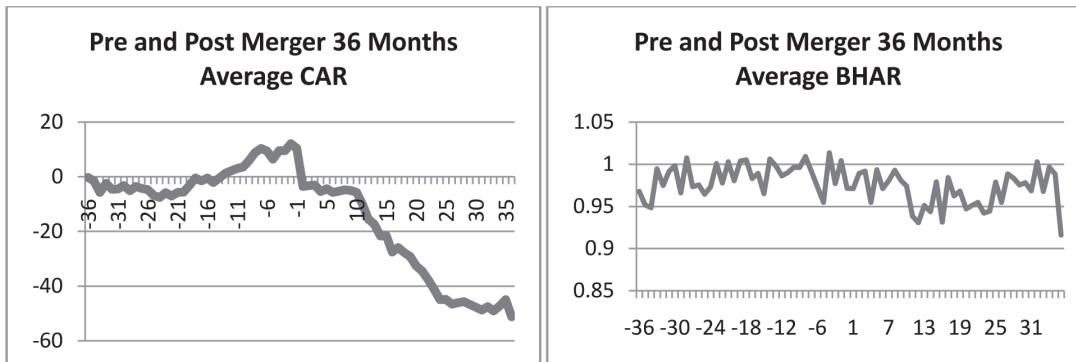


Figure 3. Pre 36 months and Post 36 months Average CAR and Average BHAR values of Acquiring Entities:



Tables:

Table 1. Results of Shapiro-Wilk test for testing Normality of CAR values:

Variable	Test-statistic	Sig. Value	D.F.	Remarks
Difference between pre 12 months CAR and Post 12 months CAR	.993	.882	102	Data is found normal
Difference between pre 24 months CAR and Post 24 months CAR	.988	.492	102	Data is found normal
Difference between pre 36 months CAR and Post 36 months CAR	.991	.771	102	Data is found normal

Table 2. Results of Shapiro-Wilk test for testing Normality of BHAR values:

Variable	Test-statistic	Sig. Value	D.F.	Remarks
Difference between pre 12 months CAR and Post 12 months BHAR	.992	.845	92	Data is found normal
Difference between pre 24 months CAR and Post 24 months BHAR	.981	.202	92	Data is found normal
Difference between pre 36 months CAR and Post 36 months BHAR	.981	.202	92	Data is found normal



Table 3. Results of Paired t-test for CAR for all three event windows:

Variable	Pre Merger Mean CAR	Post Merger Mean CAR	Sig. Value	D.F.
12 Month CAR [(-12 to -1), (0 to +12)]	14.96	-8.70	0.00*	102
24 Month CAR [(-24 to -1), (0 to +24)]	18.91	-36.85	0.00*	102
36 Month CAR [(-36 to -1), (0 to +36)]	13.82	-43.30	0.00*	102

(*significant at 1%)

Table 4. Results of Paired t-test for BHAR for all three event windows:

Variable	Pre Merger Mean CAR	Post Merger Mean CAR	Sig. Value	D.F.
12 Month BHAR [(-12 to -1), (0 to +12)]	0.97	0.87	0.16	92
24 Month BHAR [(-24 to 11), (0 to +24)]	0.95	0.61	0.00*	92
36 Month BHAR [(-36 to -1), (0 to +36)]	0.78	0.52	0.00*	92

(*significant at 1%)

